

Weatherfluencers: Trust and Collective Sensemaking  
in Severe Weather Livestreams

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**Abstract**

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During severe weather, YouTube-native content creators interpret unfolding conditions in real time, offering radar analysis and safety guidance to large audiences. These *weatherfluencers* operate outside the credentialing, professional affiliation, and accountability structures through which the U.S. weather enterprise has historically made its expertise publicly legible. Existing work in sensemaking, trust, crisis informatics, and weather communication has not explained how audiences organize live collective interpretation around a creator whose professional standing is actively contested. I investigate that problem through three studies of severe weather livestreams. I find that broadcast meteorologists retain their institutional advantages compared to weatherfluencers, particularly on measures of trustworthiness, credibility, and legitimacy; that weatherfluencers make their interpretive reasoning continuously observable through source triangulation, uncertainty narration, and on-screen revision; and that chat participants engage with that reasoning through directed questioning, ground-truth reports, and source comparison. I develop *inspectable interpretive work* to name the continuous public externalization of interpretive reasoning as it unfolds, which gives audiences

evaluable material to work with even where credential cues are absent or contested.

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I am grateful to my parents for raising me with a respect for science, curiosity, and careful observation. Growing up in SE Texas, I learned early that weather was not an abstraction or occasional inconvenience, but an essential part of everyday awareness. Although my father is not here to see this work completed, his influence is felt throughout. After all, he is part of how I knew to call the First State Bank weather line when we were expecting a freeze. My deepest apologies for calling every minute until the temperature hit 32 degrees. I am especially grateful to my mother, whose attentiveness to weather, gardening, and the rhythms of the natural world helped me stay connected to how consequential this weather work can be. She helped me think through how people outside academic circles encounter, interpret, and make meaning from weatherfluencers.

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# **DEDICATION**

To everyone working toward a better  
weather information ecosystem.

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# List of Acronyms and Key Terms

| Term or Acronym               | Definition                                                                                                                                                                                                                                                     |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AMS                           | American Meteorological Society.                                                                                                                                                                                                                               |
| CAPE                          | Convective available potential energy; a measure of the potential energy available to a rising air parcel due to positive buoyancy, commonly used to estimate potential updraft strength in convective storms [7].                                             |
| CBM                           | Certified Broadcast Meteorologist, a professional certification offered by the American Meteorological Society [6].                                                                                                                                            |
| CDM                           | Certified Digital Meteorologist, a professional designation offered by the American Meteorological Society [4].                                                                                                                                                |
| Convective outlook            | A Storm Prediction Center forecast product that depicts areas where severe thunderstorms are possible, often using categorical risk levels such as marginal, slight, enhanced, moderate, and high risk [181].                                                  |
| Coverage legitimacy           | The perceived appropriateness or authority of the weather information or coverage itself.                                                                                                                                                                      |
| Debris ball                   | A radar signature associated with debris lofted by a tornado; closely related to what the AMS Glossary describes as a tornado echo, a precipitation echo observed with large, strong tornadoes at relatively close radar ranges [13].                          |
| Forecast                      | An assessment or prediction of the future state of the atmosphere, often based on current observations, meteorological reasoning, and numerical weather prediction [15].                                                                                       |
| Futurecast                    | A broadcast or platform-facing visualization of predicted future weather conditions, often based on numerical model output. In this dissertation, “futurecast” refers to a displayed predictive visualization rather than to an official NWS product category. |
| Hook echo                     | A pendant or curve-shaped radar reflectivity feature produced when precipitation is drawn into the cyclonic circulation of a mesocyclone [8].                                                                                                                  |
| HRRR                          | High-Resolution Rapid Refresh, a frequently updated convection-allowing numerical weather prediction model used in short-term forecasting [128].                                                                                                               |
| Inspectable interpretive work | Publicly visible practices through which creators make their reasoning process observable, including source triangulation, uncertainty narration, visual annotation, and explanation of changing meteorological evidence.                                      |
| Interactional trust work      | The real-time audience practices through which reliance is monitored, negotiated, and coordinated in livestream chat, including questioning, corroboration, comparison, and revision tracking.                                                                 |

|                             |                                                                                                                                                                                                                                                                        |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mesocyclone                 | A cyclonically rotating vortex within a convective storm, often associated with supercells and sometimes with tornado formation [9].                                                                                                                                   |
| Mesoscale discussion        | A Storm Prediction Center product that discusses short-term severe weather potential and conditions that may require a watch or continued monitoring [182].                                                                                                            |
| NAM                         | North American Mesoscale Forecast System, a numerical weather prediction model used for regional forecasting [126].                                                                                                                                                    |
| NWA                         | National Weather Association.                                                                                                                                                                                                                                          |
| NWS                         | National Weather Service.                                                                                                                                                                                                                                              |
| PDS                         | Particularly Dangerous Situation; enhanced National Weather Service wording used in rare situations when long-lived, strong, and violent tornadoes are possible. This wording may also accompany severe thunderstorm watches for intense convective wind storms [132]. |
| Presenter legitimacy        | The perceived appropriateness or authority of the individual communicating the weather information.                                                                                                                                                                    |
| Radar reflectivity          | A radar-derived measure of the efficiency with which a target returns radio energy, commonly used in weather radar displays to identify precipitation structure and storm features [10].                                                                               |
| Severe thunderstorm warning | A National Weather Service warning issued when severe thunderstorm conditions are occurring or imminent [130].                                                                                                                                                         |
| SPC                         | Storm Prediction Center, the National Weather Service center responsible for severe thunderstorm and tornado outlooks and watches [181].                                                                                                                               |
| Squall line                 | A line of active deep moist convection, often associated with thunderstorms and contiguous precipitation areas [11].                                                                                                                                                   |
| Storm mode                  | The organization or structure of convective storms, such as discrete supercells, clusters, or lines.                                                                                                                                                                   |
| Supercell                   | A dangerous convective storm characterized by a persistent, rotating updraft and often associated with severe weather, including large hail, damaging winds, and tornadoes [12].                                                                                       |
| Tornado emergency           | Enhanced tornado warning language reserved for rare situations when a severe threat to human life and catastrophic damage is imminent or ongoing and a damaging tornado has been confirmed visually or by radar evidence [134].                                        |
| Tornado outbreak            | A multiple-tornado event, usually referring to the occurrence of several tornadoes associated with the same synoptic-scale or mesoscale weather system [14].                                                                                                           |
| Tornado warning             | A National Weather Service warning indicating that a tornado has been sighted or indicated by weather radar and that immediate protective action is needed [29, 130].                                                                                                  |
| Tornado watch               | A Storm Prediction Center product indicating that atmospheric conditions are favorable for tornado development in and near the watch area [134].                                                                                                                       |
| Velocity couplet            | A radar velocity signature in which adjacent inbound and outbound velocities indicate rotation, often used as evidence of possible tornadic circulation [133].                                                                                                         |

|                    |                                                                                                                                                                                                                                                                                           |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Weather enterprise | The broader institutional system through which weather, water, and climate information is produced, authorized, and communicated, including government agencies, academic and research institutions, broadcast meteorology, emergency management, and commercial weather providers [136]. |
| Weatherfluencer    | A platform-native creator who provides real-time severe weather interpretation for public audiences, often through livestreaming platforms such as YouTube.                                                                                                                               |

---



# Chapter 1

## Introduction

### 1.1 “God please don’t hit Lake City”

On the afternoon of April 2, 2025, a large wedge tornado was tracking toward Lake City, Arkansas. Over on YouTube, a content creator was watching it on radar in real time and streaming the images to thousands of viewers. *“This is in Bay, Arkansas right now. This thing is growing in size, rapidly. This is a significant tornado. This is going to wedge.”* Then, narrating the radar display directly: *“On the radar at the bottom right we have a huge debris signature on the east side of town... that’s going to be a deadly tornado.”* In parallel, the creator also narrated town-by-town protective action guidance. *“Guys if you’re in Lake City, you need to get to your safe place. Tornado on the ground. If you’re in Lake City, if you’re in Black Oak, Mon[ette], you’ve got to be in your safe place. If you’re in a mobile home or trailer park, got to ride it out in a ditch or get to a sturdy structure.”* The Live Chat scrolled too quickly to read. Super Chat, the paid feature that allows viewers to have their chat message highlighted to the streamer, showed that dozens of donations had accumulated. Moderators posted shelter locations and enforced conversation norms in the chat. Storm chaser feeds from intercepting drivers near the storm filled secondary windows on screen. Interspersed within the same continuous narration, the creator’s own registration of the stakes became audible: *“This is... I hate to say this, but this is probably a deadly tornado.”* And: *“scary God please don’t hit Lake City.”* And: *“God can hear it roaring I can hear it.”* This creator was not yet a meteorologist nor a broadcaster. He was not employed by any news organization and held no authority to issue warnings or provide any sort of protective guidance. And yet, several thousand people were watching him, potentially fully relying on him, to understand the mechanics of storm movement, translate the advanced-mode radar products, and know who would be in the storm’s path.

The creator I am profiling is Max Velocity, a YouTube creator and channel with 1.19 million subscribers who operated solo at the time of these events. At the time, Max was not just a weather enthusiast, but a student of meteorology and nearing completion of his bachelor’s degree. His training up to that point placed him at an interesting crossroad between full-on expertise and advanced hobbyist. He was more trained than a National Weather Service (NWS) Storm Spotter, but still comfortably outside the institutional structures through which severe weather authority typically organizes. Max had no broadcast news organization affiliation nor an affiliation with the NWS. He possessed no professional credentials or seals with the American Meteorological Society or National Weather Association nor any affiliation with emergency management systems. And therein lies the problem. Max is one of a small number of platform-native creators who have accumulated substantial audiences based on regular severe weather livestreams, alongside figures such as Ryan Hall, Y’all (2.7 million subscribers), Texas Weather Center (89,100 subscribers), and a handful of

others. They sit within a broader ecosystem of severe weather communication that includes the National Weather Service, Storm Prediction Center (SPC), the field of broadcast meteorology and professional storm chasing, emergency management, local law enforcement, and other platform-native observers and weather analysts. Each of those carve out their own information streams, with data moving between them in real time across YouTube, X/Twitter, Discord, and other social media channels. The creators named here are among the most prominent on YouTube, but they certainly are not the total population. I refer to these creators as *weatherfluencers*, a construct whose name I derive from Hurcombe’s *newsfluencer* [88]. Like newsfluencers, weatherfluencers operate through platform infrastructure, audience-supported revenue structures, and exude parasocial elements through their hosting of the stream and related Discord communities. Their subject matter is inherently live with an element of forecast or forward-looking analysis. Original interpretation of various data sources as events unfold is their primary material, with consequences that are immediate, geographically specific, sometimes down to the neighborhood level, and inevitably tied to protective-action decisions. This small group of livestreamers also shares a distinctive structural position within the broader weather communication ecology: substantial audiences accumulated outside the credentialing, accountability, and media-backed structures that the weather enterprise has used for decades to make their expertise and authority recognizable to the general public.

The weather communication landscape is changing rapidly. The increasingly cross-platform character of this ecosystem becomes visible in moments when the official warning system itself fails. On June 25, 2024, a significant EF-3 tornado struck near Whitman, Nebraska, at approximately 7:30 PM Mountain Time, without any warning from the National Weather Service. The cascade of alerts that would typically sound across phones, television screens, radio, specialized weather radios, and X/Twitter did not activate. On YouTube, however, Max Velocity was already covering the storm. At 7:46 PM Mountain Time, Max exclaimed “Wow!” while pointing his viewers toward a radar loop of Nebraska near the Hyannis and Whitman area. *“Look at this storm. This isn’t even tornado-warned. . . Look at this thing. . . I cannot believe there is no warning on that.”* In the YouTube Live Chat, observers, moderators, and viewers fielding second-hand reports were already active. *“NWSNorthPlatte really dropped the ball here,”* one commenter said. Other users put the warning gap into context: *“28% of all tornadoes are never warned.”* Minutes later, Max said, *“this could be a large and strong tornado. I could be missing something, but this is clear as day.”* Nearly 15 minutes after Max identified the storm, an official tornado warning was finally issued.

During the Whitman storm, a parallel response to the lack of warning was simultaneously assembling across X/Twitter, a key platform for breaking news and weather communication. To understand the discourse, I collected a small sample of 418 Tweets surrounding the Whitman storm, from time windows just before the tornado struck to the morning after the storm had passed. Analysis of that corpus shows the rapid emergence of a narrative surrounding the situation. Nearly all Tweets (97.8%) included some kind of visual evidence, such as actual photos of the tornado from storm chasers like Roger Hill<sup>1</sup> and specific radar products, underscoring the importance of visual documentation in establishing what had occurred and where. About one in five Tweets (19.6%) explicitly mentioned the warning system failure as the visual and radar evidence showed a story that did not line up with NWS response. Across the set of Tweets, posts document how audiences watching on drew on the triangulation of radar imagery, local reports, and on-the-ground confirmation to make sense of an unfolding communication breakdown and to reiterate that an ongoing threat to life and property was present. Table 1.1 presents selected posts showing the actors involved and the temporal sequence of response.

The response to the Whitman tornado was not coordinated by any single entity. Interpretation of the storm assembled in real time and across many places at once: on Max Velocity’s livestream, in weather

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<sup>1</sup>On X/Twitter: <https://x.com/rehill57> and <https://www.silverliningtours.com/>.

spotter chat groups, through live storm chaser feeds, in posts on X/Twitter, and in the relayed observations of amateur watchers, local sheriffs, and other official weather accounts. Max’s livestream link appeared in the first public shelter-in-place guidance issued that evening. His identification of the storm at 7:46 PM preceded any tweeted alerts from him or from other weather professionals as far as the present data can show. The posts collected in Table 1.1 accumulated after 8:00 PM, as attention moved from the livestream to broader cross-platform alerting once the tornado was on the ground. Hours later, reflecting on another tornado in the same region that the NWS had declined to verify, one storm chaser wrote: *“This is why ppl [sic] are turning to YouTubers.”*

Two days later, on June 27, KNOP News2 in North Platte reported that a “possible tornado” struck Whitman, partially destroying at least two homes and leaving residents to address the aftermath [44].

## 1.2 A Changing Weather Communication Landscape

Public communication about severe weather in the United States has historically been structured around official warning agencies and broadcast meteorologists embedded in news organizations [76]. Organizations such as the National Weather Service and the Storm Prediction Center issue alerts and interpretive guidance, while broadcast meteorologists and other professional intermediaries such as storm chasers, interpret these products for themselves, or in the case of broadcasters, their immediate viewing area. Federal and local officials as well as emergency managers then use forecasts for storm preparation and any anticipated response.

Official and professional weather communication now circulates across digital platform environments more than ever. The National Weather Service’s 2014 decision to allow X/Twitter to be used as an official outlet for alerts and other related safety messaging marked one important step into their presence on social media [62]. The Storm Prediction Center’s YouTube channel, which only began in early 2026, offers another example, using video to explain product changes and walk viewers through upcoming severe weather, however, the intended audience is weather professionals [142]. All weather communicators are now operating in the same networked and platformized spaces where various audiences can encounter different types of information and look at them side by side. Severe weather livestreams extend this shift by organizing many of those inputs through a live creator-host, a shared screen, and a continuously visible audience.

Livestreams bring together multiple data products, real-time feeds, and creator-led analysis in a shared public setting. On the surface, weatherfluencers perform work very similar to broadcast meteorologists and they do so without necessarily possessing the credentialing, editorial oversight, or formal accountability structures that traditionally govern responsibility, error correction, and public trust in weather communication. Audiences observe conditions as they unfold, ask questions, contribute observations, and compare information across sources in real time. Interpretation is produced and revised in the presence of an audience, rather than delivered as a finished product. These environments function as sites of collective sensemaking. Although my studies focus on livestreaming, weatherfluencer activity is not confined to YouTube or to livestreams. These creators maintain an ongoing presence across platforms, sustaining long-term audiences between outbreaks and circulating updates during active events when conditions affect large populations. Their effects are not confined to a single platform. Severe weather livestreams are nonetheless productive sites for examining how audiences come to treat platform-native interpretation as actionable, particularly as the weatherfluencer status among weather professionals is contested, because they make the interpretive process inspectable in real time, render audience response continuously visible through chat, and unfold in a time and place where a viewer might not have a chance to fully vet the creator before they need to use their guidance for personal safety.

Table 1.1: Selected posts from real-time X/Twitter discourse surrounding the Whitman, Nebraska tornado (June 25–26, 2024). Drawn from a corpus of 418 captured posts. Times shown in Mountain Time. Tornado struck approximately 7:30 PM MT.

| Actor Type       | Handle           | Post                                                                                                                                                                                                                                    | Time (MT)            | Likes |
|------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------|
| Public           | @brikzwx         | “unwarned tornado north of Whitman”                                                                                                                                                                                                     | 7:54 PM              | 1     |
| Weatherfluencer  | @MaxVelocityWX   | “UNWARNED LARGE TORNADO LIKELY near Whitman, Nebraska”                                                                                                                                                                                  | 8:00 PM              | 588   |
| Storm Chaser     | @NickKrasz_Wx    | “WHITMAN, NEBRASKA: Cored by an intense-violent tornado just now, NO warning whatsoever.”                                                                                                                                               | 8:00 PM              | 956   |
| Public           | @lmr_49          | “@NWSNorthPlatte really dropped the ball here. Monster tornado and zero warning. Hope the people in Whitman are ok!”                                                                                                                    | 8:04 PM              | 0     |
| Weatherfluencer  | @MaxVelocityWX   | “BREAKING — A TORNADO IS ON THE GROUND near Whitman, Nebraska. Seek shelter immediately, away from windows, and on the lowest floor possible. We are live —”<br>[link]                                                                  | 8:04 PM              | 250   |
| Public           | @WestonBrya27345 | “These are photos I took and also a rough estimate of where this tornado tracked! “THIS IS NOT OFFICIAL” the tornado went through the town of Whitman NE UNWARNED! Praying that no one was hurt!”                                       | 10:41 PM             | 149   |
| Storm Chaser     | @AdamLucioWX     | “...This is why ppl [sic] are turning to YouTubers”                                                                                                                                                                                     | 11:55 PM             | 902   |
| Official Weather | @NWSNorthPlatte  | “An NWS survey team is currently conducting a storm survey from the thunderstorms last night that produced large hail, damaging winds and a tornado near Whitman. Once additional information is known, more details will be released.” | 9:55 AM <sup>†</sup> | 538   |

*Note.* Posts are drawn from a corpus of 418 captured X/Twitter posts from June 25–26, 2024. Times are shown in Mountain Time. The tornado struck at approximately 7:30 PM MT. <sup>†</sup> June 26, 2024 — the following morning.

### 1.3 How Do People Come to Trust Weatherfluencers?

The observation that viewers are increasingly turning to weatherfluencers is more than a simple critique of a particular storm and a warning system failure. It points to something the broader weather enterprise itself was not designed to handle after decades of successful engagement with the general public: a practice in which people orient to informal interpreters and unregulated platforms as actionable sources of safety-critical guidance, without any professionally recognized accountability structure authorized to oversee it.

The weather enterprise regards weatherfluencers as contested figures. Some in the weather enterprise view them as a net good: more broadly accessible than television, available to anyone with an internet connection, and sometimes more engaging than the local weathercaster. Others within professional meteorology have identified weatherfluencers as potential risks to public safety, citing the introduction of perceived “#hype” into forecasts and streams, elevated false alarm rates that can erode public confidence in official warnings over time [154], and the potential for conflicting guidance between platform-native streamers and official NWS products to generate public confusion [21]. Both of these positions on the weatherfluencer are operating under a broader shift in how the public relates to professional expertise. From a television standpoint, traditional interpreters like broadcast meteorologists may be less accessible in some markets than they once were due to TV station consolidation. Relatedly, the idea of expertise itself is approached with greater skepticism than in prior decades<sup>2</sup>. Weatherfluencers have grown in reach partly within this environment, though neither the shift nor their rise is fully explained by any single trend.

Those within professional meteorology who raise concerns are identifying something critical about the long-standing trust arrangement among the NWS, broadcasters, and the publics served by local warning and broadcast systems. The weather communication system spent decades aligning professional credentials, accountability, media channels, emergency response relationships, and public reliance around a common task: helping people identify which sources could guide protective action during severe weather. Weatherfluencers do not fit into this arrangement neatly.

On digital platforms, the weather enterprise’s presence persists in a form considerably more diffuse than its historical arrangement on broadcast. Audiences may encounter broadcast meteorologists on X/Twitter or on station-produced apps, though platforms largely strip the credentialing infrastructure and production value these figures carry in broadcast contexts. The cues the public has long relied on to recognize a trustworthy weather interpreter have no clean analog on YouTube. A verification badge on a channel with the “seal of approval” from millions of subscribers is structurally indistinguishable from one on an official NWS channel, and the platform provides no dedicated location for displaying meteorological credentials. Audiences come to recognize and return to particular weatherfluencers through different mechanisms: algorithmic recommendation, repeated exposure across events, word-of-mouth, and cross-platform sharing. Barriers to entry are low. Anyone can start a channel, stream live, and build an audience with modest equipment. Audiences encountering a weatherfluencer mid-stream are working within a different set of recognition cues than broadcast communication has supplied. This is a form of engagement that the weather enterprise has not needed to deal with for a long time: audiences treating a non-sanctioned, platform-native interpreter’s reading of conditions as actionable while the interpreter’s professional standing remains up in the air.

I approach weatherfluencers as a puzzle of *collective sensemaking* [204] rather than as a problem of credentialing. The livestream can be theorized as a collaborative production of data interpretation sufficient to guide the next decision under continuously changing and ambiguous conditions, not as passive observation or as a collective search for some pre-existing, objective truth about the weather. Disaster voyeurism

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<sup>2</sup>Longitudinal survey data document a decades-long divergence in public trust in science along political lines, with especially rapid shifts since 2018 [118]. Recent surveys find trust in scientists higher than in most other prominent institutions but still below pre-pandemic levels, with notable partisan differences and concerns about communication [192].

is likely part of what draws some audiences to these streams, and the pull of watching destructive weather unfold in real time should not be dismissed. But voyeurism alone does not account for what audiences do once they are there: they ask questions, contribute observations, compare sources, and return across events. The central problem I address through three studies is how distributed, collective sensemaking proceeds *well enough* to warn residents of a small town approximately fifteen minutes in advance of a dangerous storm, despite that work being carried out by informal actors on platforms that are largely unregulated for safety-critical communication.

## 1.4 Authority in the Weather Enterprise

Addressing this problem requires specifying what kinds of authority are formally recognized. The weather enterprise has historically organized public safety communication around three forms of authority. *Statutory authority* is the legal power to issue binding weather warnings and to activate the public alerting systems that distribute them, including the Emergency Alert System, Wireless Emergency Alerts, and NOAA Weather Radio [130, 52]. The National Weather Service and its component centers, including the Storm Prediction Center, hold this authority exclusively; no other actor in the weather enterprise holds this standing. *Professional standing* within meteorology is the recognition conferred by the field itself through formal training, certification, and organizational affiliation, with signals legible to both colleagues and the public through degrees, AMS and NWA seals, and newsroom or agency positions. *Interpretive authority* refers to whose observations and analyses audiences actually orient to and act on during unfolding events, treating a given interpreter's reading of conditions as the working basis for their own attention and response. Table 3.1 provides further detail on which actors hold which forms. Weatherfluencers expose the limits of this three-part vocabulary. They hold no statutory authority; they inconsistently hold elements of professional standing; and while they demonstrably exercise interpretive authority, the basis on which audiences orient to them is not professional legitimation.

I argue that what is operating here constitutes a fourth form of authority, *audience-constituted authority*, one that the existing three-part vocabulary does not accommodate cleanly. Chapter 3 develops the concept; the three empirical studies qualify and specify it. What audiences are doing in these streams is not reducible to a misclassification within the three categories above. They are forming reliance on interpreters whose standing within the enterprise remains unsettled because the enterprise's existing categories do not yet name what is being exercised.

I use *legibility* to name the public shorthand produced by that long-standing arrangement: the ability to recognize, quickly and under time pressure, that a weather source belongs to an expert system with responsibility for public safety. In conventional weather communication, legibility is carried through the alignment of NWS warning authority, professional meteorological training, broadcast affiliation, local presence, production conventions, emergency management relationships, and accountability structures. Those cues allow many viewers to read a broadcast meteorologist or NWS message as part of a trusted weather information system before they evaluate any single interpretive act in detail. Legibility is practical and safety-relevant. It reduces the work a person must do during a threat to decide whether a source has the expertise and responsibility needed for reliance.

## 1.5 Trust as a Theoretical Gap

The weatherfluencer not fitting neatly into the three-part authority framework has some operational consequences. Weatherfluencers rely on National Weather Service alerts and often defer to them on official

guidance and damage reports, but are not bound by the accountability structures that regulate their use. Weatherfluencer audiences can reach scales comparable to regional broadcast outlets, but the editorial, legal, and professional oversight structures that accompany broadcast reach do not extend to platform-native interpretation. Observations and interpretations circulate in real time, but the National Weather Service retains sole authority over the official record, including tornado counts and EF ratings finalized through post-event storm surveys. These are symptoms of a configuration in which high-stakes severe weather interpretation operates without the professional and organizational constraints that typically govern public safety communication.

When source evaluation becomes salient, especially in weather risk communication, two categories typically do most of the work: credibility and legitimacy. *Credibility* concerns whether a particular claim or source is worth accepting as accurate, a judgment audiences make about messages and speakers [84, 115]. *Legitimacy*, also a very relevant measure, concerns recognized standing and appropriateness rather than accuracy, a judgment about whether a speaker has the right to communicate authoritatively in a given domain [183]. Both domains are well-specified in literature and research on weathercasters and warning infrastructure, but neither works as a silver bullet for understanding the weatherfluencer phenomenon. Reliance on these creators by an audience is more than a judgment of their credibility and legitimacy.

Trust enters the argument at the point where source evaluation remains unsettled but practical reliance continues. By reliance, I mean viewers treating an interpretation as a working basis for their next practical judgment, including the judgment to continue attending to the interpreter, even when the interpreter's professional standing, institutional authorization, or the accuracy of particular claims has not been settled. In the case of weatherfluencers, viewers may assess credibility, legitimacy, and trustworthiness while still orienting to the creator's interpretation as the stream moves forward. Trust, as I use it, concerns how viewers keep an interpretation provisionally usable under conditions of uncertainty. Credibility concerns whether a claim or source appears believable; legitimacy concerns recognized standing; trustworthiness concerns qualities attributed to a source. This use draws on work that separates trust from antecedent judgments of trustworthiness, links trust to action despite the possibility of disappointment, and characterizes trust as involving suspension when knowledge remains incomplete [111, 102, 122, 123]. Weatherfluencer livestreams make that process visible because viewers are assessing both the interpreter and the anticipated storm trajectory while the stream continues to move forward.

In the moments when Max Velocity was narrating a wedge tornado on the ground near Lake City, registering audibly that it was likely deadly, and directing several hundred thousand viewers town-by-town toward shelter, no newsroom or special credential carried Max's urgent pleas to get to safety. Whatever was carrying the message was being assembled in the visible moment of the stream itself, between the creator, the data on screen, the storm chasers, the moderators, and an audience that was simultaneously watching, contributing, and acting. In the chapters that follow, I specify the space that the weatherfluencer operates in and how their interpretations enable action and sensemaking for viewers even as their standing in the weather enterprise is tenuous.

## 1.6 Overarching Research Question

Disaster sociology provides the immediate lineage for this question because it treats disaster response as a social process that routinely extends beyond formal agencies. Convergence research shows that disasters draw people, messages, and resources toward damaged places and information centers, but also that those who converge do not arrive as a single public: they include people seeking information about loved ones or places, people trying to help, people watching out of curiosity, and people whose presence creates ad-

ditional control problems [63]. Work on organized behavior in disaster adds that event-generated demands are not handled only by established agencies. Existing organizations may expand their capacity, extend into unfamiliar tasks, or be joined by newly formed groups when available routines do not fit the situation [49]. Emergent citizen activity therefore does not necessarily signal the absence or failure of public authority; it often develops around perceived unmet needs and becomes more or less useful depending on available knowledge, resources, recognition, and incorporation into the wider response [173]. Kendra and Wachtendorf make that last problem explicit by treating convergence as a question of negotiated legitimacy within a response milieu: who has a valid reason to participate, whose contributions fit the needs of the event, and whose access or influence should be restricted [94].

Crisis informatics carries this lineage into online settings, where convergent attention and participation can become organized information work. Humanity Road is a close precedent because it shows digital volunteers transforming online social convergence into practices for verification, routing, synthesis, and public information production [178]. Weatherfluencer livestreams sit within this lineage, but they do not fill a simple absence in official weather infrastructure. The livestream concentrates those inputs around a host's screen and narration while viewers ask local questions, offer reports, compare sources, and decide whether the creator's account remains usable as the threat develops. The specific tension the livestream concentrates is how platform-native interpretation becomes and remains usable to audiences when the interpreter's standing within the weather enterprise is actively contested.

Weatherfluencer livestreams sit within the disaster lineage while concentrating the problem in a specific form: live, host-centered, prospective-oriented interpretation with a concurrent live audience. Chapter 3 develops the weatherfluencer role in detail.

I address these intersections with an overarching research question:

*How does collective sensemaking in weatherfluencer livestreams make prospective severe weather interpretation actionable while the threat is still developing and the host's professional standing remains unsettled?*

Study 1 examines audience evaluation when professional standing differs sharply across sources. It shows that the socially recognized authority structure of the weather enterprise remains consequential at the level of individual judgment, but does not fully account for how audiences orient to platform-native interpreters in practice.

Study 2 turns to the production side of livestream interpretation. It examines what weatherfluencers make publicly visible as they interpret severe weather in real time and develops *inspectable interpretive work* as the public visibility of reasoning that makes aspects of interpretive performance available for evaluation.

Study 3 examines the YouTube Live Chat as a place of interaction. It shows how chat participants work with the creator's interpretation through directed questioning, ground-truth reports, and source comparison, even when the weatherfluencer role remains contested.

## 1.7 Contributions and Significance

The three studies together specify how collective sensemaking proceeds when professional standing does not, by itself, settle whose interpretation should be treated as actionable. Public visibility of reasoning, differentiated audience evaluation, and live interaction around a creator's interpretation each contribute part of the answer; Chapter 9 assembles the full cross-study discussion.

These studies that follow collectively contribute to sensemaking theory by showing how evaluation can become part of sensemaking while interpretation is still unfolding. I use *inspectable interpretive work* to

describe the visible and narrated practices through which weatherfluencers align data sources in real time. I also show that audiences work with a creator’s interpretation as it proceeds: they question it, compare it with other sources, contribute local observations, and continue assessing it in real time. In this setting, audiences encounter interpretation as in-progress work that can be followed, questioned, corroborated, or provisionally relied upon.

Severe weather makes this pattern especially legible because the stakes are immediate, the relevant expertise is externally checkable, and the consequences of interpretation are concrete. The weatherfluencer condition developed here may be useful for thinking about other platform-mediated settings in which professionally recognized standing should theoretically be consequential to the information delivery. By shifting analytic attention from who is trusted to how audiences publicly work with an interpretation while events are still unfolding, I show how reliance on a tenuous creator becomes possible within collective sensemaking.

## **1.8 Previously Published Work**

This dissertation incorporates two studies that have undergone peer review. Study 1 (Chapter 6), examining audience evaluation of weatherfluencers and broadcast meteorologists, has been accepted at the 2026 International Conference on Information Systems for Crisis Response and Management (ISCRAM). Study 2 (Chapter 7), examining creator interpretive practices during severe weather livestreams, has been accepted for publication in the Proceedings of the ACM on Human-Computer Interaction (CSCW). Study 3 (Chapter 8) was conducted specifically for this dissertation and has not been previously published.

All studies are presented here in their dissertation form, which in some cases extends the analysis and framing beyond what appears in the published versions.



## Chapter 2

# Literature Review

### 2.1 Introduction

Weatherfluencer livestreams are a layered communication setting. Live severe weather interpretation, public-facing crisis information work, and creator-centered platform activity all occupy the same screen. Making sense of how that setting works requires drawing from several bodies of research. Sensemaking theory explains how people construct and revise usable accounts under uncertainty. Work on credibility, trustworthiness, legitimacy, and authority distinguishes what audiences evaluate and on what grounds. Crisis informatics locates this project within a lineage of participatory and distributed crisis information work. Platform and livestreaming research specifies the sociotechnical conditions, including visibility, monetization, chat, and creator-audience relations, that organize that work online. Weather communication research grounds the domain in the stakes of official warning authority, forecast interpretation, and protective action. Table 2.1 at the end of the chapter maps each tradition's core contribution to the three studies.

### 2.2 Sensemaking

#### 2.2.1 Foundational Sensemaking Theory

Sensemaking refers to the process through which people work to understand events, issues, or situations that are novel, ambiguous, confusing, or discrepant with expectations [105]. In Weick's formulation, sensemaking is an ongoing, retrospective process through which actors extract cues from experience, enact aspects of their environments, and develop plausible understandings of ambiguous or equivocal situations. It involves extracting cues from ongoing experience, enacting aspects of the environment through action, and retrospectively developing plausible accounts of what is occurring [204]. The environment is not treated as a fully formed object whose meaning is simply discovered. Rather, actors notice, bracket, and act on selected cues, and those actions produce consequences that become part of the situation they subsequently interpret.

Weick characterizes sensemaking through seven properties: it is grounded in identity construction, retrospective, enactive of sensible environments, social, ongoing, focused on and by extracted cues, and driven by plausibility rather than accuracy [204]. These properties are interrelated dimensions of a process. Cue extraction and plausibility describe how actors select and organize fragments of experience into usable accounts. Retrospection and ongoingness describe the temporal conditions under which accounts become intelligible and remain subject to revision. Identity, sociality, and enactment describe how accounts are shaped by who actors understand themselves to be, by the presence of others, and by the consequences of

prior action.

This formulation keeps sensemaking distinct from information seeking, interpretation, or decision-making. Sensemaking research asks how some accounts become available, plausible, actionable, and socially consequential under conditions where the situation remains equivocal. Actors may attend to the wrong cues, retain a plausible but misleading account, become committed to an interpretation that narrows subsequent attention, or lose the social and organizational structure that previously made coordinated interpretation possible.

Identity is key in Weickian sensemaking because actors interpret events through role-based expectations about who they are, who others are, and what relations connect them. These expectations shape which cues become salient and what actions appear sensible [204]. In his analysis of Mann Gulch, Weick argues that the crew's role system unraveled as the fire changed, so the foreman's authority, the crew's reciprocal obligations, and the meaning of available actions no longer held together as a basis for coordinated response [203]. The crew did not simply lack information about the fire. As the fire behaved in unexpected ways, the shared structure that had supported role expectations, communication, and coordinated action deteriorated. Weick describes this kind of breakdown as a cosmology episode: a moment in which people suddenly and deeply experience the world as no longer rational or orderly [203]. Roles, routines, and relationships help actors know what cues matter, whose interpretations count, and what actions remain available. When those supports fail, the problem is not limited to an incorrect assessment of conditions. The interpretive infrastructure for coordinated action also comes apart.

Retrospection is central to Weickian sensemaking, but severe weather requires a careful reading of that property. Weick emphasizes that people make sense of action after it has occurred, yet that retrospective work takes place within an ongoing stream of activity [204]. Later reviews identify temporality as an active debate in the field: classic sensemaking work is strongly retrospective, while other work examines prospective or future-oriented forms of sensemaking that construct images of possible futures [105]. Tornado livestreams make this temporal weaving visible. Interpreters draw on remembered storms, current radar signatures, live reports, and anticipated trajectories while maintaining an account of what is happening.

Sandberg and Tsoukas sharpen this temporal issue by arguing that the sensemaking perspective has underdeveloped prospective, immanent, and embodied forms of sensemaking [158]. Their critique is relevant to severe weather because tornado coverage is not organized solely around an interrupted episode followed by retrospective repair. It involves ongoing practical orientation to a developing situation: recognizing patterns, anticipating storm behavior, responding to changing evidence, and preserving a usable account while the threat remains active.

## **2.2.2 Accounts, Sensegiving, and Visible Interpretive Work**

The concept of inspectable interpretive work developed in Study 2 rests on this literature: creators make their interpretive account continuously available to audiences, and the sensegiving literature specifies what it means to produce, circulate, and contest accounts in interaction. Organizational sensemaking becomes available to others through accounts. Maitlis defines accounts as discursive constructions that interpret or explain a situation and allow actors to deal with ambiguity and act [104]. An account is therefore more than a report of what someone already believes. It is a public form of sensemaking that others can inspect, adopt, contest, elaborate, or use as the basis for coordinated action.

Maitlis's study of British symphony orchestras treats sensegiving as an interactional process through which leaders and stakeholders shape which accounts circulate, consolidate, or remain fragmented. Leader sensegiving organizes timing, access, and issue framing; stakeholder sensegiving keeps claims, demands, and alternative interpretations active over time. The resulting forms of guided, fragmented, restricted,

and minimal sensemaking describe different relations between interpretive control and participant animation [104]. In livestream setups, the creator has considerable control over what appears on screen, which sources are linked, how quickly the account moves, and which audience inputs become part of the narrated interpretation.

Recent sensemaking scholarship cautions against treating interpretation as only cognitive or discursive. Sandberg and Tsoukas argue that mainstream sensemaking research has privileged disruptive episodes and deliberate cognition while giving less sustained attention to prospective, immanent, and embodied forms of sensemaking [158]. Severe weather interpretation brings those limits into view. Tornado coverage involves visual recognition, local experience, felt urgency, emotional salience, and practical orientation toward environmental threat. These elements do not replace cue extraction, accounts, or plausibility. They show that weather sensemaking is also carried through embodied familiarity with storms, landscapes, and risk.

### 2.2.3 Collective Sensemaking and How Interpretation Becomes Shared

Severe weather livestreams assemble tens of thousands of simultaneous viewers around a single creator's account: the sensemaking is collective from the start, and Study 3 traces the interactional practices through which it stays coordinated. The foundational question this literature addresses is how sensemaking becomes shared enough to support action at all, and what can disrupt it. A central question in sensemaking is how it becomes shared enough to support coordinated action. Weick's framework treats sensemaking as social, but collective sensemaking requires more than the presence of multiple actors. It requires interactional processes through which participants orient to a shared situation, exchange or contest cues, build accounts that are sufficiently compatible for action, and monitor whether those accounts remain adequate as conditions change [104]. Collective sensemaking does not require full consensus. Intersubjective meaning may be partial, provisional, and sufficient for coordinated action rather than fully shared across all participants [105]. In livestreamed severe weather interpretation, audiences may not converge on a single belief, but they can still orient to a common interpretive problem: where the threat is, how it is changing, and whether the creator's account remains usable.

Distributed cognition helps specify the sociotechnical arrangement through which interpretation is carried out. Sensemaking theory explains how actors construct plausible interpretations under ambiguity; distributed cognition examines how that cognitive work is organized across people, artifacts, representations, and time. In *Cognition in the Wild*, Hutchins shifts the unit of analysis from the individual mind to activity systems organized through people, tools, representational media, and temporal sequence [89]. Hollan, Hutchins, and Kirsh bring this orientation into HCI by arguing that human-computer interaction should be studied across whole environments, including technologies, work materials, social organization, and histories of interaction [81].

Stigliani and Ravasi provide a more precise account of how material artifacts support collective prospective sensemaking. In their study of design work, material practices helped participants move from individual interpretations toward group-level understandings by organizing selected cues, embodying provisional interpretations in material form, and supporting reflection on the plausibility of emerging accounts [180]. Their empirical setting is design work rather than crisis communication, but the same relation between material form and collective interpretation travels: material forms can make partial interpretations durable, shareable, and available for recombination.

Work on sensemaking under pressure shows how collective interpretations can stabilize through interaction. Cornelissen, Mantere, and Vaara examine real-time sensemaking in the Stockwell shooting, showing how communication, emotion, and material cues contributed to collective commitment to a single erroneous frame [39]. Their concept of a contraction of meaning describes how an interpretation can become pro-

gressively harder to dislodge as language, affect, and perceived material evidence reinforce one another. The Stockwell case provides a caution for crisis sensemaking: shared communication and material cues can stabilize a plausible but erroneous frame rather than keep alternative interpretations available. Collective interpretation can remain adaptive, but it can also become path-dependent and stabilize premature closure.

Research on emergent disaster response adds a further coordination problem. Majchrzak, Jarvenpaa, and Hollingshead examine how emergent groups coordinate expertise when membership, tasks, roles, and knowledge cannot be specified in advance [107]. Their analysis is not a general theory of sensemaking, but it specifies a condition that matters for collective interpretation: participants must develop working knowledge of who knows what while often lacking prior bases for validating expertise. In platform-mediated crisis contexts, this problem is intensified because participants may encounter interpretations from actors whose professional standing, organizational affiliation, and accountability structures are unevenly visible.

#### 2.2.4 Sensemaking in Crisis and High-Reliability Contexts

Crisis conditions make sensemaking consequential because ambiguity, time pressure, and high stakes converge. Weick's analysis of Bhopal develops this point through the concept of enacted sensemaking [202]. In crisis, action is often required before actors fully understand the situation, yet action also produces new cues, constraints, and consequences that become part of the situation being interpreted. Weick's central claim is that cognition lies in the path of action: actors often act in order to learn what the situation is, while those actions alter the environment they must subsequently make sense of [202].

Weick identifies commitment, capacity, and expectations as mechanisms that shape enacted sensemaking in crisis [202]. Commitments can make prior accounts difficult to revise, especially when actions are public, volitional, and consequential. Capacity affects what actors can perceive as actionable, because people are more likely to notice and interpret events they believe they can do something about. Expectations shape how cues are read, which can help coordinate action while also normalizing signs that should prompt doubt. In his later reflections on Bhopal, Weick sharpened this analysis by emphasizing problems of abduction, awareness, reliability, certainty, and insufficient updating [205]. The issue was not simply lack of information. Fragmentary and misleading cues were fitted into weak or outdated accounts under conditions where doubt and revision were needed.

The Mann Gulch case identifies a different form of crisis sensemaking failure. Weick's *cosmology episode* describes the collapse of the basic frameworks through which actors ordinarily make events intelligible [203]. In Mann Gulch, the crew's role structure, communication, and capacity for coordinated action deteriorated as the fire behaved in unexpected ways. The loss of structure mattered because structure provides more than command hierarchy. In Weick's reading, structure consists of interlocking roles, routines, norms, and trusted relations that allow a crew to keep interpreting and acting as a crew. At Mann Gulch, those relations unraveled as the fire accelerated: the foreman's order to drop tools, his escape fire, and the expectation that the crew could outrun the fire no longer fit a shared account of the situation. The breakdown narrowed what could be heard as instruction, what could be recognized as viable action, and how the smokejumpers could coordinate with one another under threat.

High-reliability organization research addresses the opposite problem: how organizations operating in hazardous environments sustain interpretive capacity despite the possibility of catastrophic failure. Weick and Sutcliffe describe high-reliability organizing through practices such as preoccupation with failure, reluctance to simplify, sensitivity to operations, commitment to resilience, and deference to expertise [206]. These practices keep weak signals available for interpretation, resist premature closure, and allow authority to migrate toward relevant expertise when conditions change. The HRO literature provides a model of organized attentiveness, but it generally assumes organizational settings with training, routines, and recognized

domains of expertise.

Gephart's study of disaster sensemaking shows another crisis trajectory: after a disaster, participants construct accounts of risk, responsibility, and blame through textual and organizational inquiry processes [68]. Sensemaking is not limited to immediate action during a crisis. It also occurs through retrospective public and organizational accounts that assign responsibility and stabilize an explanation of what happened. For my purposes, the distinction between in-crisis interpretation and post-crisis accounting is important. Severe weather livestreams involve immediate interpretation oriented toward unfolding threat, while later community discourse may evaluate whether those interpretations were accurate, responsible, or legitimate.

Maitlis and Sonenshein further develop sensemaking in contexts of crisis and change, emphasizing shared meanings and emotion as conditions that shape whether sensemaking becomes adaptive or constraining [106]. In high-pressure settings, collective sensemaking may require an account that is shared enough to support coordinated action, while strong commitment to that account can narrow attention and inhibit revision.

### **2.2.5 Temporality and Prospective Interpretation**

The temporal orientation of sensemaking is central to severe weather interpretation. Classic Weickian sensemaking is retrospective: actors make sense of what they have already said, done, or noticed within an ongoing flow of experience [204]. A tornado livestream, however, is organized around an active and future-oriented problem. The account must explain what is happening now while remaining open to what the storm may do next.

Maitlis and Christianson identify temporality as one of the tensions in the sensemaking literature, noting that classic work emphasizes retrospection while later work examines prospective and future-oriented sensemaking [105]. Sandberg and Tsoukas make the critique more directly, arguing that the sensemaking perspective has underestimated practitioners' anticipatory orientation toward how situations may unfold [158]. Severe weather interpretation sits inside this tension. Interpreters use prior storms, remembered patterns, recent radar changes, current warning products, and possible storm trajectories within the same unfolding account.

Klein's data-frame theory develops within the broader sensemaking tradition associated with Weick, while offering a more granular vocabulary for diagnostic and prospective interpretation. Weick's formulation centers extracted cues, enactment, plausibility, retrospection, identity, sociality, and ongoing action. Klein and colleagues examine how people connect data and frames as situations unfold: fitting data into frames and frames around data, noticing discrepancies, elaborating or preserving interpretations, comparing alternatives, reframing, and projecting possible future states [95]. This is particularly useful for severe weather because meteorological interpretation depends on updating a working account as radar signatures, warning products, chaser reports, and local observations change. It specifies how current evidence is used to diagnose the present threat and anticipate what the storm may do next, while Weick provides the broader account of sensemaking as social, ongoing, cue-based, and action-oriented.

Stigliani and Ravasi connect prospective sensemaking to visible and material work. Their model describes future-oriented collective sensemaking as a process in which participants organize selected material cues, embody provisional interpretations in material form, and reflect on the plausibility of emerging accounts [180]. In livestreamed severe weather coverage, prospective interpretation is spoken, displayed, annotated, rearranged, and made available for others to inspect as conditions change.

Sensemaking frameworks provide the building blocks for analyzing how plausible accounts are produced under ambiguity, how roles and participation shape those accounts, how interpretation can be distributed across people and artifacts, and how temporal orientation matters when actors must preserve a

usable account while conditions change. Public, safety-relevant livestreams add an evaluative layer to these sensemaking questions: whether the information is credible, whether the interpreter appears trustworthy, whether the interpreter has legitimate standing, and whether expertise is visible enough to support reliance on that creator.

## **2.3 Trust, Credibility, Legitimacy, and Authority**

Severe weather sensemaking often depends on accounts of events that people cannot fully verify in the moment. Radar interpretation, warning updates, local reports, forecasts, and protective-action guidance may all be evaluated while conditions are still changing and before the consequences of relying on a source are fully knowable. That makes evaluation part of the sensemaking problem itself: people are asking what is happening, but also asking whether an account is believable, whether the communicator appears competent and trustworthy, whether the communicator has appropriate credentials or expertise, and whether the interpretation is usable under the conditions. Credibility, trustworthiness, trust, legitimacy, authority, and expertise name parts of that evaluative work, but are not interchangeable.

Credibility refers here to a receiver's judgment that a source, message, or information object is believable, accurate, or well grounded. Classic source credibility research showed that the same message could have different persuasive effects depending on the perceived credibility of the source to which it was attributed [84]. Later formulations in this tradition treated credibility as involving perceptions of expertise and trustworthiness, making credibility a judgment about the communicator as well as the message [83]. In information environments, credibility also attaches to content, platforms, institutions, and information objects. For this reason, credibility in this dissertation is used broadly to refer to the perceived believability and evidentiary adequacy of information and its source.

This multidimensional understanding of credibility also has a measurement tradition in journalism and mass communication research. Gaziano and McGrath developed a credibility measurement approach that treated news credibility as a composite evaluation involving dimensions such as fairness, bias, accuracy, trustworthiness, completeness, and community concern [66]. Meyer later refined this tradition into a newspaper credibility index intended to provide a practical and systematic measure of audience-perceived newspaper credibility [116]. These instruments are useful for this dissertation because they operationalize credibility as a set of related evaluative judgments rather than as a single global attitude. However, they were developed primarily for news contexts, where the news organization, communicator, and professional accountability structure are more tightly bundled than they are in platformed severe weather communication.

Trustworthiness is narrower. In the integrative model developed by Mayer, Davis, and Schoorman, trust is defined as a willingness to be vulnerable to another party based on the expectation that the party will perform an action important to the trustor, irrespective of the trustor's ability to monitor or control that party [111]. Ability, benevolence, and integrity are not trust itself in this model. They are dimensions of perceived trustworthiness that help explain why a trustor may become willing to accept vulnerability. This distinction is consequential for Study 1, which examines audience evaluations of sources and coverage, including trustworthiness, credibility, legitimacy, objectivity, and accuracy. Those evaluations are trust-relevant, but they are not identical to the real-time process through which reliance is sustained during an unfolding event.

Legitimacy names a different kind of judgment. Suchman defines legitimacy as a generalized perception or assumption that an entity's actions are desirable, proper, or appropriate within a socially constructed system of norms, values, beliefs, and definitions [183]. Legitimacy is not reducible to accuracy, usefulness, or technical competence. It concerns whether an actor or action fits a socially recognized order. This distinction

is necessary for analyzing weatherfluencers because a creator's interpretation may appear plausible while the creator's role remains contested. Conversely, an institutionally recognized actor may retain legitimacy even when a particular communication episode offers limited direct evidence of interpretive quality.

Authority refers here to recognized cognitive standing within a domain: the condition under which a person's, institution's, or information object's claims carry weight for others in deciding what to believe, attend to, or use. Wilson describes cognitive authority as relational, graded, and sphere-specific: an actor has authority for someone else only to the degree that the actor's claims carry weight for that person within a particular domain [209]. This authority is related to credibility, but it is not identical to it. A source may be judged credible without becoming an authority whose claims guide another person's thinking. Conversely, cognitive authority involves the recognition that a source's influence is proper because the source is taken to have an adequate basis for what it says [209].

In professional domains, cognitive authority is often made publicly legible through credentialing and occupational position. Wilson argues that, because non-experts usually cannot directly test an expert's knowledge, they rely on indirect indexes of competence, including occupational specialization, formal education, credentials, training, experience, peer reputation, common recognition, and demonstrated performance [209]. This is the sense in which the weather enterprise has historically stabilized public weather authority: National Weather Service employment, statutory warning responsibility, meteorological degrees, broadcast affiliation, certification, newsroom accountability, and professional reputation operate as recognizable signals that a communicator is entitled to speak within the domain of weather risk. These signals do not guarantee accuracy in any given instance, but they make professional standing visible before a specific forecast or warning is evaluated.

### **2.3.1 Credibility as Situated Assessment**

Study 1 operationalizes credibility as one of six evaluation dimensions, drawing on this literature's distinction between content-level and source-level judgment and its account of the cues audiences use when assessing claims and communicators under uncertainty. Metzger defines online credibility as the believability of information and/or its source, and reviews a long tradition that treats credibility as multifaceted, with expertise and trustworthiness as central dimensions [114]. In digital environments, this problem becomes more acute because networked media lower the costs of producing and circulating information, reduce the gatekeeping role of traditional publishers, and often remove or obscure conventional authority indicators such as author identity, affiliation, reputation, or editorial oversight [114]. The result is not that people need wholly new cognitive capacities to evaluate information, but that they must exercise credibility judgments more frequently and across a wider range of sources.

Metzger's review identifies five commonly recommended criteria for evaluating online information: accuracy, authority, objectivity, currency, and coverage or scope [114]. Accuracy concerns whether information is reliable and verifiable. Authority concerns authorship, credentials, qualifications, affiliation, and recommendations from trusted sources. Objectivity concerns purpose, bias, commercial intent, and whether information is presented as fact or opinion. Currency concerns whether information is up to date. Coverage concerns depth and comprehensiveness. These criteria map well onto severe weather interpretation, where viewers may need to assess whether a source is current, accurate, appropriately qualified, transparent about uncertainty, and sufficiently comprehensive for the viewer's situation.

The empirical credibility literature also shows that users often do not evaluate information through exhaustive checklist procedures. Metzger and Flanagin argue that networked digital environments increase the burden on individuals to locate information they can trust, while information abundance and disintermediation make that task more difficult. Under these conditions, people often use cognitive heuristics,

including reputation, endorsement, consistency, self-confirmation, expectancy violation, and persuasive intent, to make credibility judgments more quickly and with less effort [115]. Heuristic evaluation should not be treated simply as error or irrationality. It is a practical response to information abundance, limited time, and limited domain expertise. In severe weather livestreams, this means that viewers may use recognizable source names, prior performance, visible data sources, chat corroboration, platform metrics, and perceived commercial intent as cues before or alongside more careful assessment of a creator's reasoning.

Hilligoss and Rieh treat credibility assessment as layered and contextual rather than as a single judgment. They distinguish among three levels of credibility judgment: the construct level, the heuristics level, and the interaction level [78]. The construct level concerns how a person conceptualizes credibility, including truthfulness, believability, trustworthiness, objectivity, and reliability. The heuristics level concerns general rules of thumb, including media-related, source-related, endorsement-based, and aesthetics-based heuristics. The interaction level concerns judgments formed through engagement with particular content cues, source cues, and information-object cues. These levels map onto different parts of the dissertation's empirical work: Study 1 examines construct-level evaluations of weather communicators and coverage formats; Study 2 analyzes how livestreams produce interaction-level evidence through visible interpretive work; and Study 3 examines how audiences evaluate, supplement, and monitor interpretation as events unfold.

Hilligoss and Rieh also clarify the relation between credibility and cognitive authority. Drawing on Wilson, they describe cognitive authorities as people, institutions, instruments, or information objects that influence others' thoughts because they are recognized as credible or proper within a domain [78]. A source may be credible in a general sense without becoming a cognitive authority for a particular viewer or situation. Conversely, a viewer may treat a creator, radar product, warning polygon, storm chaser feed, or institutional account as a cognitive authority for a specific interpretive task.

### **2.3.2 Trust as Action Under Uncertainty**

Chapter 9 distinguishes trustworthiness as an evaluative attribution (what Study 1 measures) from trust as the ongoing management of reliance (what Study 3 documents). This subsection establishes both frameworks so that distinction can be made precisely. In severe weather livestreams, viewers often orient to a developing event rather than evaluate a completed claim. Mayer et al. provide the source-evaluation vocabulary. Their model distinguishes perceived trustworthiness from trust itself and from the risk-taking behaviors that may follow from trust. Ability, benevolence, and integrity describe why a trustee may be judged trustworthy; trust names a willingness to be vulnerable to that trustee under conditions where monitoring or control is limited [111]. This distinction is useful for analyzing audience judgments about whether a weather communicator appears competent, well-intentioned, and principled enough to rely on.

In Luhmann's sociological account, trust reduces social complexity by allowing actors to proceed without considering all possible future contingencies [101]. Trust does not remove uncertainty. It makes action possible in the presence of uncertainty by allowing some possibilities to be treated as sufficiently unlikely or manageable. Luhmann's later distinction among familiarity, confidence, and trust further clarifies that trust involves risk and a choice to proceed despite the possibility of disappointment [102].

For severe weather audiences, uncertainty is a problem of attention and timing as much as knowledge. Threat information changes while viewers are deciding whether a place is implicated, whether a warning or radar signature should be treated as relevant, and whether another source should be consulted before acting. Luhmann's point applies here because trust narrows the set of contingencies a viewer must actively hold open. A viewer does not need every possible storm evolution, source error, or timing mismatch to be resolved in order to treat a creator's interpretation as provisionally usable.

Möllerling helps specify how trust proceeds when viewers have enough evidence to continue, but not

enough evidence to eliminate uncertainty. Trust involves interpretation, expectation, and suspension: actors interpret available grounds for trust, form expectations, and bracket what cannot be known well enough to continue acting [122]. His later work elaborates this process through reason, routine, reflexivity, and suspension, emphasizing that trust is sustained through ongoing practice rather than settled once and for all [123]. In livestreamed severe weather interpretation, viewers cannot wait for uncertainty to disappear. They must decide whether a creator's developing interpretation remains usable as radar signatures change, warnings are issued or expire, chaser reports arrive, local conditions are reported, and prior assessments are revised.

Lewis and Weigert conceptualize trust as a social relation rather than an individual attitude. Trust rests on cognitive discrimination among trustworthy, distrusted, and unknown actors; emotional investment in a relationship; and behavioral enactment, where people proceed as though uncertain future actions can be counted on [98]. This provides a bridge from individual source evaluation to collective audience practice. In a livestream chat, viewers do not only hold private assessments of a creator. They make reliance and doubt publicly visible through questions, corrections, corroborating reports, comparisons with other sources, and responses to updates. These visible actions can become part of the environment through which other participants assess whether continued reliance is warranted.

### **2.3.3 Legitimacy, Expertise, and Interpretive Authority**

This subsection assembles the vocabulary Study 1 and Ch. 9 use to explain the credential pattern: Suchman's legitimacy framework, Collins and Evans's distinction between interactional and contributory expertise (which explains the objectivity exception in Study 1), and Abbott and Gieryn's accounts of jurisdictional claims and boundary work (which explain the meteorological community's response to weatherfluencers). Legitimacy is more a judgment about social fit rather than the absolute truth of a particular claim. Suchman defines legitimacy as a generalized perception or assumption that an entity's actions are desirable, proper, or appropriate within a socially constructed system of norms, values, beliefs, and definitions [183]. Legitimacy can rest on pragmatic benefit to an audience, moral evaluation of whether an activity is appropriate, or cognitive comprehensibility and taken-for-grantedness [183]. It helps separate whether an interpretation appears useful from whether the interpreter is understood as an appropriate kind of actor to provide it.

Suchman's discussion of procedural and structural legitimacy is important for professional knowledge domains. When outcomes are difficult to observe, delayed, or partly stochastic, audiences may rely on accepted procedures, recognizable structures, and institutional categories as proxies for less visible qualities of performance [183]. Legitimacy is not reducible to whether a particular interpretation later proves accurate. It also concerns whether the work appears to be conducted through appropriate methods, by an appropriate kind of actor, and within a recognizable social order.

Expertise research adds a different angle. Collins and Evans argue against treating expertise as only an attribution made by others. Expertise is also a substantive capacity acquired through socialization into the practices of an expert group [37]. Their distinction between contributory and interactional expertise is useful here: contributory expertise is the capacity to do competent work within a domain, while interactional expertise is the capacity to master the language of a specialist domain without necessarily performing its contributory work [37]. They also distinguish these expertises from the ways outsiders judge expertise, including credentials, experience, track record, demeanor, consistency, and social location [37].

Epstein's study of AIDS treatment activism shows how "nontraditional" participants can become credible within expert domains without erasing the distinction between professional and nonprofessional standing. AIDS activists did not gain credibility simply by asserting experiential authority. They learned technical language, engaged with methodological disputes, linked epistemic and ethical claims, and secured forms of

representation within biomedical institutions [50]. Epstein is careful about the limits of this participation: activists changed some practices and gained advisory standing, but they did not acquire full jurisdiction over research [50].

Abbott's theory of professions explains how expertise becomes tied to occupational authority. Abbott argues that professions should be understood through jurisdictional claims over work, rather than through traits such as licensure, associations, or ethics codes alone [1]. Jurisdiction links an expert group to a task domain, and professional conflict occurs when that link is challenged, defended, or reallocated. Abbott describes professional claims as involving the authority to classify a problem, reason about it, and act toward it: diagnosis, inference, and treatment [1]. Applied to weather communication, this theory helps describe why the authority to interpret severe weather is not just a matter of possessing meteorological knowledge, but also the recognized standing to classify a situation, reason from uncertain evidence, and communicate what follows from that reasoning.

Gieryn describes one way scientific and professional authority is publicly marked: by attributing selected characteristics to science, its practitioners, methods, knowledge, values, or work organization in order to distinguish it from non-science or rival forms of expertise [69]. Gieryn's thesis is that boundaries are drawn and redrawn in flexible, historically changing, and sometimes ambiguous ways, depending on the authority, resources, and autonomy at stake [69].

These works separate four related problems. Legitimacy concerns whether an actor or activity appears appropriate within a socially recognized order. Expertise concerns the substantive capacities and socialization through which people come to know what they are talking about, as well as the criteria others use to judge that capacity. Jurisdiction concerns professional claims over domains of work. Boundary work concerns the public defense and adjustment of those claims. Weather interpretation involves expertise, legitimacy, jurisdictional claims, and audience-constituted authority, particularly on platforms where institutional gatekeeping is absent.

### **2.3.4 Synthesis: Three Concepts, One Evaluation Problem**

These distinctions between trust, credibility, and legitimacy are necessary because weatherfluencer audiences actively evaluate interpretation during use. They do not encounter fully finalized information nor any statement from any official deeming the weatherfluencer a trusted source of information. A viewer may find a specific interpretation credible while remaining uncertain about the creator's institutional standing; may recognize a creator as a familiar public interpreter while questioning a particular reading; or may continue following a stream because the interpretation remains usable even when full verification is unavailable. In Study 1, I ask participants to judge weatherfluencers on measures of trustworthiness and legitimacy, among others. For Study 3, the concept of trust and trustworthiness take on a social and ongoing nature in my content analysis. Separating credibility, trust, and legitimacy makes it easier to develop a nuanced analysis and explain phenomena in the data.

## **2.4 Crisis Informatics and Distributed Work**

Crisis informatics provides the closest scholarly lineage for weatherfluencer practice. Working through how disasters generate participatory information work, how that participation moved into networked digital settings, and how distributed actors organize crisis information outside formal institutional channels provides the vocabulary Chapter 3 uses to situate the weatherfluencer among adjacent figures and specify what is distinctive about this particular configuration.

### 2.4.1 Disaster Convergence: People, Information and Legitimacy

Disaster sociology provides a starting point for this section because it treats disasters as events that draw people, information, and resources toward places where assistance, contact, or interpretation is expected.

Fritz and Mathewson conceptualize disasters as convergence-generating events: people, messages, supplies, and equipment move toward damaged places, information centers, relief sites, and other locations where information or assistance is expected to be available. They treat convergence as broader than the familiar problem of traffic, sightseers, outsiders, or unauthorized personnel. They argue that convergence has to be understood across personal, informational, and material-and-process forms, and across both internal and external dimensions of the disaster setting. The movement of people toward a disaster site is intertwined with messages, supplies, equipment, requests for information, attempts to locate relatives or property, and efforts to provide or obtain assistance. Their five types of convergers, returnees, the anxious, helpers, the curious, and exploiters, name recurring motivations for movement toward the disaster rather than fixed identities [63].

Dynes distinguishes organized responses by the relation between task and structure. Established organizations continue regular tasks, expanding organizations take on regular tasks through new structures, extending organizations use existing structures for nonregular tasks, and emergent groups form around new tasks through new structures [49]. This distinction allows existing routines and event-generated demands to be discussed in the same frame: some disaster work redirects capacities already in place, while other work develops through temporary structures formed around the event.

Where Dynes distinguishes the organizational forms through which disaster tasks are handled, Stallings and Quarantelli examine how informal response can become consequential when participants perceive that response needs are insufficiently addressed. In their analysis of a Southern California brush fire, an emergent citizen group formed as local participants assembled for evacuee registration, incoming phone calls, supply processing, food and clothing support, firefighter rest needs, and communication. As the event unfolded, the group developed internal leadership, task divisions, and departments, then disbanded after the immediate response period ended. Its significance depended on both local capacity and temporary linkage to formal response. Recognition by the fire department allowed a brief working relationship with official responders [173].

Kendra and Wachtendorf extend convergence by treating disaster response as a “response milieu,” where formal responders, volunteers, emergent groups, victims, bystanders, and new convergers such as mourners and supporters, encounter one another through the work of response. In their analysis of the World Trade Center response after the September 11, 2001 attacks, convergence creates sorting problems. People and resources arrive, but access and usefulness have to be negotiated through motive, capability, affiliation, credentials, proximity, and fit with the needs of the event. Their analysis of anxious convergers shows this negotiation in practice: city officials recognized relatives and friends searching for missing people as legitimate participants, redirected many of them away from Ground Zero, and created credentialed family assistance spaces where information, counseling, communication, and other services could be organized [94]. Legitimacy, in this account, is negotiated through the work of response rather than established in advance.

Hughes et al.’s “Site-Seeing” work carries disaster convergence into online settings by shifting the analytic unit from converger roles to behaviors and observable traces of activity. In virtual settings, categories such as “helpers” or “the anxious” can overstate what is empirically available, because researchers often see only the interaction or its visible result. Hughes et al. describe online convergence through displays of helping, being anxious, returning, supporting, mourning, exploiting, and being curious [86]. This activity-based vocabulary is especially useful for livestream chat. A viewer may ask whether a town is safe, report hail at a particular location, compare the stream against an official warning, thank the creator, donate to surface a

question, or disrupt the conversation. These brief actions make different relationships to the unfolding threat visible without requiring the analyst to assign a stable converger identity to the viewer.

Hughes et al.'s shift from roles to observable behaviors is the bridge between disaster convergence research and crisis informatics: once convergence moves online, researchers often encounter participation through visible traces rather than stable participant roles. The next section turns to crisis informatics to examine how networked ICTs made these practices increasingly visible, distributed, and consequential for crisis information work.

## **2.4.2 From Disaster Convergence to Digital Crisis Information Work**

Crisis informatics takes shape around a methodological and empirical problem created by networked crisis participation. Palen et al., elaborating on “crisis informatics” first coined by Hagar [74], argue that disaster activity increasingly unfolds across physical and virtual sites, requiring researchers to follow social exchange through specific “sites of interaction” rather than through a simple distinction between online and offline activity [146]. Their Virginia Tech analysis follows crisis communication across interviews, university messages, news reports, Facebook groups, Wikipedia edits, Flickr activity, and other online traces. Instant messaging and Facebook supported co-temporal awareness, allowing students and families to infer safety from presence indicators, activity status, and “Are you OK?” / “I’m OK” exchanges. Pop-up Facebook groups then became explicit sites of safety accounting, while Wikipedia and Facebook supported distributed problem-solving around victim identification, source checking, and the correction of incomplete knowledge before official confirmation [146, 145].

Hughes and Palen in 2009 treat Twitter as an emerging source of data about mass convergence and emergency events rather than as a disaster-only platform. Comparing tweets about the 2008 Democratic and Republican National Conventions with tweets about Hurricanes Gustav and Ike, they found that Twitter activity rose around event milestones such as convention dates and hurricane landfalls, while cautioning that the samples were not fully comparable [85]. Across the four datasets, most users contributed only a small number of posts, while a smaller set of accounts appeared to operate as information hubs. Event-related tweets contained fewer @-replies than a general Twitter sample and more URLs, with hurricane tweets especially likely to include links [85]. The resulting pattern shows Twitter activity during emergencies doing more than conversation: event-related posting also supported public broadcast and resource brokerage around non-routine events, with emergencies producing strong information demands.

Where Hughes and Palen identify public broadcast and resource brokerage in event-related Twitter use, Vieweg et al. examine which microblogged updates may contribute to situational awareness during unfolding natural hazards. Their analysis of Twitter posts during the 2009 Red River floods and Oklahoma grassfires focuses on local individuals and identifies situationally relevant features such as geo-location, location-referencing, and situational updates [199]. The analysis found that situational information was contingent on hazard type and disaster phase. In the Red River floods, where residents had a longer warning period and shared knowledge of the river and floodplain, flood level, weather, preparation, and volunteer information were more prominent [199]. Situational awareness in this context depends less on public posting in general than on whether a message can be interpreted in relation to the timing, geography, and informational demands of the hazard.

Stieglitz, Mirbabaie, and Milde add a related point about actor position. Where Vieweg et al. show that situational information varies with hazard phase and local information needs, Stieglitz et al. show that the social positions shaping crisis communication also vary as uncertainty changes [199, 179]. In their analysis of Twitter activity during the Brussels attacks and Munich rampage, high-uncertainty periods were marked by information-oriented communication in which media and governmental organizations were especially

visible. As uncertainty decreased, communication shifted toward discussion and evaluation, with public-facing actors such as celebrities, journalists, bloggers, and other commentators becoming more prominent in case-specific ways [179]. The finding adds a social-position dimension to situational awareness: public crisis information is shaped not only by what is posted, where it refers, and when it appears, but also by which kinds of social media accounts become available as interpreters or amplifiers at different moments in the event. Mirbabaie et al.'s Hurricane Harvey study develops the influence side of this account through sensegiving. Their analysis distinguishes recurring topical authority, built through frequent crisis-relevant information provision, from episodic influence, where particular messages gain reach through retweets and amplification [119]. This distinction helps separate recurring topical authority from episodic amplification: some actors sustain influence through repeated crisis-relevant information provision, while others become consequential when particular high-value messages travel widely. Weatherfluencers fit the recurring-topical-authority pattern: their public presence spans multiple events and seasons, organized around a consistent channel and host identity rather than emerging around a single crisis.

Starbird and Palen locate digital volunteerism within disaster self-organizing rather than treating it as a wholly new effect of “crowdsourcing.” In their study of Twitter activity after the 2010 Haiti earthquake, Tweak the Tweet offered a microsyntax for formatting emergency information such as needs, offers, locations, and contact details. The syntax was expected to support reports from affected people, but its more consequential uptake came from remote participants who translated information from tweets, blogs, Facebook posts, direct messages, emails, phone calls, and Ushahidi reports into more structured forms [177]. The syntax became an organizing resource: volunteers used it to standardize information, filter noisy streams, mark source and location details, and make messages more actionable. Some participants moved from retweeting or translating into more complex work, including verification, cross-referencing, routing, and coordination across Twitter, Ushahidi, Skype, Google Wave, email, and phone. Digital volunteerism in this context names a specific form of self-organizing labor carried out by distributed actors using platform conventions and ad hoc communication infrastructures. Reuter et al.'s later review provides a broader vocabulary for placing these practices among recurring interaction patterns between authorities and publics [153].

Reuter et al.'s review places these practices within broader interaction patterns among authorities and publics, including authority-to-citizen communication, citizen-to-authority integration of citizen-generated content, and citizen-to-citizen self-help communities [153]. The review treats this matrix as a simplification, noting that actors such as digital volunteers may fall across the authority/public distinction depending on context [153]. That observation keeps the authority/public distinction from becoming too rigid: actors may move across categories depending on role, affiliation, task, and event context.

### **2.4.3 Organizing and Routing Crisis Information**

The preceding subsection treated crisis information work as a set of distributed practices: broadcasting, brokerage, situational updating, translation, and lightweight structuring. This subsection narrows from those practices to the organized arrangements that can form around them.

Starbird and Palen trace Humanity Road's movement from online social convergence to a sustained virtual disaster-response organization. Formed from digital volunteer activity after the Haiti earthquake, Humanity Road used digital tools to organize volunteers as well as carry out information work, including the creation of information resources for victims and responders [178]. As the organization responded across events, its work became structured through virtual workrooms, checklists, tweetables, shared documents, Event Diaries, and later Situation Reports. These tools coordinated long-term and episodic volunteers, carried lessons from one event into the next, and made the organization's work visible as a responsible contribution to the emergency-response ecosystem. Humanity Road is an important organizational precedent:

crisis information work can be persistent, virtual, cross-event, procedurally structured, and oriented toward both affected publics and formal response. Severe weather livestreams also assemble heterogeneous information for public use, but they do so through a recurring creator channel and live screen-based interpretation rather than through a volunteer disaster-response organization or responder-oriented situation reports.

Trusted digital volunteer teams show a different form of organized crisis information work: digital labor can become semi-formal, responder-facing, and operationally linked. In the Shadow Lake Fire, St. Denis et al. describe a Virtual Operations Support Team (VOST) assembled to extend the social media capacity of a Type I incident management team under conditions of restricted federal social media use, limited official tooling, and local demand for public information [171]. The team established Facebook, Twitter, and WordPress channels under the identity @ORFireInfo, monitored social and traditional media, identified public concerns and misinformation, pushed key messages, and documented the surrounding media conversation [171]. Its value lay partly in separating information concerns: the VOST could communicate with the public, archive and filter media activity, and surface issues requiring attention without making the incident command team process every public-facing trace directly. Later, VOST work formalizes this arrangement further, describing teams with higher membership barriers, links to emergency management agencies, liaison roles near emergency operations centers, and tasks such as social media monitoring, verification, crisis mapping, image analysis, filtering, and aggregation [51]. Hughes and Tapia characterize this as an articulation problem between professional responders and digital volunteers, where useful information products still have to cross boundaries of credibility, liability, training, organizational process, and operational fit [87].

Dailey and Starbird provide a public-facing counterpart to responder-linked volunteer information work. Their study of Hurricane Irene in the Catskills examines how the Watershed Post, a small online news outlet that already worked as a regional aggregator and curator, deployed a liveblog that became an information hub during flooding in a rural area with uneven communication infrastructure [45]. The editors deliberately shaped the liveblog by selecting trusted local contributors, incorporating official feeds from agencies such as FEMA, the American Red Cross, and NOAA, adjusting event-specific hashtags, moderating guest comments, and sharing access with other regional news outlets [45]. As participation expanded, more than twenty volunteer moderators helped sustain the liveblog across thirteen days, while participants contributed reports about weather, power outages, road damage, stranded people, supplies, volunteer needs, fundraising, and relief coordination. The resulting collaboration was a “human-powered mesh network,” in which people routed information across platforms, audiences, and communication channels. The journalists’ role was infrastructural: they helped catalyze, maintain, and teach the collaboration by transferring journalistic practices of selection, moderation, vetting, and public accountability into a crowd-supported crisis information space. Crisis information work can be organized by identifiable actors who connect sources, audiences, platforms, and participation norms during a storm event. I revisit infrastructuring in Section 2.5.

Fichet et al. extend crisis informatics into live video by examining Periscope use during the Baltimore protests, the Amtrak derailment, and South Carolina flooding in 2015. Their analysis shows that live-streaming was used by both citizens and journalists for crisis reporting, coverage, and commentary, adding visual immediacy to public crisis information work [53]. Periscope combined live visual evidence with embedded chat, allowing remote viewers to interact with people broadcasting from or near crisis scenes. Fichet et al. distinguish event-reporting streams from event-discussion streams, showing that live video could support both direct observation of unfolding conditions and commentary or sensemaking around those conditions [53]. During the South Carolina floods, for example, The Weather Channel used Periscope for interactive broadcasts in which an anchor and meteorologist provided local forecasts, showed flood video, and solicited users in affected areas to participate in live chats [53].

#### 2.4.4 Distributed Verification and Claim Trajectories

The preceding work locates weatherfluencer livestreams within a longer set of digital crisis information arrangements: responder-linked volunteer teams, public-facing liveblogs, and live video streams that combine visual evidence with interaction. The next problem is how participants evaluate information once it enters those arrangements. Crisis-related information must be worked with. Claims can be asserted, repeated, questioned, denied, corrected, deleted, or left unresolved, and those trajectories shape what participants can treat as useful. Research on distributed verification offers a way to examine how crisis participants scrutinize circulating claims while also showing why correction cannot be assumed to arrive with the same speed, visibility, or uptake as the claims it addresses.

Mendoza et al.'s study of Twitter after the 2010 Chile earthquake offers an early look at how uncertainty can become visible within circulating information. Comparing seven confirmed truths with seven false rumors, they manually coded tweets as affirming, denying, questioning, or unrelated, and found that false rumors drew substantially more questioning than confirmed truths [112]. The mechanism is that users' questions and denials became available as traces that could be aggregated around pieces of information. Mendoza et al. propose that such traces could support platform warnings when many users are questioning a claim, but their empirical finding remains narrower: questioning can mark uncertainty in the circulation record [112]. Starbird et al.'s analysis of three false rumors after the Boston Marathon bombing shows the limits of questioning as uncertainty. Corrections appeared in each case, but at lower volume than misinformation and often after misinformation had already circulated widely; in one rumor, misinformation outnumbered correction by more than 44 to 1 [175]. Questioning and correction can become visible in networked crisis discourse, but those traces do not ensure that correction will be timely, proportionate, or equally visible.

Arif et al. move from correction traces to the decisions behind them. Combining Twitter trace analysis of two false rumors with interviews with users who participated in rumor propagation or correction, they examine why people correct, delete, deny, or take no visible corrective action [18]. Their analysis identifies three corrective objectives: correcting oneself, correcting the broader information space, and correcting another user or organization [18]. These choices depend partly on where users situate responsibility for misinformation and how they imagine audiences will perceive and act on a correction [18]. The result is a more situated account of distributed verification. Correction is not simply an informational outcome visible in the stream, but a public-facing action shaped by responsibility, platform expectations, and anticipated audience response.

Andrews et al. shift attention from correction as a crowd-level process to the source status of the accounts that participate in rumoring and correction. Their study examines how "official" accounts, including emergency responders and organizations implicated in a rumor, participate in the propagation and correction of crisis-related claims [17]. In the Lakemba raids and WestJet hijacking cases, official denials could become highly visible corrective signals: the Australian Federal Police denial reactivated correction after the Lakemba rumor had slowed, while WestJet's denial entered during active propagation and corresponded with a rapid rise in denials and a sustained decline in affirmations [17]. The paper also shows why officialness is a boundary problem on social platforms. When an affiliated official source is absent from the conversation, people may look to mainstream media or breaking-news accounts, and some breaking-news accounts gain trust by resembling legitimate information sources while broadcasting with the speed and tone of mass media [17]. Rumor trajectories are shaped by the presence of correction and by whether the correcting or affirming account is institutionally accountable, media-affiliated, or merely positioned to appear timely and authoritative in the stream.

Tapia et al. shift the verification problem from a single standard of trustworthiness to a varied landscape

of data quality and decision needs. Based on interviews with representatives from twenty-one humanitarian and response organizations, they show that responders already work with imperfect information, often using the best available data when higher-quality information is unavailable [185]. Microblogged data can be useful, but its usefulness depends on how it enters organizational work: whether it arrives at the appropriate time, in the appropriate form, to the appropriate person, and with the appropriate level of confidence [185]. Their respondents distinguished uses that could tolerate low or unknown data quality, such as initial awareness, contextual understanding, or prompts to seek additional information, from decisions that required higher confidence, such as search and rescue, logistics, and resource allocation [185]. Tapia et al. frame crisis information evaluation as a problem of sorting and classification: microblogged data may be contextual, potentially action-worthy, or insufficient for the decision at hand. Across these studies, credibility is tied to use. Information may be more or less adequate depending on what participants are trying to do with it, and on how time-sensitive, localized, and consequential that use is.

#### **2.4.5 Crisis Named Resources and Visibility Without "Official" Standing**

The preceding subsection showed that claim trajectories are shaped not only by what is said, but by the status of the accounts through which claims and corrections become visible. Andrews et al.'s analysis of official, media, breaking-news, and flight-tracking accounts points to a broader source-standing problem: platform environments can make some crisis information sources visible and useful even when their authority or accountability is uneven. This section shifts from actions on claims to the sources through which crisis information becomes visible, usable, or seemingly authoritative.

Chauhan and Hughes's 2017 study of official sources during the Carlton Complex wildfire provides a useful bridge between crisis informatics and weatherfluencers. This work treats official crisis information as part of a plural source ecology rather than a single channel. They define "official information" as information whose source is perceived by the public as more authoritative or trustworthy, and identify four types of official information sources: Event Based Resources, Local Responders, Local News Media, and Cooperating Agencies [32]. These sources differed in scope, relevance, and timeliness. Local News Media provided the greatest quantity of relevant information and the most first reports for the two information types they traced, while Event Based Resources had the highest percentage of on-topic Facebook and Twitter posts [32]. The official/unofficial distinction turns out to be less clean than it looks. Useful crisis information may be distributed across agencies, local media, and event-specific resources, each with different responsibilities and forms of public legibility.

The Event Based Resources in the Carlton study anticipate the later CNR problem. These resources were named after the Carlton Complex wildfire or its location, which made them easier to find and marked them as dedicated sources of wildfire information [32]. Some claimed to provide official information or were later found to be managed by official agencies, but in many cases the authors could not determine who managed the resource or who was accountable for its information [32]. Simply naming a page or account a certain way can appear event-relevant, and sometimes official-seeming, before audiences have enough information to evaluate ownership, expertise, or accountability to accurate information.

Chauhan and Hughes's later work names these resources Crisis Named Resources: social media accounts, pages, or communities named after a crisis event that often appear soon after the event and become easy to find through platform search [33, 34, 35]. In their Fort McMurray wildfire study, most Facebook and Twitter CNRs were created during the wildfire, especially during the first week when the fire grew rapidly and forced mass evacuation [33]. These accounts or pages shared reports, needs and offers, stories, donations, fundraisers, prayers, and reactions, and some were unrelated to the event [33]. Many later became inactive, were deleted, or broadened their purpose beyond the original wildfire [33]. CNRs show how

event naming can temporarily gather attention, information, support, and action around a crisis while the resource's operator, purpose, and durability may remain unsettled.

Wildfire communication research identifies a related but distinct actor configuration. Hocevar's network analysis of Twitter activity during Oregon's Almeda Fire found that citizen journalists played a more influential role in information diffusion than government or media accounts during the active stage of the crisis [79]. The study also shows why influence and reliability should be carefully pulled apart: some highly interacted-with tweets from nonlocal media or nonlocal citizen-journalist accounts included inaccurate or misleading information about fire boundaries and evacuation conditions [79].

The CNR trustworthiness work shows how audiences evaluate resources when official standing is incomplete or difficult to determine. In their Hurricane Irma study, Chauhan and Hughes found that participants assessed CNR trustworthiness through perceptions of the resource's content, information source, profile, and owner [34]. Participants tended to trust CNRs when they perceived that the owner had crisis response experience, could help the public respond, understood the situation, had affected individuals' interests in mind, and would correct misinformation [34]. One especially relevant case was a Twitter CNR created by self-described weather enthusiasts in Tampa tracking Hurricane Irma. Interviewees found it highly trustworthy because it linked to the National Hurricane Center, followed weather professionals and organizations, provided relevant information, had many followers, and appeared oriented toward informing the public [34]. This example shows that topical expertise, source-linking, public-help orientation, and professional information networks can become trust cues even when the resource itself is not an official emergency source.

Later work on COVID-19 CNRs extends this point from resource-level cues to platform structure. Chauhan and Hughes found COVID-19 CNRs across Facebook, Twitter, and Reddit, but the participation and moderation structures differed across platforms: Facebook and Twitter CNRs were owner-controlled, while Reddit CNRs allowed broader user posting shaped by up-votes, down-votes, moderators, and community rules [35]. Ownership and accountability remained central: many CNR owners, especially on Facebook and Twitter, did not disclose their identities, and the authors identify unknown ownership as a concern when CNRs share crisis news, raise funds, express opinions, or attract large followings [35].

CNRs show that crisis information venues can gain visibility through event naming, search, and platform circulation rather than through formal emergency authority. Yet, they are usually not event-named (though every livestream contains a date and title, which can retroactively change), and their visibility is not tied only to one weather event. They operate across events and seasons, carry forward subscriber relationships, and are organized around recurring interpretation rather than event naming alone. The CNR and wildfire communication literatures clarify some nearby configurations to help situate the weatherfluencer: event-named visibility, cue-based trustworthiness, platform-shaped moderation, and nonofficial influence.

## **2.4.6 Synthesis: Situating Live Severe Weather Interpretation**

The literature reviewed in this section provides a vocabulary for thinking about weatherfluencers without treating them as wholly new intermediaries. Disaster convergence, digital volunteerism, liveblogs, and wildfire citizen journalists each help identify related forms of public-facing crisis information work. They exemplify how information may be gathered, routed, interpreted, corrected, and made visible through mixed arrangements of official agencies, media organizations, volunteers, and affected publics. They also show why usefulness, timeliness, accountability, and source standing are often difficult to pull apart in networked settings. The next chapter uses these related actors and practices as points of comparison for defining the weatherfluencer.

## 2.5 Platform Infrastructures and Livestreaming

Digital platforms shape severe weather livestreams before any interpretation begins. Platform studies names the infrastructure and sociotechnical conditions that make weatherfluencer operations possible. Platforms, such as YouTube, provide the channel architecture through which streams are found, ranked, recommended, monetized, moderated, archived, and replayed. They also set the terms under which audience response becomes visible through Live Chat, likes, subscriptions, donations, comments, clips, and later circulation. Gillespie argues that the term “platform” performs ideological work: it presents intermediaries such as YouTube as open, neutral, and user-serving while obscuring their roles in curating, governing, and commercializing public expression [70]. Later platform governance work makes those curatorial and governing roles more explicit by showing how platforms exercise power through content rules, moderation systems, recommendation infrastructures, and policy decisions that shape what remains visible, discoverable, and actionable within public communication environments [71, 196]. For weatherfluencers, the platform is an essential part of their condition.

### 2.5.1 Platformization, Visibility, and Algorithmic Timing

Platformization scholarship explains how cultural production becomes tied to platform markets, governance frameworks, and infrastructures of distribution. Nieborg and Poell define platformization as the penetration of platforms’ economic, governmental, and infrastructural extensions into the web and app ecosystems, affecting the production, distribution, and circulation of cultural content. Their analysis of news and games shows how platformization reorganizes cultural production through multisided markets, platform governance, and infrastructural integration. In the case of news production, producers increasingly orient production and distribution around platform data, advertising and monetization arrangements, algorithmic curation, and governance standards. Cultural commodities become contingent in two linked senses: production becomes dependent on platform companies, and content becomes modular, malleable, revisable, and informed by datafied user feedback [138]. Duffy et al. extend this definition by arguing that platformization must also be understood through everyday platform practices: the strategies, routines, experiences, and expressions of labor, creativity, and citizenship through which cultural producers work within changing platform conditions [48].

Algorithmic systems also organize when public information becomes visible. Bucher argues that algorithmic media shift from a primarily chronological or “real-time” logic toward a “right-time” logic, in which platforms sort and deliver content according to platform-defined judgments of relevance, engagement, and opportune timing [26]. This distinction is consequential for severe weather because hazard timing and platform timing are not identical. A stream, clip, or alert-oriented post may become visible through search, subscriptions, recommendations, notifications, or later resurfacing, each of which can connect audiences to weather information at different moments in the event. While recency matters, visibility is also shaped by personalization, engagement signals, predicted relevance, and platform-specific routes into live or archived coverage.

Research on credibility cues helps explain how users interpret particular interface features, source markers, or social signals as evidence when making judgments [57, 184]. I treat that literature more directly in the study-specific sections because it addresses how viewers evaluate visible cues. The platform literature explains how those cues become available, salient, or obscured within infrastructures that organize visibility, timing, monetization, and participation.

### 2.5.2 Creator-Centered Public Information

Hurcombe's "newsfluencer" names a hybrid public information actor produced through the convergence of platformatised journalism and online content creation. He defines newsfluencers as platformatised creators who operate according to the economic and cultural logics of online influencers to produce news content for participatory audiences [88]. Hurcombe specifies this form across four intersecting dimensions: platforms, business models, labor, and cultures. Platforms distribute and monetize content; business models are subscriber-led, insecure, and entrepreneurial; labor involves self-branding, relational audience work, and passion-led overwork; cultures form around fandom, parasociality, and participatory audience engagement [88].

Hurcombe adds a creator-economy logic to the crisis information precedents reviewed earlier. CNRs gain attention because event names, locations, and crisis-specific purposes make a page or account appear relevant during a high-demand information moment, while ownership, administrator identity, credibility, and accountability may remain difficult to assess [32, 33]. Digital volunteer and liveblog cases organize crisis information through response-oriented labor: monitoring, routing, mapping, moderating, verifying, and moving information across publics, platforms, and responders [87, 45]. Hurcombe's newsfluencer is organized through a different set of logics. Continued visibility is tied to platform distribution and monetization, subscription or entrepreneurial revenue, self-branding, relational labor, fandom, and parasocial audience attachment [88]. Hurcombe's category is also more topic-flexible than event-bounded: newsfluencers produce content about current events and public issues across platforms, rather than appearing primarily as resources named for a specific crisis. These features shape how creators remain visible, how audiences return, and how public information becomes tied to ongoing creator support. Newsfluencers may still understand their work as public service, commentary, journalism, education, advocacy, or community-building, and Hurcombe treats the category as ambivalent [88]. The creator-economy layer means that public information work is also tied to audience retention, monetized affiliation, and platform metrics.

### 2.5.3 Audience Labor and Relational Visibility

The prior subsection placed newsfluencers within creator-economy logics and notions of having to maintain relationships with an audience over time. Audience labor scholarship specifies how those logics are maintained in practice. Marwick and boyd show that social media users address audiences that are only partially knowable, requiring them to manage context collapse, imagined audiences, authenticity, and self-presentation [109]. For creators, this audience problem is also a labor problem. Public presence must remain recognizable across heterogeneous audiences, platform contexts, and interactional situations, even when the audience being addressed is unstable or only partly visible.

Baym's concept of relational labor names the ongoing communicative work through which creators sustain audience relationships over time. Relational labor involves regular communication with audiences to build social relationships that foster paid work, while also requiring creators to manage the blurred boundary between personal connection and professional livelihood [20]. Creators must maintain a sustainable relation between themselves, the audience, and the platform conditions through which attention, support, and content are organized.

Influencer scholarship extends relational labor and creator self-presentation to audience participation in visibility systems. Abidin's concept of visibility labor names the work followers do when they make themselves and influencer-affiliated brands visible through practices such as tagging, reposting, producing #OOTD posts, and creating follower-anchored advertorial content around an influencer's fashion brand [2]. Follower responses can generate additional promotional material, engagement signals, and social proof

around the creator-brand relationship. This mechanism connects audience labor back to the platformization: platform visibility is produced through arrangements such as ranking, recommendation, monetization, and governance, but also through everyday practices of liking, sharing, commenting, tagging, donating, and affiliating [48].

#### **2.5.4 Livestreaming as Synchronous, Creator-Anchored Interaction**

Livestreaming adds a distinctive interactional structure to platformized public information. Hamilton et al. describe Twitch livestreams as mixed-media environments that combine broadcast video with open chat, allowing streamers and viewers to participate in shared events in real time [75]. Their ethnographic account emphasizes that livestreams can function as participatory communities, where viewers gather around shared content, repeated interaction, and emerging community norms [75]. This framing is useful for weather livestreams because the audience is not only watching a finished report. Viewers are present while interpretation unfolds.

Recktenwald offers a more micro-level account of livestream interaction. Online livestreaming combines a broadcaster, an activity, and an audience, but these participants do not have equivalent access to the interactional field. The broadcaster is oriented to the streamed activity and must shift gaze or attention toward chat, while audience members watch the stream and produce written messages that may move through the interface within seconds [152]. This creates an asymmetric but interactive setting: many viewers can address the creator, but the creator can only respond selectively and must balance audience interaction with the primary activity being streamed.

This asymmetry means that the focal activity and the audience channel compete for the creator's attention, which could have consequences for safety-critical information. If the environment is potentially overwhelming, additional labor must be done to ensure the most safety-critical information is still prioritized.

High-volume chat also changes the form of participation. Ford et al. show that massive livestream chats may become difficult to read as conventional conversation, but can still produce coherence through "crowdspeak" [58]. They identify three practices of coherence: shorthanding, bricolage, and voice-taking. Shorthanding compresses participation into acronyms, emotes, commands, and short phrases. Bricolage reuses and recombines a limited repertoire of familiar lexical items, including emotes, copied text, commands, and repeated phrases. Voice-taking occurs when multiple participants adopt a shared stance, syntax, or style, allowing a crowd to speak through repeated or closely related forms [58]. These practices make chat legible through recognizable repertoires rather than through stable conversational threads. Over time, such repertoires can also become part of a channel's interactional norms: participants learn what kinds of messages, jokes, reactions, and repeated forms belong in that stream's chat.

Moderation is another infrastructural condition of livestream participation. Research on volunteer moderation shows that moderators do more than remove inappropriate content; they help maintain community norms, support participation, and coordinate local governance within platform spaces [162]. Seering and Kairam's Twitch survey further shows that moderation practices vary by channel size, recruitment pathway, task distribution, and role perception [161].

#### **2.5.5 Synthesis: Platformed Livestreaming as Interpretive Setting**

Across these literatures, the platform question shifts from information circulation to venue formation. Platform infrastructures and creator-economy practices can make public information work durable across events: a recurring channel, a recognizable host, returning audiences, monetization, metrics, and audience traces.

Livestreaming gives that venue a synchronous form, where the activity being interpreted, the creator's narration, audience chat, and moderation are co-present.

Prior work has shown that crisis information work can be coordinated through persistent virtual organizations such as Humanity Road, responder-linked arrangements such as VOSTs, event-named resources such as CNRs, and public-facing formats such as liveblogs or crisis maps [178, 87, 33, 45]. Fichet et al.'s study of Periscope adds an important bridge: live video brought crisis reporting, commentary, visual evidence, and viewer interaction into the same interface, including streams produced by citizens, journalists, and The Weather Channel during unfolding events [53].

The comparison is one of venue and organization. The live screen makes selected evidence visible concurrently with the creator's narration; chat and moderation provide a selective participation layer through which viewers can work with the evidence presented and even contribute new evidence. Platformed livestreaming organizes crisis interpretation as public, visible, and interactionally responsive while the event is still underway.

## **2.6 Weather Risk Communication**

Weather risk communication scholarship grounds the dissertation in the specific domain the three studies examine. This literature explains how audiences have historically encountered and processed severe weather information, how warning systems are designed to produce protective action, and how the shift toward diversified source ecologies has changed who audiences turn to and why. Natural hazard communication makes the preceding conceptual distinctions consequential because risk interpretation is tied to protective action, preparedness, and public response.

Wachinger et al.'s review of natural hazard risk perception identifies direct experience and trust, or lack of trust, in authorities and experts as major factors shaping risk perception [200]. At the same time, the review cautions against a simple model in which higher risk perception automatically leads to preparedness or protective behavior. The authors describe a risk perception paradox in which people may understand a risk but still fail to prepare or act because of competing motivations, transferred responsibility, or limited personal capacity [200].

### **2.6.1 Warning Response Models and Protective Action**

Study 1's three ranking criteria, including appropriateness for severe weather situations, draw on this literature's descriptions of how people integrate information sources, social cues, and environmental confirmation when deciding on protective action. Weather communication and warning response research provides the closest applied literature for understanding how people encounter severe weather information and decide whether to act. A foundational contribution of this work is the distinction among multiple stages of warning response. Mileti and Sorensen describe public warning response as a sequence of related processes: people must hear or receive a warning, understand it, believe it, personalize it, decide how to respond, and often confirm it through additional sources before acting [117].

The Protective Action Decision Model (PADM) provides a more elaborated account of how these processes unfold in response to environmental hazards. Lindell and Perry describe protective action decision-making as beginning with environmental cues, social cues, and warnings transmitted from social sources through communication channels. These inputs move through predecisional processes of exposure or reception, attention, and comprehension, then into perceptions of the threat, possible protective actions, and relevant stakeholders. PADM's treatment of stakeholder perceptions is especially relevant here because it

includes perceptions of stakeholder hazard expertise, trustworthiness, and protection responsibility as part of protective action decision-making [100]. In PADM, people seek additional information when they cannot resolve a question at a given stage of protective action decision-making, such as whether the threat is real, whether it applies to them, what action is appropriate, or whether action must be taken immediately [100]. Mileti and Sorensen similarly identify confirmation as a distinct part of warning response [117].

Warning research also identifies core message content and style dimensions. Mileti and Sorensen organize warning content around hazard, location, timing, source, and protective guidance, and identify specificity, consistency, certainty, clarity, and accuracy as key message-style dimensions [117]. These dimensions make warning communication a practical interpretive task: hazard information has to be made specific enough for people to understand what is happening, where and when it matters, who is communicating, and what protective action is available.

Warning response models and warning-message research place severe weather communication inside a chain of practical judgments: what the hazard is, where and when it matters, who is communicating, what action is available, and whether additional confirmation is needed. Severe weather livestreams operate in that same practical space, but those judgments are assembled through live interpretation rather than through completed warning messages or broadcast segments alone. The following section turns to the weather enterprise and broadcast intermediation, where severe weather interpreters have historically been made publicly recognizable through local presence, professional affiliation, and institutional accountability.

## **2.6.2 The Weather Enterprise and Broadcast Intermediation**

Study 1 uses the broadcast meteorologist as the institutional comparison baseline precisely because this literature establishes what that baseline provides: parasocial familiarity, organizational accountability, local presence, and the credential bundle that makes severe weather interpretation publicly legible. Severe weather communication in the United States is organized through what the National Weather Service describes as the Weather, Water, and Climate Enterprise: the interdependent academic, government, and commercial sectors that contribute to weather science, forecasting, warning, and public information. Within that enterprise, government provides foundational observations, forecasts, and warnings, while commercial weather providers and media organizations add value and distribute weather information through television, radio, smartphones, websites, and other internet channels [136]. This enterprise framing separates statutory warning authority from broader interpretive and distribution roles.

The National Weather Service holds governmental authority to issue official watches, warnings, and advisories. Broadcast meteorologists have historically occupied an intermediary role between official products and public audiences, translating warnings, radar, reports, and forecast information into locally meaningful guidance. Sherman-Morris and Lea describe the local television weathercaster as an essential communicator of severe weather information, noting that severe weather coverage may include communicating NWS warnings, passing on reports from spotters and emergency managers, monitoring social media, and explaining radar imagery during extended live coverage [167].

That intermediary role is technical, institutional, and relational. Broadcast meteorologists work within news organizations, appear in routinized local media formats, and often accumulate public familiarity across many forecast cycles. Henson's history of television weathercasting describes the long professionalization of broadcast meteorology and the emergence of the weathercaster as a recognizable public figure within local television news [76]. Programs such as the AMS Certified Broadcast Meteorologist designation add further credential markers to this public role [6]. These markers help make professional standing easier for viewers to recognize before a particular severe weather event begins.

Experimental work comparing weather forecast presenters suggests that professional standing can oper-

ate as an evaluative cue in weather communication. Spence et al. found that participants rated professional meteorologists as more credible than amateur or robotic forecast presenters in a broadcast-style forecast experiment [170]. The finding is best used as evidence that professional standing can provide one recognizable cue through which viewers evaluate weather information sources, rather than as evidence that status alone determines audience response.

In the broadcast setting, that cue is bundled with other forms of weather enterprise signals. A local television weathercaster appears through a news organization which has vetting procedures (i.e.: gatekeeping), may display professional credentials and seals, and often becomes recognizable through repeated local news cycles. Broadcast meteorology provides a historically established model of severe weather communication in which the work of interpreting weather is attached to and is made available and recognizable to the public.

### **2.6.3 Forecast Use and the Diversifying Weather Source Ecology**

Research on weather information seeking shows that public weather use has long involved multiple sources. Lazo et al.'s nationwide survey of U.S. adults documented where people obtained weather forecasts, how they perceived them, how they used them, and how much they valued them. In that 2006 survey, local television was the most common source, but respondents also used cable television, radio, web pages, newspapers, NWS web pages, family and friends, NOAA Weather Radio, cell phones, and telephone services [97]. This finding provides a baseline for understanding weather information as a mixed source ecology.

Demuth et al. extended this baseline by examining variation across people's sources, uses, and perceptions of everyday forecasts. Their analysis found that forecast use, source frequency, perceived importance of forecast parameters, confidence, and satisfaction were interrelated behaviors and evaluations [47]. Source choice is therefore tied to what people use forecasts for, what forecast parameters they consider important, and how confident they are in the information they receive.

Morss et al. move from everyday forecast use toward hazardous weather prediction and communication in a modern information environment. They argue that weather risk communication is better understood as a dynamic hazard information system in which forecasts, warnings, information flows, social interactions, risk perceptions, vulnerabilities, and decisions evolve as the threat develops [120]. Their framework accounts for digital media, social interaction, and the changing circulation of hazard information before and during events.

Recent survey work shows that the source ecology has continued to diversify. Krocak et al. report observations from the Extreme Weather and Society Survey showing declining reliance on television for severe weather information from 2017 to 2023 and increasing reliance on phone notifications, internet websites, friends and family, and social media [96]. Their interpretation is cautious but important: as people turn to more diverse and individualized sources, a wider set of actors has the opportunity to provide weather information, raising questions about information quality, reliability, and accessibility.

The emergence of digital meteorology marks a professional response to this changing source ecology. Trujillo-Falcón et al. describe digital meteorology as a developing field shaped by social media, mobile applications, and online weather presentation. They identify the AMS Certified Digital Meteorologist seal as an effort to extend professional standards and credentialing into digital weather communication, and they note that independent scientists, storm chasers, and social media influencers already play visible roles in real-time public engagement [190]. For the purposes of this dissertation, the Certified Digital Meteorologist program can also be read as boundary work within the weather enterprise. It extends credentialing into digital presentation and creates an intermediate authority space in which some digital practitioners become newly credentialed while other creators remain evaluated through visible performance, platform reputation, and audience interaction.

Several structural conditions make this shift possible. Publicly accessible NWS and NOAA data products make radar, warnings, outlooks, and related meteorological information available beyond broadcast and government institutions [127]. Streaming platforms make real-time video distribution possible without a television station. Social media and recommendation systems make weather information discoverable through creator-centered channels alongside local broadcast schedules and official websites. These conditions create the technical and distributional basis for platform-native interpreters to become visible at scale.

#### **2.6.4 Trust, Performance, and Uncertainty Communication**

Trust in weather communication has been studied most often as a source or stakeholder perception that shapes whether people attend to, believe, and act on information. Sherman-Morris's study of the Memphis television market found that respondents reported parasocial interaction with local weathercasters and trust in weathercaster recommendations during severe weather. In a model predicting stated likelihood of taking shelter if urged by the weathercaster, both parasocial interaction and trust were significant predictors, with trust the stronger predictor [166]. This finding shows that the local weathercaster can matter as more than a neutral conduit for warning content, although the outcome measured was stated likelihood rather than observed sheltering behavior.

Ripberger et al. provide a different account of trust by examining perceived warning accuracy. In a regional survey of residents in tornado-prone areas, they found that higher perceived false alarm and missed event ratios were associated with lower trust in the NWS, and that higher trust in the NWS was associated with greater stated likelihood of taking protective action in response to a hypothetical tornado warning [154]. Their analysis also distinguishes objective warning performance from perceived warning performance. People's subjective perceptions of false alarms and missed events were associated with trust in the NWS, even though those perceptions were only partly tied to objective warning records [154]. Creator authority may be built around perceived performance narratives, including claims that official warnings were late, overly broad, or insufficiently specific.

Research on broadcast presentation shows that interpretation is also affected by how weather information is explained. Sherman-Morris and Lea tested severe weather radar broadcasts in which a weathercaster was either on or off screen and in which different radar products and verbal messages were presented. The presence of the weathercaster on screen did not produce broad differences in risk perception, recall, or behavioral intent, but the study found that verbally named locations were rated as higher risk than locations visible on the map but not mentioned aloud [167]. The study is exploratory and the authors caution that audio and visual features were confounded. Even with that limitation, the result is useful here because live interpretation involves selection, emphasis, and naming as well as the display of meteorological data.

Uncertainty communication research adds a further complication. Joslyn and LeClerc found in experimental road-salting tasks that explicit uncertainty forecasts improved decision quality, increased trust, and reduced the negative effects of forecast error compared with deterministic forecasts [92]. Joslyn and Savelli found that survey respondents generally expected uncertainty in deterministic forecasts and that many held structured expectations about how uncertainty varied with lead time and forecast extremity [91]. Morss et al. found that people have different probability thresholds for taking protective action and that context and presentation influence how people use deterministic, range, and probabilistic forecasts in decision scenarios [121].

These studies support a bounded claim for this dissertation: audiences can use explicit uncertainty information, and in some decision contexts uncertainty communication can improve decisions and preserve trust when forecasts err. Weatherfluencer livestreams often involve visible reasoning under uncertainty. The relevant question is how audiences evaluate the creator's interpretive process as evidence changes.

### 2.6.5 Relational Familiarity, Parasocial Interaction, and Livestreaming

Broadcast meteorology also has a relational dimension. Horton and Wohl's concept of parasocial interaction describes the apparent interpersonal relationship that can form between audiences and media personae through repeated mediated encounters [82]. Sherman-Morris applies this framework directly to local weathercasters, arguing that the regularity of weathercasts, the direct address of the weathercaster, and the local embeddedness of news personalities make weathercasters plausible objects of parasocial interaction [166]. In this account, the weathercaster combines features of expertise, familiarity, and guidance.

The empirical evidence varies across hazards. Sherman-Morris found that parasocial interaction and trust predicted stated likelihood of taking shelter if urged by a weathercaster in a tornado context [166]. Sherman-Morris et al.'s Hurricane Irma study found that parasocial relationship with the local weathercaster was not related to hurricane risk perception or protective actions, although local television news remained the most important information source and trust in local news was related to risk perception [168]. Tornado sheltering and hurricane evacuation differ in lead time, authority structure, protective action type, and the role of public officials. The evidence suggests that relational familiarity with a weathercaster can matter, with behavioral relevance shaped by hazard type and protective action context.

Ballantine and Martin extend parasocial thinking to online communities, especially cases where users observe active contributors without directly participating [19]. Livestreaming adds a further structural feature: audience members can address the creator during the interpretive act itself. The creator does not respond to everyone, and the relation remains asymmetric. The possibility of selective acknowledgment, question uptake, and incorporation of audience reports still changes the interpretive setting.

Here, I treat that condition as partial reciprocity. Partial reciprocity refers to an asymmetrical interactional structure in which audience participation can become visible inside the creator's interpretive work. The creator retains control over the stream, the interpretation, the visual field, and the decision to acknowledge or ignore audience input. Viewers can ask whether a warning applies to a location, report sirens or damage, compare what another source is saying, or press for clarification. Those contributions may redirect attention or become part of the public interpretive record.

The community dimension also differs from broadcast. Preece and Maloney-Krichmar define online communities in terms of people, shared purpose, policies or norms, and computer systems that support interaction [149]. Severe weather livestream chats can contain those elements during long-duration events: recurring participants, shared storm-tracking vocabularies, moderator enforcement, repeated creator-audience routines, and visible traces of collective attention. Livestreaming supplies interactional conditions distinct from broadcast television, including synchronous co-presence among viewers, visible many-to-many audience talk, and the possibility that audience contributions become part of the creator's ongoing interpretation.

### 2.6.6 Beyond the Broadcast Bundle

Weather communication scholarship shows that severe weather information is rarely evaluated as message content alone. Warnings, forecasts, radar imagery, source cues, uncertainty, confirmation practices, relational familiarity, and protective-action guidance are interpreted in relation to one another. In the broadcast setting, many of those elements have historically been bundled through the local weathercaster: a recognizable character who translates NWS products, explains changing conditions, appears within a familiar mass media institution, and accumulates public familiarity across repeated forecast cycles.

The more diversified source ecology loosens that arrangement. Television, mobile alerts, websites, social media, interpersonal networks, storm chasers, independent scientists, and platform-native creators now coexist as possible sources of severe weather information. The next chapter turns to the weatherfluencer

as one actor positioned within this reorganized source ecology.

## 2.7 Literature Synthesis

Severe weather livestreams are complex communication settings: live weather coverage, public-facing crisis information work, and creator-centered platform activity occupy the same screen. Sensemaking theory is the starting point because the stream is organized around keeping a changing weather hazard intelligible enough for continued attention and possible action. Trust, credibility, legitimacy, and authority research enters because that interpretation comes through a visible person whose claims, competence, standing, and reliability are assessed while the account is still unfolding. Crisis informatics provides the closest HCI lineage for this project because it examines how publics, volunteers, journalists, responders, and platformed resources gather, route, verify, correct, and organize information during emergencies. Platform studies explains the sociotechnical conditions that make this form of public interpretation possible: persistent channels, monetization, chat, moderation, metrics, and recurring creator-audience relations. Weather communication grounds the domain by specifying the stakes of official warning authority, forecast interpretation, confirmation, uncertainty, source choice, and protective action.

Crisis informatics documents participatory crisis information work, distributed verification, and claim-level credibility assessment, much of it in feed-based, multi-actor, public-private settings where information circulates through posts, replies, reposts, hashtags, and linked resources rather than through a single creator-anchored live screen. Platform studies explains how digital infrastructures shape visibility, participation, monetization, and creator-audience relations. Weather communication research shows how the weather enterprise has historically made professional standing publicly legible, while also documenting an increasingly diversified source ecology.

Across these literatures, severe weather livestreams come into view as settings where official and observational weather evidence, platform visibility, public-facing crisis information work, and live audience evaluation are organized around a visible interpreter. The next chapter defines this actor in relation to adjacent figures such as broadcast meteorologists, digital volunteers, CNRs, livebloggers, citizen journalists, and newsfluencers, asking what the weatherfluencer extends, what it recombines, and where it departs from existing forms of crisis and weather communication.

Table 2.1: Literature reviewed in Chapter 2: core concepts borrowed and primary use in the dissertation

| Literature strand                                                                                                                            | Core concepts borrowed                                                                                                                                                                                                           | Primary use                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Organizational sensemaking:<br>Weick; Maitlis                                                                                                | Coordination through role structure; sensegiving as shaping which accounts circulate or remain fragmented; conditions under which collective interpretation remains usable without formal role anchors                           | Frames the livestreams as sites of sensemaking, outlined in Chapter 5; sensegiving as partial parallel to the creator's narration function                                                                                                                                                                                                             |
| Credibility, trust, and legitimacy:<br>Wilson; Metzger; Hilligoss & Rieh; Mayer et al.; Möllering                                            | Cognitive authority; multi-level credibility assessment (construct, heuristic, interaction); ability-benevolence-integrity trustworthiness dimensions; trust as continuously enacted suspension of doubt                         | Study 1: operationalizes trustworthiness (Mayer), credibility (Metzger; Hilligoss & Rieh) as evaluation dimensions; Ch. 9: distinguishes trustworthiness-as-attribution from trust-as-ongoing-reliance as the distinct phenomena Studies 1 and 3 document                                                                                              |
| Crisis informatics and disaster sociology:<br>Fritz & Mathewson; Kendra & Wachtendorf; Starbird & Palen; Chauhan; Hughes et al.; Arif et al. | Disaster convergence; digital volunteerism; Crisis Named Resources (CNRs) and Virtual Operations Support Teams (VOSTs); distributed verification and correction                                                                  | Ch. 3: positions weatherfluencers among adjacent crisis information figures (VOSTs, CNRs, digital volunteers); supports the ecological map (Table 3.1); grounds the weatherfluencer concept in an established research lineage                                                                                                                         |
| Platform studies and livestreaming:<br>Hurcombe; Lewis; Horton & Wohl; Ford et al.                                                           | Newsfluencer framework (platform-native public information work organized through creator identity, monetization, and audience relations); partial reciprocity; crowdspeak; parasocial interaction in creator-centered platforms | Ch. 3: Hurcombe's newsfluencer framework as a close adjacent concept; "influencer" logics exhibited by weatherfluencers; Study 1: parasocial relations as part of the creator-platform relational baseline; Study 3 and Ch. 9: partial reciprocity as the structural condition through which individual chat contributions become collectively visible |
| Weather communication:<br>Sherman-Morris; Spence et al.; Mileti & Sorensen; Lindell                                                          | Parasocial trust with local weathercasters; local embeddedness as constitutive of broadcast credibility; warning response and protective-action decision-making                                                                  | Study 1: grounds broadcast meteorologist as institutional comparison baseline; local embeddedness and parasocial familiarity explain the credibility advantage; Ch. 3: contextualizes the weatherfluencer within the weather enterprise's existing trust infrastructure                                                                                |

*Note.* Table maps the core analytic contribution of each literature strand reviewed in this chapter. It is not a complete inventory of works cited; full citations appear in the relevant subsections above.



## Chapter 3

# *Weatherfluencers*

### 3.1 The Weatherfluencer as a Contested Authority

In January 2026, Winter Storm Fern brought snow, ice, and Arctic cold to an estimated 150 to 200 million people from the Southern Plains to the Northeast. YouTube creator *Ryan Hall*, *Y'all* covered the event in marathon fashion: more than thirty hours of live content across the week, with the January 24–25 stretch running through the night and drawing peak concurrent audiences of approximately 89,000 for Max Velocity [110] and 110,000 for Ryan Hall [156]. Days before the storm’s peak, Hall was publicly narrating uncertainty about the storm’s track and potential impacts, writing on January 21 that “*Many of the models shifted north last night but the overall story remains the same, a particularly dangerous winter storm is on the way,*” while Max Velocity used more urgent framing: “*MAJOR WINTER STORM is set to slam the United States, beginning Friday, with very dangerous ice and heavy snow expected. NOW is the time to prepare.*”

As the initial ice phase intensified across Mississippi and Tennessee, both creators’ Live Chat streams filled with geographically distributed reports of conditions and outages. Viewers described local ice, travel conditions, power loss, and storm impacts while the host continued interpreting forecast models and unfolding reports. Super Chat donations were paid to the creator through highlighted messages in the livestream chat, with some creators acknowledging donation amounts during active coverage. Fern made several features of the weatherfluencer role visible at once: long-duration live interpretation, very large concurrent audiences, audience reports from many locations, and monetized attention inside the same stream that was carrying safety-relevant weather coverage.

Fern also drew criticism from weather professionals and people following the coverage across X/Twitter. Critics objected to sensationalist pre-storm framing for days leading up to the event, questioned the presence of Super Chat donations during active ice coverage, and raised concerns about showcasing extreme weather model scenarios. Defenders pointed to the reach of long-duration livestream coverage, especially during late-night and off-hour periods, and to its usefulness for viewers who may not be well served by local broadcast schedules or geographically bounded television markets. In the #WxTwitter materials collected for this chapter, Fern became a visible dispute over hype, monetization, audience reach, forecast uncertainty, and professional standing.

The contrast with Whitman is telling because the two cases show different extremes of the same role. In Whitman, Max Velocity’s stream could act as an informal warning supplement during an apparent gap in official warning coverage. In Winter Storm Fern, the longer forecast window gave creators more room to speculate, package narratives about weather models and potential impacts, and monetize those speculative forecasts, even some that were quite extreme and unlikely, before the event even began to materialize.

NWS warning offices and professional meteorologists remain central to the U.S. severe weather warning system, and nothing in the weatherfluencer phenomenon displaces that. The issue is more specific: weatherfluencers depend on the same official and operational data as their credentialed counterparts, they reach audiences at scales comparable to regional broadcast, and they direct those audiences toward protective action during active events. But their public standing is not built through the employment, credentialing, editorial oversight, and accountability structures that the weather enterprise has spent decades using to make severe weather communication recognizable as trustworthy in the first place. The Whitman and Fern cases sit at two ends of what that produces. In Whitman, the promises of the role were legible: a lean, platform-native operation that could move fast, identify a threat in real time, and reach people before the official system had acted. In Fern, the perils were equally visible: sustained pre-storm coverage that escalated uncertainty into narrative, monetized attention running alongside safety-relevant guidance, and public disagreement about whether the coverage had done more harm than good. The remainder of the chapter defines the weatherfluencer role, locates it within related crisis domains and weather communication arrangements.

## **3.2 Defining the Weatherfluencer**

### **3.2.1 The Crisis Informatics Lineage**

Weatherfluencer livestreams belong to a longer lineage of public-facing crisis information work. Crisis information has often been organized through hybrid arrangements of formal responders, journalists, volunteers, affected publics, platform accounts, and technical infrastructures. In those arrangements, information becomes usable through practical work: reports are formatted, location and source cues are attached, claims are routed across platforms, official feeds are placed alongside local observations, public questions and corrections are surfaced, and information products are made legible to different audiences.

Crisis Named Resources and event-based resources use event names, locations, and platform search to make crisis-specific information findable, even when ownership, expertise, purpose, and accountability are unevenly visible [32, 33, 34]. Digital volunteer work and organizations such as Humanity Road show public-facing crisis information becoming persistent, cross-event, and procedurally organized through workrooms, checklists, shared documents, Event Diaries, and Situation Reports [177, 178]. VOSTs configure a different public-official exchange: volunteer teams monitor social and traditional media, identify public concerns and misinformation, filter and aggregate information, and sometimes work through liaison roles near emergency operations centers [171, 51, 87]. Public-facing liveblogs organize crisis information through editorial curation, moderation, official feeds, local reports, volunteer contributions, and shared access to a common information surface [45]. Live video streams add visual immediacy and viewer interaction to crisis reporting and commentary, while wildfire communication research shows that nonofficial hazard accounts can become influential during active events even when influence and reliability do not align [53, 79].

The comparisons are clearest at the level of the public surface and the labor behind it. Crisis Named Resources are anchored by event names, locations, and searchability; weatherfluencer channels are anchored by recurring creator identity, even though individual archived videos may later be titled around a significant tornado, outbreak, or storm system so that the coverage can be found after the fact. Humanity Road and VOSTs show boundary-spanning information work organized through procedures, volunteer roles, workrooms, shared documents, responder-facing products, and, in some cases, liaison relationships with emergency-management operations. Weatherfluencer streams may include moderators, chaser networks, bots, and audience reports, but the public synthesis is organized through the host's screen and narration rather than through assigned volunteer tasks or responder-linked team procedures. Public-facing liveblogs organize crisis information through editorially curated textual surfaces, while on-scene live video reporting

centers on visual proximity to the event. Severe weather livestreams organize crisis information through a recurring creator-host, a live evidentiary display, prospective interpretation of operational meteorological data, and a returning platform audience.

### **3.2.2 Borrowing from Hurcombe's *Newsfluencer***

The crisis informatics lineage explains how weatherfluencer livestreams fit within a longer history of public-facing crisis information work, but it does not explain how that work becomes organized around a recognizable creator, a returning audience, and a platform economy of visibility and support. Hurcombe's newsfluencer framework supplies the creator-centered side of the weatherfluencer definition. Hurcombe defines newsfluencers as "platformatised creators" who operate according to the economic and cultural logics of online influencers to produce news content for participatory audiences [88]. His framework describes public information work organized through platform distribution, entrepreneurial monetization, self-branding, relational audience labor, and participatory audience cultures. Weatherfluencers share this creator-centered organization. Their work is attached to recurring channel identities, audience-supported revenue through donations, memberships, and sponsorships, community norms, off-platform spaces such as Discord servers, platform metrics, and long-duration relational labor with viewers. The crisis information arrangements described earlier show how public-private actors gather, route, verify, and organize information during emergencies. Hurcombe explains a different layer: how public information work becomes attached to a recognizable creator, a returning audience, and a platform economy of visibility and support.

Hurcombe specifies the newsfluencer across four intersecting dimensions: platforms, business models, labor, and cultures [88]. The platform dimension concerns how digital platforms distribute and monetize newsfluencer content, while also requiring creators to negotiate platform business interests, recommendation systems, and content formats. The business model dimension is subscriber-led, insecure, and entrepreneurial: creators may rely on advertising revenue, subscription systems, sponsorships, merchandise, live events, collaborations, and other diversified revenue streams. The labor dimension concerns self-branding, relational audience work, and passion-led production, where creators turn the self into a recognizable public brand and maintain audience relationships as part of the work. The cultural dimension concerns fandom-centric and parasocial audience formations, where participatory audiences gather around a creator, support that creator's work, and sometimes engage in conflict with competing sources or rival audiences. For weatherfluencers, these dimensions are attached to severe weather interpretation rather than general news commentary. A creator-host builds an audience through personality, recurring coverage, and platform presence, then draws that audience back during later storms, watches, outbreaks, and named events.

### **3.2.3 The Contestation of the Weatherfluencer**

The weatherfluencer's position at the intersection of these two lineages is precisely what makes the role contested within the weather enterprise. Crisis informatics has documented informal and emergent actors filling information gaps during disasters for decades, and that work has generally been treated as a net contribution to the broader response ecology, useful, even if messy and imperfect. The influencer logics that the meteorological community is perceiving change the picture slightly. When public safety interpretation is organized through monetized attention, parasocial audience cultures, platform engagement incentives, and entrepreneurial self-branding, the weather enterprise does not necessarily see a digital volunteer filling a gap. It sees a creator whose structural incentives may not align with the safety-first norms that have governed severe weather communication for decades. There are also other concerns, which split along two lines. Some within the weather enterprise object to the interpretation itself; an uncredentialed creator reading velocity

couplets and issuing shelter guidance to a hundred thousand people is, in their view, a public safety problem regardless of how accurate the read turns out to be. Others are more permissive on credentials, noting that meteorological judgment is partly learnable outside formal training, and that track record matters more than a degree. But, even that more permissive camp tends to draw the line at the influencer logics wrapped around the interpretation: Super Chat donations flowing during active tornado coverage, thumbnails engineered for clicks before a storm has materialized, thumbnail and title conventions that can reward more dramatic pre-event framing before the forecast outcome is knowable. It is the combination — safety-critical interpretation organized through a platform economy that does not distinguish between a tornado outbreak and a gaming stream — that the weather enterprise cannot reconcile with decades of norms around responsible public weather communication.

The question of how credentials come into play is another point of disconnect for the weather enterprise. Some weatherfluencers hold formal meteorological training: Max Velocity completed his bachelor's degree in meteorology during the period covered by this dissertation, and Texas Weather Center's David Reimer is a degreed meteorologist. Others hold no formal atmospheric science credential; Ryan Hall, whose concurrent audience during major events can reach six figures, is the most prominent example. The weather enterprise's response has been predictable: draw the credential line, enforce it through boundary work on #WxTwitter, and develop institutional programs like the AMS Certified Digital Meteorologist credential to try to bring the population inside a legible accountability structure. That line is difficult to enforce when a creator without a degree is reaching more people during a significant outbreak than most local broadcast markets, and when audiences have no reliable mechanism for distinguishing credentialed from uncredentialed practice at the point of encounter. Whitman showed the role at its most defensible: fast, lean, ahead of the official system. Fern showed what the influencer logics look like when the forecast window is long and the monetization is visible; pre-storm narratives escalated uncertainty, dramatic framing persisted even as model guidance shifted, and a public dispute unfolded that no institutional body had the authority to resolve. The contestation is not incidental to the role. It is a structural feature of what happens when crisis informatics lineage meets influencer logics in a safety-critical domain.

The crisis informatics lineage along with influencer logics help locate the weatherfluencer within recognizable traditions of public crisis information work and creator-centered platform media. The role is not a wholly new invention, it is primarily a reconfiguration of crisis volunteerism, one that becomes more distinctive precisely where it intersects with influencer and parasocial logics: live, hosted, prospective interpretation of safety-critical hazard information, organized through a platform economy and a creator identity that the weather enterprise has no existing category to govern. The sections that follow specify what that reconfiguration looks like across adjacent hazard domains, the platform and data conditions that make it possible, and the structural tensions it generates within the weather communication field.

### **3.3 Related Crisis Domains**

The configuration described above is most visible in U.S. severe convective weather, but nearby hazards and public-information domains share parts of the arrangement. The comparisons below clarify the scope of the definition by showing overlaps and differentiation.

#### **3.3.1 Wildfire Communication**

Wildfire communication presents the closest counterexample because it also involves remote monitoring, public-facing maps, official incident updates, and non-broadcast digital information sources. CAL FIRE

incident pages, the public channels created under the @ORFireInfo identity during the Shadow Lake Fire VOST effort, and contemporary services such as Watch Duty [201] show that wildfire publics already encounter digital infrastructures for gathering, mapping, routing, and updating hazard information [171]. The comparison starts from that overlap: wildfire already has public-facing intermediaries and digital crisis information work.

Wildfire differs from severe convective weather in its data, timing, and operational control. Severe convective weather can be narrated through frequently refreshing radar products: reflectivity, velocity, correlation coefficient, warning polygons, storm tracks, and chaser confirmation can be read together every few minutes. Wildfire information is less suited to that form of continuous screen-based nowcasting. Perimeter maps, satellite hotspots, smoke layers, air quality readings, evacuation zones, road closures, terrain, wind, fuels, and containment reports are all useful, but they do not create the same minute-by-minute visual grammar for public interpretation. Fire perimeters may lag the event, evacuation information can be managed by several jurisdictions, and fire behavior depends on terrain, fuels, suppression activity, access constraints, and changing winds in ways that are harder to translate through a single live evidentiary display. Operational wildfire communication also remains closely tied to incident command, evacuation authorities, land-management agencies, county emergency management, and fire information officers. Wildfire has strong digital information infrastructures, but its data structure and response organization do not produce the same recurring format of a creator-host interpreting fast-refreshing operational evidence for a broad live audience while the threat is still developing.

### **3.3.2 Earthquake Response**

Earthquake response provides a useful boundary case because it has strong public information demand, distributed monitoring, and significant digital crisis information work. Humanity Road's Haiti response, for example, shows that earthquake-related information can be gathered, routed, translated, verified, and monitored across distributed online systems during the response period [178]. After a mainshock, aftershock forecasts, damage maps, infrastructure reports, missing-person information, local needs, and response coordination can all become objects of continuing interpretation.

Earthquakes bound the category because the initiating hazard lacks the same forecast structure. Earthquake mainshocks are not predicted in the same prospective sense as severe convective storms. Aftershocks are a partial exception because they can be forecast probabilistically after a mainshock, but that work begins after the initiating event has already occurred. Earthquake communication can support intense public-facing crisis information work, including during-and-after monitoring, but it does not produce the same live format of creator-hosted interpretation before impact; there is little predictive element. The comparison helps bound the weatherfluencer category: the role depends on a hazard that can be monitored prospectively before it reaches particular places, not only interpreted after the first impact has occurred.

### **3.3.3 Hurricane Communication**

Hurricane communication is the closest comparison to the tornado events sampled in my studies, because it shares several conditions. Hurricanes are forecast prospectively, monitored through rich satellite and model products, updated across multiple days, and followed by geographically dispersed audiences before, during, and after landfall. Creators can cover hurricanes for long durations, integrate National Hurricane Center products, model guidance, radar, storm surge maps, field reports, webcams, and audience updates, and in some cases organize teams or field contributors around hurricane response. Although tornado outbreaks were the core domain of weatherfluencer coverage, particularly in the early period beginning around 2023,

Ryan Hall’s channel shows the same desk-based livestream format being used for hurricanes as well. The seasonal separation matters practically for channel content throughout the year: hurricane coverage can fill a different part of the annual severe-weather calendar and sustain the viewership through the late summer and early fall.

Hurricanes shift the comparison from minutes and hours to days. Hurricanes are usually visible as named systems days before their most severe local impacts, and the National Hurricane Center provides a centralized public forecast structure through cones, watches, warnings, and advisory cycles. Weatherfluencers may interpret, amplify, localize, or critique those products, but the public forecast object is already organized around a named storm with a widely recognized federal advisory source. The main interpretive problems often involve track shifts (sometimes significant ones), timing, intensity, storm surge, rainfall, flooding, wind, evacuation zones, and embedded tornadoes. Those hazards can become urgent and local, especially near landfall and in outer bands, but they usually sit within a longer lead-time communication environment than tornadic supercells.

The hurricane case shows that the tornado-centric weatherfluencer practice can extend across hazards, especially where prospective interpretation, local uncertainty, and audience demand for immediate place-specific guidance converge.

### **3.3.4 Public Health Surveillance**

Public health surveillance is another useful boundary case because it can involve continuous data, national scale, public dashboards, and independent interpretation. During COVID-19, case counts, hospitalization rates, deaths, vaccination data, wastewater signals, and regional dashboards became part of public information routines, while public health experts and public health influencers used social media to interpret pandemic information for nonexpert audiences [151, 103]. Independent public-facing interpreters also emerged around ongoing surveillance data. The Pandemic Mitigation Collaborative, led by Michael Høerger, provides recurring COVID reports and wastewater-derived estimates through a public dashboard, while accounts such as JWeiland became visible through recurring interpretation of wastewater, variant, and transmission trends [80, 93]. These examples show that public health can also produce source-standing questions: interpretation may become useful and widely circulated even when the interpreter’s institutional location, credentials, or accountability are not equally visible to audiences.

Public health surveillance works through a slower evidentiary tempo. Public health data usually becomes meaningful through aggregation, smoothing, comparison, and trend interpretation over days or weeks. The public questions also differ. Instead of tracking whether a visible hazard is approaching a particular place within minutes or hours, public health audiences are often interpreting changes in prevalence, transmission, risk, policy, and personal mitigation under slower and more cumulative conditions. Public health surveillance can support independent explanation and dashboard-based interpretation, but it does not produce the same recurring format of creator-hosted live interpretation before impact.

## **3.4 Platform Infrastructure and the Data Stack**

The definition established in Section 3.2 describes what weatherfluencers are and where they sit within the weather communication field. They do not describe how that position is made materially possible. The next step is to examine the platform and technical arrangements that let creators display evidence, narrate updates, receive audience input, monetize attention, and sustain a channel between events. This section characterizes those conditions across four dimensions: the appropriation of entertainment infrastructure for civic purposes,

the data stack and toolchain on which interpretive practice depends, the historical emergence and growth of the creator population within those conditions, and the distinctive form of audience relationship that livestream platforms make available.

### 3.4.1 YouTube as the Platform Setting

YouTube Live is the primary platform examined in this dissertation because it offers a comparatively compatible environment for long-duration severe weather livestreaming. The platform is primarily entertainment and creator-economy infrastructure, with features built around creator channels, recommendation, monetization, Live Chat, archiving, and replay. For weatherfluencers, those features align with several practical requirements of severe weather coverage: streams can remain live for many hours, archived coverage can be reviewed after the event, viewers can find streams through search and recommendation, and creators can sustain the work through platform monetization. Compared with Twitch and TikTok, YouTube offers a more compatible combination of long-duration livestreaming, discoverability, archiving, replay, chat, and monetization features [214, 213, 191, 188]. Platform fit gives creators a workable base, but the severe-weather communication environment has to be assembled in practice.

Pipek and Wulf's concept of *infrastructuring* specifies that assembly as an ongoing relation between information systems and work practice. Information systems become work infrastructures through configuration, appropriation, repair, and integration into existing routines, tools, standards, and conventions [148]. Weatherfluencer livestreams show this process in the combination of YouTube Live with screen-capture and broadcast software, typically Open Broadcaster Software (OBS) or equivalent tools; radar visualization platforms; National Weather Service warning overlays; maps; chaser feeds; browser windows; alert feeds; chat moderation tools; and visual annotation systems. YouTube supplies live distribution, chat, archiving, and monetization. The severe-weather interpretive workspace is built around those functions through the creator's toolchain and streaming practice.

The livestream also makes parts of that infrastructure visible as the event unfolds. Creators switch layouts, add or remove data layers, repair dropped feeds, reconfigure chaser video, troubleshoot audio or latency problems, and continue narrating while the hazard develops. Pipek and Wulf describe infrastructures as often receding into the background during routine use and becoming visible through breakdown, repair, or local adaptation [148]. In weatherfluencer streams, viewers often see the host reading radar while also maintaining the improvised civic information environment. These practices support what the Study 2 analysis describes as interpretive structure: the organization of visual information that allows audiences to observe analytical reasoning as it unfolds across heterogeneous data sources in real time.

Boyd's work in networked publics adds the audience-facing consequences of this platform architecture. She conceptualizes networked publics as spaces constructed through networked technologies and as collectives that emerge through the intersection of people, technology, and practice [23]. In this perspective, affordances configure participation without determining it. Weatherfluencer livestreams engage the affordances Boyd identifies in networked publics: persistence, replicability, scalability, and searchability. Archived recordings persist after the event and allow later review of a creator's interpretive track record. Stream segments, screenshots, clips, and chat excerpts can be replayed and circulated. A single creator or small team can reach large simultaneous audiences without broadcast production infrastructure. Titles, descriptions, archived videos, platform search, and recommendation systems can route viewers toward relevant coverage during and after an event.

Hamilton et al.'s characterization of livestreaming as "live mixed media" specifies the interactional form created by this architecture [75]. Weatherfluencer streams bring video, radar and warning displays, creator narration, Live Chat, and ambient audience activity into one continuous interface. Broadcast meteorology

can incorporate viewer reports, social media inputs, spotter observations, and field footage, usually through selection by the production team or presenter. In YouTube Live, audience activity remains visible as a continuous layer alongside the ongoing interpretation. That co-presence modifies the audience relationship in ways developed in Section 3.4.4.

### **3.4.2 The Visualization Toolchain**

The platform appropriation described in Section 3.4.1 addresses the distribution and audience-relationship infrastructure of the role. An equally constitutive layer is the data stack and software toolchain on which interpretive practice itself depends, a layer whose significance extends beyond technical description into the accountability analysis.

The most prevalent tools within the ecosystem include GR2Analyst (Gibson Ridge), which provides high-resolution Level II radar analysis with storm interrogation and velocity interpretation capabilities; RadarScope, which offers mobile and desktop Level III radar access with algorithm-derived products; Pivotal Weather, which aggregates model guidance, upper-air analysis, and surface observations in an integrated forecasting interface; and WeatherWise, which provides real-time storm-based warning overlays and threat assessment displays. These tools are commercially produced, subscription-supported products of the private weather services sector rather than freely available public resources. Their adoption by weatherfluencers creates a technical dependency on commercial vendors whose products were designed primarily for professional meteorological users, including broadcast meteorologists, emergency managers, and private weather services clients. The use of these tools by weatherfluencers is both a marker of interpretive seriousness, distinguishing their practice from casual social media weather discussion, and a form of credentialing-by-association that is examined from the perspective of the community responses it generates.

The most fragile point in the stack is the platform streaming infrastructure itself: YouTube Live's server architecture, encoding pipelines, and content delivery network, supplemented by third-party broadcast software and, in many cases, by external hardware capture cards, dedicated streaming computers, and network equipment. The Study 2 analysis documents tool failures, streaming latency, radar data desynchronization, and chat interface malfunctions occurring during active severe weather coverage, generating mid-stream repair work that creators must perform while simultaneously maintaining interpretive narration for audiences who may be in the threat area (examined in Chapter 7).

The toolchain is not only a structural condition of the role but a site of visible practice. Creators routinely demonstrate their competence with the toolchain on stream: switching radar products, adjusting window configurations, troubleshooting streaming hiccups, integrating new data layers as conditions evolve. This management work is itself observable, and audiences attend to it. A creator who fluently navigates GR2Analyst between reflectivity and velocity products, repositions a chase feed when a storm shifts, or repairs a dropped overlay without losing narrative thread is making technical competence legible in the same continuous frame as interpretive competence. The toolchain functions doubly in the role: as the infrastructural dependency described above, and as one of the ongoing displays through which audience-constituted authority is built and sustained. In some cases, creators also add their own interpretive layers over official and operational inputs, including storm outlook or severity scores, automated alert services, and creator-drawn threat polygons.

### **3.4.3 Weatherfluencer Emergence and Growth**

The weatherfluencer ecosystem as a recognizable population of audience-facing severe weather livestream interpreters on YouTube emerged as a cohesive phenomenon roughly between 2017 and 2022. Earlier mobile

and social livestreaming platforms, including Periscope and Facebook Live, had already made live crisis video, real-time audience interaction, and platform-based public reporting more familiar during unfolding events [53]. Those experiments are best understood as adjacent precursors rather than direct origins: they established live video and interaction as crisis communication practices, while YouTube’s longer streams, archives, channel subscriptions, monetization, and recommendation systems supported the recurring creator-hosted severe-weather format examined here. The convergence of several conditions during this period explains the timing. YouTube Live reached sufficient technical maturity and monetization infrastructure to support multi-hour streams at reliable quality. The Level II and Level III radar data infrastructure described in Section 3.4.2 became increasingly accessible through consumer-facing visualization tools. Audience familiarity with livestreaming as a format, driven primarily by gaming and e-sports content, generated a population accustomed to extended synchronous viewing. And mobile device penetration reached levels at which significant audiences could access real-time severe weather interpretation during events, including while sheltering.

The growth trajectory within this period was not linear. Individual creators who established early presence on YouTube with consistent multi-event coverage built subscriber bases that compounded across seasons. Severe weather’s seasonal recurrence allows audiences to observe creator performance repeatedly across events, enabling credibility to accumulate over time. Ryan Hall represents the most prominent example within the ecosystem examined by this dissertation, having grown from a regional following to an audience that during major tornado outbreak events reaches concurrent viewership figures in the hundreds of thousands (see Table A.2 in Appendix A).

Platform algorithms also shape which creators become visible. Cotter’s analysis of how digital creators navigate algorithmic visibility systems on Instagram offers a useful parallel for thinking about YouTube’s recommendation and search architecture: creators who achieve early engagement within a content category benefit from compounding visibility, as algorithmic ranking systems surface high-engagement historical content to new audiences who then contribute additional engagement that reinforces ranking [40]. This means the weatherfluencer creator population that audiences encounter is not simply the population of individuals who have attempted sustained severe weather interpretation, but the subset of that population that platform algorithms have surfaced at scale. The implications of this selection mechanism for what the creator population looks like are developed in Section 3.7, and its implications for the tension between audience growth incentives and responsible safety communication are developed in Section 3.8.

### **3.4.4 Creator-Audience Relations in Livestreaming**

Weatherfluencer livestreams carry forward the relational stakes of weather interpretation in a different interactional setting. As reviewed in Section 2.6.5, Sherman-Morris’s tornado study found that parasocial interaction and trust were associated with stated likelihood of taking shelter if urged by a local weathercaster, while the later Hurricane Irma study found no relationship between parasocial relationship and evacuation or hurricane risk perception [166, 168]. The comparison leaves open how audience familiarity operates when the interpreter is no longer embedded in local broadcast routines, station affiliation, and the professionally legible role of the television weathercaster.

Weatherfluencer livestreams attach that question to creator-centered audience work. Hurcombe’s newsfluencer framework identifies public information actors whose visibility depends on platform distribution, creator labor, monetization, self-branding, parasociality, and participatory audience engagement [88]. Abidin’s work on intimacy and visibility labor specifies how creator-audience closeness is maintained through acknowledgement, interaction, disclosure, follower participation, and platform visibility [2]. In weatherfluencer streams, this relational work is folded into live hazard interpretation. Acknowledging questions, re-

sponding to reports, reading donations, and recognizing audience presence help maintain the venue through which viewers continue to watch, ask, report, compare, and decide whether the account remains usable.

Live Chat also changes the audience relationship by making audience activity visible to other viewers, including those who never post themselves. Viewers can see other people asking about towns, reporting local conditions, repeating warnings, reacting to radar changes, and trying to direct the creator's attention. They can also see which inputs disappear into the speed of chat, which receive moderator attention, and which are taken up by the creator. Audience participation becomes part of the visible interpretive environment. Broadcast meteorology can cultivate strong local familiarity and can incorporate viewer reports, social media posts, spotter observations, and field footage through station routines and presenter selection. In YouTube Live, the audience can watch the selection process occur alongside the ongoing weather interpretation. There is also partial reciprocity through the stream: audience members can address the creator directly, but the creator's response is selective because attention is distributed across many different streams of input, not limited to data products and the chat. The relationship remains asymmetric: audience address is continuously available, creator response is selective, and only some audience inputs become consequential for the public account. A question about a town, a local report, or a correction may pass by unread, receive moderator attention, prompt a verbal response, or be incorporated into the creator's narration.

The relationship also extends across quiet-weather periods. Community posts, short-form videos, social media activity, channel memberships, and archived streams keep the creator attached to viewers' weather routines between severe-weather events. Archived coverage gives returning viewers a record of prior interpretation, channel style, source use, and severe-weather judgment. Between-event activity also maintains expectations about how the creator addresses the audience, what kinds of questions or reports are useful, and how moderators and viewers manage the chat. During active weather, then, Live Chat functions as a participation layer already shaped by prior exposure, channel norms, moderator practices, and expectations about selective uptake.

Recurrence should be treated as a mechanism of audience evaluation rather than as a categorical distinction. Weatherfluencer livestreams are episodic at the level of individual storm days, outbreaks, and named events, but recurring at the level of channel, host, audience, and interpretive routine. This recurrence sits alongside other persistent crisis-information arrangements. Humanity Road and VOSTs, for example, demonstrate cross-event persistence through organizations, procedures, memberships, shared workspaces, repeated deployments, Event Diaries, Situation Reports, and public- or responder-facing information products [178, 171, 51]. Weatherfluencer recurrence is organized differently: through channel identity, creator persona, archived streams, repeated severe weather coverage, and audience return across storm days and seasons. That structure gives viewers opportunities to encounter the same host across comparable hazards, to see recurring habits of caution or escalation, and to compare present interpretation with official products, archived coverage, remembered prior events, or subsequent outcomes. Recurrence helps explain how audience-constituted authority can accumulate outside the institutional pathways mapped later in Table 3.1.

### **3.5 What Makes the Weatherfluencer Possible**

Several structural conditions help explain why this role has become visible in severe weather: public access to professional-grade meteorological data, livestreaming infrastructure that allows creators to reach large audiences without newsroom affiliation, and a fragmented media environment in which younger audiences increasingly encounter news and crisis information through platform feeds [147, 155, 59, 30]. Local broadcast meteorology and national professional weather media still provide institutionally embedded severe weather coverage through news organizations, professional staff, editorial routines, and accountability

structures. Creator-led livestreams draw on a different arrangement. The conditions below explain why severe weather has become a particularly workable domain for that arrangement.

### 3.5.1 Open Data

The first and most foundational condition is open data. The National Weather Service, operating under a federal mandate to provide weather information freely and without restriction, publishes its full suite of operational products as public goods: Level II and Level III radar feeds, numerical weather model outputs, Storm Prediction Center convective outlooks, mesoscale discussions, and the full text of every watch, warning, and advisory it issues [130, 181]. These are not summary products designed for general audiences; they are the same operational data products that trained meteorologists use to issue forecasts and warnings. Professional-grade visualization software, including GR2Analyst, Pivotal Weather, and RadarScope, has made this data accessible to any user willing to invest in the learning curve. The open data infrastructure of the NWS is a constitutive precondition for the weatherfluencer story. Without it, non-institutional creators would have far less access to the high-resolution, frequently updated evidence needed to produce credible real-time interpretation. This structural dependency carries a direct implication: proposals to reduce NWS operational funding, consolidate forecast offices, or privatize weather data products, all of which have surfaced in recent United States federal budget and policy debates [41, 42, 164, 208, 172], would materially affect not only the formal warning system but the data layer on which the entire weatherfluencer ecosystem depends. The National Center for Atmospheric Research, which supports ensemble modeling and forecast research that feeds into the NWS operational products weatherfluencers interpret, faced proposed staffing reductions and budgetary uncertainty in 2025–2026; the precise status of those changes remained fluid at the time of writing.<sup>1</sup> Broadcast meteorologists and private weather services can supplement degraded public data with commercial data products; their institutional resources and contractual relationships with private providers create redundancy that platform-native creators lack. Weatherfluencers depend on NWS open data as a constitutive rather than supplemental input, which means federal budget decisions that reduce NWS operational capacity expose a structural vulnerability specific to platform-native interpretation, one with no institutional backstop.

### 3.5.2 Visual Legibility

Open data alone does not produce a large livestream audience. The second condition, visual legibility, concerns the form in which operational weather evidence can be shown, pointed to, and explained to viewers in real time. Legibility does not mean that radar is self-explanatory or equally accessible to everyone watching. It means that the display provides visible features that a host can connect to places, movement, uncertainty, and possible consequences in ways that livestream viewers can follow.

Professional-grade meteorological visualization software, not consumer-facing weather applications, is the required primary medium of real-time interpretive practice. Radar imagery has a particular visual grammar that, while not trivial to master, is learnable with repeated exposure and modest training. Color-coded reflectivity displays, wind velocity couplets indicating storm rotation, and the characteristic *hook echo* signature of a supercell capable of producing a tornado are patterns that dedicated enthusiasts can learn to identify from publicly available educational resources. Weatherfluencers use this visual structure systematically: they narrate what they are seeing on screen, annotate the display in real time, and move between the technical vocabulary of meteorology and the place-based concerns of viewers. The same display lets viewers follow the explanation without doing the full technical analysis themselves. They can see the

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<sup>1</sup>For current status of NCAR and NOAA funding changes, see [208, 172, 99] and subsequent reporting.

feature being named, the place being identified, and the assessment being revised as new scans arrive. In this sense, radar becomes usable as a shared surface for live explanation, revision, and place-specific attention.

### 3.5.3 Continuous Updating

Visual legibility would sustain a single broadcast, but it would not sustain a practice. The third condition, continuous updating, is what makes real-time coverage both necessary and rewarding over extended durations. NWS radar observations are generated through periodic *volume scans*, which typically refresh every four to six minutes rather than providing continuous real-time observation.<sup>2</sup> Watch and warning products issue, update, and expire across dynamic polygons as storm cells evolve. This near-continuous data refresh creates the informational layer for multi-hour livestreams: there is always something new to interpret, always a reason for audiences to remain attentive, always a next update that may change the picture. The platform dynamics of YouTube, which rewards sustained engagement and longer session durations through its recommendation and notification infrastructure, align with this data rhythm [43]. Continuous updating and platform incentive structure are mutually reinforcing in the severe weather context because the data rhythm gives creators and viewers a recurring reason to remain with the stream.

### 3.5.4 Seasonal Recurrence

The fourth condition, seasonal recurrence, is especially important for the authority argument developed in this chapter. Severe convective weather in the United States follows predictable climatological patterns: a primary severe weather season centered on the Southern Plains and Deep South in spring, extending into the Midwest and Ohio Valley, with secondary activity through summer and early fall, hurricane activity from early through late fall, and winter storm events providing year-round coverage opportunities across different geographic corridors. This predictable recurrence structure means that weatherfluencers do not face each event as strangers to their audiences. Although continuous streaming is relatively new, creators increasingly maintain visibility between major events through forecast videos and occasional subscriber-only content, returning to the same viewers across seasons and building track records that accumulate cross-event credibility. A creator who correctly characterizes a significant tornado threat in April is better positioned in the audience's credibility assessment come June. The audience, in turn, develops familiarity with the creator's interpretive style, threshold calibration, uncertainty practices, and protective communication patterns. Over time, this repeated exposure allows viewers to evaluate the creator's interpretive performance across multiple comparable events, building credibility judgments from a visible track record rather than a single moment of interpretation.

### 3.5.5 Remote Monitoring

The fifth condition, remote monitoring, is what makes the practice scalable in a way that field-dependent interpretation is not. Severe weather interpretation requires no physical presence at the event. The data

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<sup>2</sup>The U.S. Next Generation Weather Radar (NEXRAD) network consists of Doppler weather radars jointly operated by the National Weather Service, Federal Aviation Administration, and U.S. Air Force [127]. These radars sample the atmosphere through predefined Volume Coverage Patterns (VCPs), which consist of a sequence of 360° antenna sweeps at multiple elevation angles completed within a specified time interval [127]. In precipitation mode, volume scans generally complete in roughly 4–6 minutes depending on the selected VCP [139]. During severe-weather operations, dynamic scanning techniques such as the Supplemental Adaptive Intra-Volume Low-Level Scan (SAILS) may insert additional 0.5° low-level scans within the volume, increasing the temporal frequency of near-surface reflectivity and velocity updates [141].

products that support credible real-time interpretation, including radar feeds, model guidance, SPC outlooks, spotter reports, and NWS warning text, are all accessible from any internet-connected location. A creator can track a tornado outbreak across three states simultaneously from a fixed studio setup, switching seamlessly between regional radar loops, integrating storm chaser feeds from distributed field contributors, and narrating the aggregate picture to an audience that is geographically dispersed across the entire threat area and beyond. The practice does not require vast infrastructure investment, formal NWS or SPC authorization, or geographic proximity to the hazard. Entry is determined primarily by skill, equipment, and the ability to attract and accumulate an audience.

### **3.5.6 Local Demand**

Local interpretive demand refers to the geographically specific questions that severe convective weather generates as an outbreak unfolds. An outbreak is not a single object of attention: it may involve many states, many hours, many local concerns as the storm system evolves, snow in one part of the U.S. and tornadoes elsewhere, hundreds of watch and warning polygons, and affected places changing at the same time. Official warnings and broadcast coverage remain central to that environment, and local NWS offices and meteorologists bring familiarity with the towns, roads, terrain, recurring hazards, and audience needs in their viewing areas. People often arrive to livestreams with more granular questions: whether a particular cell is rotating, whether the storm is tracking toward a school, highway, relative, or neighborhood. Platform-native livestreams can respond to this demand because a host can move among radar products, warning updates, chaser feeds, field reports, and viewer questions while explaining why attention is shifting from one place to another. The granularity of severe weather leaves room for multiple creator-hosted interpretations to circulate at once, and specialized accounts arise for particular regions, such as Texas Weather Center's Texas-only coverage, storm setups, or audience relationships.

## **3.6 Structural Position within Weather Communication Ecology**

### **3.6.1 The Weather Communication Field**

The weather communication field is the patterned ecosystem within which interpretive authority in U.S. severe weather is ordinarily acquired, recognized, and exercised. It includes the National Weather Service, Storm Prediction Center, and National Hurricane Center as federal warning and forecast authorities, broadcast meteorologists and local news organizations as professionally embedded interpretive intermediaries, and private weather services operating with contractual and reputational accountability [135, 181, 140]. These actors differ in mandate and organizational form, but they share a common normative expectation within the weather enterprise: public severe-weather authority is expected to be institutionally grounded and accompanied by formal accountability.

The shift away from scheduled broadcast news toward platform feeds helped create openings for creator-centered severe weather interpretation. Research on media consumption documents a sustained generational movement toward streaming, social platforms, and algorithmically curated feeds as everyday information environments, particularly among younger audiences [147, 155, 59, 30]. In those environments, institutional affiliation does not disappear, but it appears alongside other cues: engagement metrics, repeated exposure, creator familiarity, platform recommendation, visible reasoning, and audience response. Thorson and Wells's account of curated flows helps characterize the audience-side shift because people encounter information through mixes of editorial, algorithmic, social, and self-selected pathways rather than through

a single institutional channel [187]. Anderson et al.'s account of post-industrial journalism helps characterize the production-side shift: digital media loosen the older alignment among professional institutions, production infrastructure, and public access, making room for new entrants, audience participation, platform distribution, and data-intensive forms of public information work [16]. The analogy concerns the media environment rather than occupational identity. Severe weather interpretation now circulates in a setting where institutional standing does not automatically determine who becomes visible, who reaches audiences, or whose interpretation viewers return to during active events.

### **3.6.2 Ecological Map: Weatherfluencers Among Adjacent Actors**

Each adjacent actor within the weather communication field stands in a specific relationship to weatherfluencers. Those relationships are not simple competition or substitution. They involve data dependencies, overlapping interpretive functions, platform competition, technical support, and different accountability structures.

The NWS and its local forecast offices have a layered relationship to weatherfluencer practice. First, NWS products provide much of the evidentiary base on which weatherfluencer streams depend: radar feeds, watch and warning issuances, mesoscale discussions, convective outlooks, and model guidance. Without those public products, platform-native severe weather interpretation would lose much of the data layer that makes it credible to viewers. Second, weatherfluencers often translate NWS products for lay audiences, explaining warning polygons, outlook categories, mesoscale discussions, and radar signatures in real time for viewers who may not engage those products directly. In that sense, they perform some of the public interpretive work that broadcast meteorologists have historically carried out between NWS products and local audiences.

NWS offices and weatherfluencers also meet audiences on some of the same platforms. NWS local offices and the Storm Prediction Center now post radar imagery, warning graphics, and safety messaging on the same platforms where weatherfluencers circulate alerts and stream live coverage. Audiences may encounter both during the same event and compare them against each other. Weatherfluencers frequently amplify official warnings and reinforce NWS messaging, but they may also identify possible threats before corresponding warnings are issued, as in the Whitman case, or characterize risk in ways that differ from official products. NWS accounts remain institutional communicators using platform distribution; weatherfluencers remain platform-native interpreters whose standing depends on audience uptake.

Broadcast television meteorologists are the closest institutional comparison for the interpretive intermediary role that weatherfluencers now partially inhabit. Before platform-native creators reached large weather audiences, local broadcast meteorologists were among the most visible public intermediaries between NWS products and viewers seeking locally contextualized guidance. Their position was built through local television institutions: station affiliation, repeated presence in a viewing area, newsroom routines, professional norms, and public accountability. Broadcast stations are also part of federal alerting infrastructure: FCC rules include radio and television broadcast stations among Emergency Alert System participants and require analog and digital AM, FM, and TV broadcast stations to conduct weekly EAS tests [52]. Employment within a local news institution could also support forms of local knowledge that matter during severe weather, including familiarity with towns, roads, terrain, recurring hazards, audience expectations, and relationships with local emergency-management systems. Henson documents how television weathercasting developed as both a professional and relational public role, pairing meteorological expertise with repeated local presence and audience familiarity [76].

Weatherfluencers now occupy a partially overlapping intermediary function within the same information environment, but their public standing is organized differently. They may develop regional familiarity

or recurring relationships with viewers, but those relationships are built through platform presence, repeated event coverage, audience return, chat participation, and visible interpretive work rather than employment within a local broadcast institution. Broadcast meteorologists build credibility through station affiliation, repeated presence in a viewing area, newsroom routines, professional accountability, and editorial support. Weatherfluencers do so through recurring platform visibility, audience familiarity, and publicly visible interpretive reasoning. Chapter 6 examines how viewers evaluate these source types across dimensions such as credibility, trustworthiness, legitimacy, and perceived usefulness.

Local news organizations share the broadcast meteorologist's accountability and local presence characteristics but add an editorial layer that produces weather coverage with different temporal and communicative properties. During active severe weather events, local television stations frequently suspend regular programming for continuous coverage, but that coverage operates within a broadcast infrastructure characterized by segment structure, production staff, on-set coordination, and editorial oversight that is organizationally more complex than single-creator livestreaming and structurally constrained by broadcast conventions in ways that YouTube Live is not. The ecological significance of this distinction is temporal: the continuous, uninterrupted, multi-hour format that gives weatherfluencers a structural advantage is structurally less available to local broadcast institutions organized around news segments, advertising breaks, and multi-anchor productions. Local news and weatherfluencers occupy partially complementary temporal niches within the same severe weather event, with local broadcast dominating the segmented, high-production coverage and weatherfluencers dominating the uninterrupted, sustained monitoring format.

National professional weather media complicate this local-broadcast comparison. The Weather Channel and Fox Weather, for example, can provide continuous weather coverage beyond a single local viewing area, making them closer to weatherfluencers in temporal availability than local broadcast stations are. Their authority structure is still different. They remain organizationally embedded professional media institutions, with credentialed meteorological staff, production infrastructure, editorial routines, and institutional accountability that single-creator or creator-led livestreams do not share.

Trained storm spotters occupy a position in the ecosystem that is upstream rather than parallel to weatherfluencer practice, and the ecological relationship between them is one of data contribution rather than competition or substitution. NWS SKYWARN spotters provide observational ground truth to local forecast offices, feeding into the official warning system that NWS products formalize. Storm chasers occupy a related but distinct position: while they may document storms visually or livestream from the field, their primary contribution is observational rather than interpretive. Some high-profile chasers also provide real-time commentary or analysis, but the defining feature of weatherfluencer practice remains sustained remote interpretation of meteorological data rather than field-based observation. In the weatherfluencer information environment, spotter reports frequently appear as a secondary data layer that creators integrate in real time, alongside radar imagery and NWS warning products, to enrich their interpretive picture during active events. This means spotters and weatherfluencers are not competing for the same function but operating at different points in the information chain: spotter observation feeds into both the official system and, indirectly, into the weatherfluencer's interpretive synthesis. Spotters contribute data upward into a system whose interpretation happens elsewhere; weatherfluencers sit at the interpretive end of that chain, not in competition with spotters but downstream of them.

Social media aggregators, accounts that redistribute NWS alerts, radar imagery, and storm reports through platforms such as X without adding interpretive work, occupy an adjacent but analytically distinct position. Their ecological function is amplification of existing signal, circulating what official sources have already produced, and their relationship to weatherfluencers is most usefully understood as occupying a different level of the information hierarchy within the same platform environment. During major events,

aggregator accounts and weatherfluencer livestreams coexist in audience information diets, with aggregators providing rapid discrete alerts and weatherfluencers providing sustained interpretive context. The two functions are complementary rather than substitutive, and the distinction between them within the platform environment reinforces the definitional point that interpretation, not redistribution, is the weatherfluencer's constitutive practice.

Private weather services, including commercial enterprise forecast providers, occupy an institutionally structured position even when organizationally private. The NWS describes America's Weather and Climate Industry as including private-sector consultants, media, equipment providers, and information service companies that make NWS information available and provide specialized services outside the NWS mission; AMS similarly describes the private sector as providing value-added products and custom-tailored weather and climate information services [135, 41, 42]. Their accountability is organized through client and service relationships, employer oversight, professional norms, and reputational standing rather than through statutory delegation. Their ecological relationship to weatherfluencers is primarily one of indirect influence: the professional-grade software tools that many weatherfluencers use, including Pivotal Weather and similar commercial radar visualization platforms, are products of the private weather service sector, creating a technical dependency that parallels the data dependency on NWS open products. Some private weather providers also produce public-facing social media content during major events, creating a competitive dimension for audience attention that is structurally similar to the NWS social media competition described above, though without the governmental authority dimension. Table 3.1 summarizes my analytic synthesis of the authority and accountability positions most relevant to this chapter; it is intended as a map of relationships used in these studies rather than as an established taxonomy from weather communication scholarship.

The weatherfluencer is simultaneously dependent on NWS data, functionally overlapping with broadcast meteorologists in the interpretive intermediary role, in temporal complementarity with local broadcast news, downstream of spotter observational labor, coexisting with aggregators in the platform attention environment, and technically dependent on private sector visualization infrastructure. This entanglement is the accountability problem. Weatherfluencers can become consequential within the warning ecology through NWS data, broadcast-like interpretation, spotter and chaser inputs, platform attention, and private visualization tools without being accountable through the institutions that organize those relationships.

The weather communication ecology adds the authority problem that makes this configuration contested. Weatherfluencers interpret official products, operational displays, field observations, and local reports in a field where safety-relevant public interpretation has historically been tied to statutory warning authority, professional meteorology, local broadcast institutions, and formal accountability structures. They make operational evidence publicly interpretable and action-relevant from outside the official warning chain and the institutional accountability structures that stabilize broadcast and government weather communication. The next section turns to the platform, data, toolchain, monetization, chat, and creator-audience infrastructures that make hosted severe weather interpretation possible at scale.

### **3.6.3 What Weatherfluencers are Not**

The definition also requires a boundary. Several adjacent figures share pieces of the weatherfluencer arrangement. Broadcast meteorologists interpret severe weather for public audiences. NWS offices use social media and other digital channels. Trained storm spotters provide real-time observations. Automated weather accounts can display radar, alerts, and chat surfaces around the clock. These figures are close enough to clarify the category, but they are not the same kind of actor. What distinguishes these adjacent arrangements is the mechanism through which public standing is produced and accountability is organized, not simply platform use, audience size, or technical competence.

Table 3.1: Authority Structures within the U.S. Weather Communication Field

| Authority Type                              | Actor Position                                | Definition                                                                                                                                                                                                    | Basis of Authority                                                                          | Accountability Structure                                                                                            |
|---------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Statutory Authority                         | Statutory Warning Authorities (NWS, SPC, NHC) | Federally authorized agencies empowered to issue official watches, warnings, and advisories                                                                                                                   | Statutory authority, federally delegated                                                    | Federal oversight, administrative review, and formal error-correction processes                                     |
|                                             | Emergency Management Agencies                 | State and local agencies responsible for operationalizing warnings and coordinating response                                                                                                                  | Statutory and administrative authority                                                      | State and local governance, legal liability, and public accountability                                              |
| Professional Authority                      | Field-Embedded Credentialed Meteorologists    | Degree-holding meteorologists employed within broadcast news organizations or other institutional media settings                                                                                              | Professional credentialing combined with institutional employment                           | Newsroom and employer oversight, FCC station obligations including EAS participation, and professional norms        |
|                                             | Platform-Embedded Credentialed Meteorologists | Degreed meteorologists producing weather content on digital platforms outside traditional institutional employment                                                                                            | Professional credentialing operating without institutional accountability bundle            | Variable; employer oversight if affiliated, reputational and platform accountability if independent                 |
|                                             | Private Weather Services                      | Commercial enterprise forecast providers (e.g., AccuWeather, Baron, DTN) employing credentialed meteorological staff and operating under contractual obligations to clients                                   | Professional credentialing combined with corporate/contractual accountability               | Client/service relationship accountability, employer oversight, reputational accountability, and professional norms |
| Audience-Constituted Authority <sup>a</sup> | Weatherfluencers                              | Platform-native creators who interpret meteorological data in real time for safety-relevant audiences and accumulate authority through audience uptake across repeated events                                 | Interpretive authority constituted through audience uptake rather than formal credentialing | Platform terms of service and reputational accountability; no statutory delegation or formal credential requirement |
|                                             | Weather Enterprise                            | The patterned ecosystem of governmental agencies, professional organizations, media actors, and platform-native interpreters sharing overlapping norms, infrastructures, and informational dependencies [163] | Varies by actor position within the field                                                   | Varies by actor position within the field                                                                           |

<sup>a</sup> Audience-constituted authority is used here as an analytic label for the form of public standing examined in this dissertation. It does not describe a formal authority recognized by the weather enterprise. It refers to the way recurring audience uptake, visible interpretive performance, and cross-event familiarity can make a creator's severe weather interpretation consequential despite the absence of statutory delegation or a uniform professional credential requirement.

One potential misreading requires preemptive clarification. The boundary runs along the *mechanism of authority*, not the presence or absence of formal credentials. A degreed meteorologist who operates platform-natively and accumulates interpretive authority through audience uptake rather than professional appointment satisfies the definition; a platform-native creator whose authority derives primarily from field recognition or organizational affiliation does not. Weatherfluencers may hold meteorological credentials. What makes them weatherfluencers is that those credentials are not the operative basis of the authority they exercise in practice.

Broadcast meteorologists hold authority that is primarily field-legitimated: conferred through professional credentialing, institutional employment, organizational accountability structures, and editorial oversight rather than constituted through audience uptake. Broadcast stations' FCC licensing obligations, including mandatory participation in the Emergency Alert System under 47 C.F.R. Part 11 [52], formally integrate the broadcast channel into the official warning chain in ways that platform-native distribution is entirely outside. Their accountability configuration is correspondingly layered and explicit.

NWS forecasters and local forecast office social media accounts hold authority that is both legitimated and accountable within a federal statutory framework. Platform distribution does not alter this configuration: NWS communication delivered through Twitter or Facebook remains communication produced by federal employees operating under formal governmental oversight, regardless of the channel through which it reaches audiences. Platform nativity, in the definitional sense this chapter establishes, requires that authority be constituted through platform means; NWS social media communication is not.

Trained storm spotters primarily provide observations for the official warning system, including confirmatory data such as whether a tornado is on the ground. Their reports require judgment about what they are seeing, but the role is organized around supplying ground-truth observations to NWS forecast offices for use in official warning decisions; that organizational logic differs from the sustained public interpretation and audience-constituted authority the weatherfluencer definition describes.

AI-generated and automated weather accounts mark a boundary case for the category. Some use the same open-data infrastructure and visual conventions as weatherfluencer content, including continuous radar displays, automated alerts or narration, and Live Chat surfaces. A 24/7 automated channel may function more like a platform-native continuous weather feed, similar in programming form to the Weather Channel's recurring "Weather on the 8s," than a weatherfluencer livestream. The Weather Channel is a professional weather organization whose coverage on the 8s is various loops of radar and any relevant watches or warnings, while an automated creator-branded feed is organized through platform infrastructure, LLMs, and brand extension rather than through a professional newsroom.

Ryan Hall's "Y'all Bot" illustrates this point. Y'all Bot is an automated, LLM-supported weather channel within the Ryan Hall, Y'all platform ecosystem. It can provide continuous weather coverage, show radar loops, and maintain a branded weather presence while Ryan is not live. However, it is not a replacement for Ryan's creator-hosted severe weather livestreams. In those livestreams, the public account is organized through Ryan's live, human selection and interpretation of data. Viewers encounter a human host making judgment calls in real time, including when to escalate, when to hedge, when to move attention from one storm to another, and how to explain conflicting evidence.

AI assistance within a creator's workflow has also become controversial. The related #WxTwitter discourse around "AI slop"<sup>3</sup> is an adjacent issue next to the weatherfluencer category boundary rather than a different category of weatherfluencer. In the materials collected for this chapter, the "AI slop" concern appears most often around platform forecast content outside the core severe weather livestream, includ-

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<sup>3</sup>The term "AI slop" circulates in #WxTwitter discourse as a label for engagement-farm weather content. Veteran meteorologist James Spann has been among its most prominent critics. See Table A.2 in Appendix A for an example.

ing AI-generated thumbnails, promotional imagery, fabricated or dramatized forecast claims, and forecast videos optimized for attention.

Pre-event forecast video creators and post-event retrospective analysts share features with the weatherfluencer role but lack the defining third component. Creators who redistribute numerical model output such as raw ensemble runs, extended-range convective outlooks, and probabilistic graphics without performing live analysis of operational data, or without contextualizing what those products mean and where their known limitations lie, do not meet the operational criteria of the weatherfluencer. They aggregate and redistribute asynchronously rather than interpret. In extreme cases, such pre-event redistribution can repackage probabilistic forecast model outputs as more determinate than they are. Extended-range ensemble runs, convective outlooks, and probabilistic graphics carry genuine and documented uncertainty at the ranges being displayed, but thumbnail and title framing can strip that nuance away for viewers who lack the domain knowledge to recover it. Platform incentives can intensify the problem: pre-event content competes for attention before viewers have an experiential reference point for calibrating certainty claims, and early engagement can reward dramatic framing whether or not the underlying data supports it. The risk is overconfident characterization at precisely the moment when forecast uncertainty is highest. Post-event analysts proceed with outcomes already known, under no immediate protective-action stakes for their audience. In both cases, the absence of real-time safety-critical context is sufficient for exclusion, irrespective of the creator's platform nativity, audience scale, or interpretive sophistication. The next section examines variation within the weatherfluencer population.

## **3.7 Population Boundaries**

The weatherfluencer category contains substantial internal variation. Creators differ in audience scale, credential profile, production arrangements, geographic focus, and hazard specialization. Those differences are consequential for how individual creators work, how their audiences encounter them, and how weather professionals respond to them.

### **3.7.1 Dimensions of Variation Within the Category**

The most visible axis of variation within the weatherfluencer population is audience scale. At the large end of the distribution, creators such as Ryan Hall and Max Velocity can draw concurrent audiences that are large for informal weather communication and, during major events, can resemble the audience scale of regional or cable weather media more than that of a hobbyist livestream. These streams may also appear in nationally visible YouTube rankings alongside entertainment and news content, giving severe weather interpretation a platform visibility that local broadcast meteorologists do not achieve through the broadcast channel alone. At this scale, the stream is rarely just a single person talking over radar. The visible production environment can include multiple video sources, moderators, storm chaser feeds, collaborators, donation callouts, and chat communities numbering in the tens of thousands of simultaneous participants.

Creators at the smaller end of the distribution occupy a recognizably different position in practice, though not in structural terms. A creator with a few thousand subscribers serving a regional audience in the Tennessee Valley, the Southern Plains, or another severe-weather region may maintain a community relationship that is more intimate and geographically specific. Their audience may know them, in the parasocial sense, as a local or regional figure rather than as a national media presence. Their chat communities are small enough that individual viewer contributions may not need to be managed by moderators. The production infrastructure is typically a single creator at a home workstation with consumer-grade broadcast software

and a subscription to one or more of the commercial radar visualization platforms described in Section 3.4.2. The platform dynamics that shape large-scale creator growth remain relevant, but they are navigated under different material conditions.

Credential profile is another major axis of variation. The weatherfluencer population includes creators who do hold formal credentials in atmospheric science, including AMS certification, degrees from accredited meteorology programs, and prior professional experience in broadcast or operational forecasting contexts. For example, Texas Weather Center’s primary host, David Reimer, is a degreed meteorologist. It also includes creators with no formal credential, whose interpretive competence has been developed through self-directed engagement with the subject matter. The #WxTwitter data assembled for this project documents the meteorological community’s awareness of this within-category variation: credentialed creators are sometimes treated by that community as legitimate practitioners who have chosen an unconventional distribution channel, while uncredentialed creators are more frequently the target of gatekeeping rhetoric and expertise challenges directed at weatherfluencers as a class. Within the creator population itself, credential possession shapes the identity work creators perform on stream and in community channels, from the display of AMS seals in profile materials to recurring on-stream statements about educational background. Uncredentialed creators navigate that terrain differently, often emphasizing track record, transparency of method, and audience trust as alternative legitimacy resources.

Operational organization ranges from genuinely solo practice to something closer to a small media operation. Some weatherfluencers operate as single creators with informal support from volunteer moderators who help manage chat during active events. A smaller number of prominent creators operate through more elaborate arrangements: contracted or recurring meteorological collaborators, storm chasers who provide live field footage, moderator and community manager labor, and relationships with weather apps or alert products that viewers can download on their phones. These arrangements can change from season to season. Both Max Velocity and Ryan Hall, for instance, have operated with multi-person production or coordination arrangements during major events. These production differences shape what appears on screen and how much labor is visible around the host, but they do not by themselves move the creator into the accountability structure of a newsroom, weather office, or emergency response organization.

Geographic focus and hazard specialization constitute two additional dimensions of variation that are more granular but worth characterizing for population completeness. Some creators maintain a national scope, covering whatever region presents the most active severe weather on a given event day, and in doing so they serve an audience that is comparably national in composition, drawn to the stream by the event rather than by local identity. Others, such as Tennessee Valley Weather and Upper Cumberland Weather, focus on specific geographic regions, developing forms of local knowledge and audience recognition that approximate, in some respects, the community embeddedness associated with local broadcast meteorology. Texas Weather Center represents a notable instance of regional focus within the ecosystem because its coverage is organized around Texas and adjacent severe-weather regions rather than around a national viewing area. Hazard specialization follows a similar pattern: some creators cover the full spectrum of severe weather, including winter storms, tropical systems, and fire weather alongside convective events, while others specialize in particular hazard types whose climatological rhythms and data interpretation demands differ from tornado-season convective work.

### **3.7.2 Credentials, Scale, and the Accountability Gap**

Credentialed weatherfluencers are the hardest test of this category. A creator who holds an AMS Certified Broadcast Meteorologist (CBM) certification, or who possesses a degree in atmospheric science, may appear to have resolved the legitimacy problem that weatherfluencers raise. But credentialing and account-

ability are not the same thing. The AMS CBM credential confers professional standing within the broadcast meteorologist role [6]. That role typically operates within news organizations that provide editorial oversight, organizational accountability, and established norms of public-safety communication. A credentialed weatherfluencer who livestreams on YouTube brings the credential, but not necessarily the institutional setting that usually gives that credential its public accountability structure. The credential travels with the individual; the newsroom, editor, employer, and organizational review process do not. Study 1 treats this as an empirical question by examining how viewers evaluate credentialed and noncredentialed creators in relation to broadcast meteorologists and other severe weather sources.

Audience scale creates a parallel problem. A creator reaching tens or hundreds of thousands of viewers during a major outbreak may become a highly consequential interpreter of severe weather, even without the institutional position that ordinarily accompanies public weather authority at that scale. Large audiences can make the creator's interpretation more visible, more widely shared, and more likely to shape how viewers attend to warnings, radar, and place-specific risk. But scale does not supply the missing accountability structure. If the creator mischaracterizes a storm, frames a threat too aggressively, or handles uncertainty poorly, there is no newsroom review process, employer oversight, or weather-enterprise accountability mechanism equivalent to those surrounding institutional communicators. Audience reach amplifies the stakes of the structural gap rather than resolving it. A small regional creator and a national-scale creator occupy the same basic accountability configuration, but the public-safety consequences of that configuration are larger when the audience is larger.

### **3.7.3 Sampling Scope and Population Visibility**

The broader population from which the dissertation's samples are drawn cannot be precisely enumerated. No registry of weatherfluencers exists, and platform creator activity is not comprehensively catalogued across YouTube, X/Twitter, TikTok, Facebook, Discord, and other spaces where severe weather interpretation circulates. The #WxTwitter corpus is useful here as a visibility trace rather than as a population frame. It shows which creators repeatedly become objects of public discussion among participants in the collected weather discourse. Those discussions do not enumerate all weatherfluencers, and I do not treat them as community validation of the operational criteria. They do show that a small set of high-salience creators, including Ryan Hall, Max Velocity, and Texas Weather Center, recur as recognizable examples when participants debate platform-native severe weather interpretation, credentials, AI-generated weather content, monetized livestreaming, and creator responsibility. Smaller or more regionally bounded creators are less visible in this corpus, which means the sample is best understood as drawn from the high-salience end of the category rather than as representative of all creators who meet the operational criteria.

The empirical studies examine this publicly visible and analytically accessible end of the weatherfluencer population. Across the three studies, the design favors creators whose streams are public, archived, long-running, and interactionally dense enough to support analysis of creator interpretation and Live Chat activity. This sampling strategy is appropriate for examining how the role becomes visible and consequential at scale, but it does not support claims about the frequency, revenue, production resources, or audience composition of the broader weatherfluencer population. The later analysis of monetization treats Super Chat, memberships, donations, sponsorship links, and related support mechanisms as visible platform features and objects of dispute, not as a basis for estimating total income or organizational payroll. The methodological implications of this sampling boundary are addressed in Chapter 4.

### 3.8 Central Paradox and Its Structural Manifestations

Returning to the paradox introduced earlier in this chapter, the weatherfluencer’s structural position brings together two arrangements that the weather communication field has usually kept more closely aligned: public severe weather interpretation and professional accountability. In the broadcast and federal warning system, public weather authority is organized through offices, employers, professional credentials, editorial procedures, legal responsibilities, and correction practices. Weatherfluencers work with many of the same operational inputs and may attract large audiences during severe weather, but their accountability is routed through different mechanisms: platform rules, audience response, creator reputation, moderator action, and public criticism after the fact.

That difference does not make weatherfluencer interpretation illegitimate by definition. It does make the role difficult to place within the weather enterprise’s existing categories. A viewer may find a creator’s analysis useful, timely, and technically competent while still recognizing that the creator does not occupy the same institutional position as an NWS forecaster, emergency manager, or broadcast meteorologist. A meteorologist may object to a creator’s framing, monetization, or credential claims while also relying on the same public data infrastructure and platform visibility environment. The paradox emerges from that overlap: weatherfluencers can become consequential interpreters of severe weather without being governed by the accountability structures that usually accompany public weather communication.

That overlap becomes visible in five recurring controversies. Two concern the creator’s legitimacy: whether audience payment during safety-critical coverage is appropriate to the role, and who can legitimately claim meteorological expertise in public. Two more concern the interpretive process itself: how platform attention shapes the tone and packaging of severe weather interpretation, and whether audience involvement in the stream supports correction or adds noise. A fifth asks how viewers assess a creator when professional standing, visible reasoning, and repeated exposure do not point in the same direction.

Table 3.2: Recurring critiques within the weather communication field

| Recurring Field Critique                          | Structural Interpretation in This Chapter                                                                                                                                                                                    | Section       |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <i>Monetizing severe weather is exploitative</i>  | Revenue dependence on platform-native monetization embeds public-safety interpretation within attention-based economic systems. Incentive tension is around structural characteristics of platform monetization.             | Section 3.8.1 |
| <i>Anyone can call themselves a meteorologist</i> | The role operates outside professional credentialing systems; boundary disputes reflect misalignment between professional legitimacy and platform-native authority.                                                          | Section 3.8.2 |
| <i>Disaster porn / sensationalism</i>             | Attention-maximizing logics of livestream platforms shape aesthetic presentation; spectacle can be interpreted as a consequence of platform incentive structures rather than solely as an issue of individual moral failure. | Section 3.8.3 |

#### 3.8.1 Monetization Within Safety-Critical Contexts

Weatherfluencers operate within a platform economy whose revenue mechanisms were designed for entertainment content and whose logic is operationally indifferent to the safety-critical character of the information being communicated. YouTube’s primary monetization mechanisms for livestreamers are advertising

revenue, channel memberships, and Super Chat, the platform's system for highlighted paid comments that appear prominently in the livestream chat interface during active broadcasts. Each of these mechanisms creates a built-in revenue coupling between audience engagement and creator income that is present regardless of whether the creator is livestreaming a gaming tournament or narrating a tornado outbreak bearing down on populated areas.

The Super Chat mechanism deserves particular attention because it brings monetization into the same live interface through which safety-relevant interpretation is being produced. When a viewer submits a Super Chat contribution during a livestream, the message appears highlighted in the chat interface and can be acknowledged verbally by the creator, sometimes interrupting or briefly pausing the interpretive narration to thank the donor. During major outbreak events these highlighted contributions can appear repeatedly throughout multi-hour livestreams, placing the financial transaction inside the same interface through which viewers ask location-specific questions, report local conditions, react to warnings, and seek the creator's attention during active severe weather coverage<sup>4</sup>. This is not evidence of bad faith on the part of individual creators. Hall and other prominent weatherfluencers consistently frame Super Chat contributions in public-service terms across streams and community posts, describing them as viewer-optional support for long-duration coverage that remains free to watch and less dependent on interruptive advertising [189].<sup>5</sup> This is an accountability mismatch: one visible mechanism through which the practice is financially supported is also one whose operation during active warning situations can require brief shifts in narration or attention, make donor recognition visible alongside location-specific questions and local reports, and embed a transactional dynamic within a communicative context that audiences may be using for protective action decisions.

The advertising dimension of the tension operates differently but with equivalent structural force. Platform advertising revenue rewards engagement and retention, which means that the algorithmic incentives shaping content visibility reward the content characteristics that maximize those metrics. During severe weather events, the content characteristics that sustain audience attention over a multi-hour stream include dramatic presentation, high-stakes framing, and the maintenance of a sense of ongoing urgency. These characteristics are not inherently incompatible with responsible safety communication; indeed, accurate representation of a genuine tornado threat is both dramatic and responsible. But the structural alignment between engagement optimization and safety-motivated audience attention creates a set of incentives that are present regardless of creator intent and that push in a consistent direction: toward presentation choices that sustain tension and attention. Cotter's analysis of how digital creators navigate algorithmic visibility systems describes this as playing the visibility game, a set of practices through which creators adapt their content choices to the reward structures that platform algorithms encode [40]. Weatherfluencers play this game within a domain where the stakes of miscalibration are not just reputational but potentially life-safety-related, and no institutional mechanism exists to govern how that game is played.

The creators themselves are not unaware of this tension. Ryan Hall has described in public statements the deliberate choice not to run intrusive advertising during active tornado warnings, framing the decision as a public service commitment that the Super Chat model enables by providing an alternative revenue stream that does not interrupt coverage. Max Velocity has described his practice as oriented toward accuracy and honesty precisely in contrast to what he characterizes as the clickbait pressure that engagement-driven economics can produce (see Table A.2). These are genuine attempts to navigate the structural tension through deliberate practice choices. What they illustrate, in making the negotiation visible, is that the tension re-

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<sup>4</sup>Precise Super Chat revenue totals are not publicly available because YouTube does not release audited earnings data for individual channels or streams. Estimates circulating in community discussions and third-party analytics platforms should be interpreted as approximate indicators of monetization patterns rather than definitive revenue figures.

<sup>5</sup>This framing recurs across multiple 2025–2026 streams and community posts and is documented in the #WxTwitter corpus compiled for this project; see Appendix A.

quires active navigation precisely because the platform’s structural incentives do not resolve it automatically. An institutional actor, a broadcast meteorologist employed by a local news organization, operates within an accountability structure that provides organizational guardrails against the most consequential forms of engagement-driven distortion. A weatherfluencer operates without those guardrails, managing the tension individually and without any external mechanism to enforce consistent choices across the population.

### **3.8.2 Expertise, Credentialing, and Weather Enterprise Response**

Professional credentialing systems are designed on the assumption that public legitimacy follows institutional endorsement: you demonstrate competence to the profession, the profession certifies you, and the public can use that certification as a basis for evaluation. This sequence bundles expertise, accountability, and legibility into a single credential that resolves the public’s evaluation problem in advance. Platform-mediated communication makes a different sequence possible. Weatherfluencers demonstrate interpretive performance directly to audiences, accumulate credibility through repeated visible practice, and build sustained followings without institutional endorsement ever arriving. The professional community’s response to weatherfluencers, documented throughout this section, is best understood as an attempt to reassert the original sequence against a population of figures who have already bypassed it. The contestation centers on which sequence governs how public authority is acquired and recognized, not on individual creator quality.

The terminology of the field is itself contested ground. The term meteorologist is degree-based and governed primarily through professional norms rather than statutory title protection: in the United States, no state broadly regulates the use of the title in public communication, but within the field the label carries strong credential expectations, typically implying formal training at the bachelor’s level or higher in atmospheric science or a closely related discipline [5]. The application of the term to creators without formal training has become a recurring flashpoint in professional boundary debates, particularly visible in discussions among meteorologists and weather communicators on #WxTwitter. Content creator is platform-native and evades expertise claims entirely, which makes it accurate for some actors in the ecosystem but analytically insufficient for creators engaged in safety-critical real-time interpretation. Influencer captures the commercial and parasocial dimensions but carries connotations that prejudice the framing toward entertainment and away from the public-safety function the role performs. The term currently most contested, digital meteorologist, occupies the analytically richest territory and warrants extended discussion.

Within professional weather communication, legitimate public interpretation has usually been tied to professional credentialing, formal educational preparation in atmospheric science, and institutional accountability. The American Meteorological Society’s Certified Broadcast Meteorologist program and the National Weather Association’s equivalent make that expectation visible in the broadcast context. The weatherfluencer’s emergence as a publicly influential interpreter without those credentials has generated a sustained, active, and visible response from within the meteorological professional community, a response that is itself analytically informative about how the field is experiencing the structural disruption the role represents.

The AMS Certified Digital Meteorologist program, launched in fall 2023 and described by Trujillo-Falcon et al. as the fastest-growing credential for digital meteorologists within two years of its introduction, represents the field’s most institutionally elaborated response to the weatherfluencer question [190]. The CDM program is designed to credential digital weather communicators who may not hold the broadcast-specific CBM but who are communicating meteorological content to public audiences through digital platforms. Significantly, the CDM does not require a degree in atmospheric science, which reflects a deliberate choice on the program’s part to acknowledge that communicative competence in digital weather formats is not exclusively coextensive with formal meteorological education. The program has been embraced primarily by mid-tier creators seeking to professionalize their public positioning, and by already-credentialed

meteorologists who work in digital formats. Its uptake among the largest-scale weatherfluencers has been notably limited. Ryan Hall, whose reach and public safety influence are among the most extensive in the ecosystem, does not hold or claim the CDM credential. His public bio, as of January 2026, reads “Digital Meteorologist | Creative Technologist | The Internet’s Weather Man,” positioning him as delivering meteorological interpretation through digital platforms without claiming equivalence to formally degreed professionals. The #WxTwitter data documents the community’s acute awareness of this distinction: the 2025 AMS Digital Meteorologist Board Chair acknowledged publicly that the program can only govern creators within AMS membership, while the figures with the largest public followings operate outside it, creating a legibility challenge for audiences who have no reliable mechanism to distinguish credentialed from uncredentialed practice at the point of encounter [108]. The terminological dispute is a boundary work episode in Gieryn’s sense [69]: contested labels such as *meteorologist* and *digital meteorologist* do more than describe a communicator. They mark who can be treated as a legitimate public interpreter of meteorological evidence and who falls outside the field’s credentialing norms. The CDM program is one institutional attempt to make that boundary visible in digital weather communication, but its reach depends on creators choosing to participate in the credentialing system. The field can define and certify digital meteorologists within AMS membership, while high-reach creators who remain outside the program can still meet audiences through YouTube search, recommendations, livestream titles, biographies, and chat. The professional community’s investment in the boundary and the boundary’s limited public enforceability are part of the same dispute over how meteorological authority and legitimacy becomes recognizable on platforms.

The credentialing dispute within the #WxTwitter community is more than just a professional boundary conflict; it is the meteorological field’s most visible mechanism for attempting to re-bundle authority with legitimacy in a context where the role’s structural conditions have already separated them. Heated community exchanges about the digital meteorologist title surface regularly in the discourse, particularly during and after major events where forecast accuracy is publicly assessable (see Table A.2). Traditional meteorologists and NWS-affiliated practitioners criticize the title when self-applied by non-degreed creators, arguing that it misleads the public by implying expertise equivalent to formal professional preparation. Defenders of the practice counter that credentials do not guarantee accuracy, that reach and demonstrated performance constitute alternative legitimacy resources, and that gatekeeping arguments serve professional interests as much as public safety ones (see Table A.2).

Creators respond to this challenge through visible role-marking practices. Recurring on-stream disclaimers, including formulations such as “this is not the news” and “we are not here to replace your local meteorologist,” mark the creator’s interpretation as distinct from professional news coverage, local broadcast meteorology, and official warning authority. These disclaimers do not remove the creator from the weather communication ecology. They instead name the boundary viewers are being asked to hold in mind while watching: the stream may interpret radar, warnings, storm reports, and chaser feeds in real time, but it is not an official warning source and does not replace local meteorological guidance. Ryan Hall’s development of the “Y’all Watches” feature within his app, accompanied by explicit in-app language clarifying that the feature does not constitute official NWS warnings, is a more elaborated instance of the same role-marking practice. It acknowledges that platform-native interpretation can become consequential for public attention while preserving a distinction between creator-produced alerts and governmental warning authority. These practices are evidence of the role’s unsettled standing: unlike an NWS office or broadcast weather segment, the creator-host cannot rely on institutional position alone to make the limits of the communication role legible. Those limits have to be restated through disclaimers, app labels, stream descriptions, and on-screen or verbal cues during coverage.

### 3.8.3 Spectacle, Responsibility, and the #DisasterPorn Critique

The tension between dramatic presentation and responsible safety communication is among the most publicly contested features of weatherfluencer practice, generating sustained community debate under the informal label of #DisasterPorn and related terminology that circulates in meteorological professional discourse on #WxTwitter. Understanding the tension requires recognizing that dramatic presentation is not inherently incompatible with safety-oriented communication; a genuine tornado warning affecting a densely populated area is both objectively significant and legitimately urgent, and communicating that significance effectively may require a communicative register that sustains audience attention across an extended event period. The structural tension is more specific than drama versus responsibility: platform incentives reward dramatic presentation regardless of meteorological knowledge, while safety communication requires calibrating presentation intensity to actual threat severity.

The most visible instance of this tension in the ecosystem is the pre-event thumbnail and title controversy that recurs in #WxTwitter discourse around many significant winter storms and long-term severe weather outlooks. Creators who attract large audiences for anticipated high-impact events rely heavily on YouTube thumbnail graphics and video titles that convey threat salience, because those elements are the primary interface between the platform's recommendation algorithm and potential new viewers who have not previously encountered the creator's work. The #WxTwitter data documents that audiences and community members actively evaluate this dimension: one post describes it as "nearly impossible to sift through all the click bait farmers begging for clicks," while another criticizes Max Velocity as "the king of clickbait" for using "an exaggerated map of red over 3/4 of the country."

The #DisasterPorn and #hype labels, as they circulate within meteorological community discourse, capture the more severe form of this tension: coverage that prioritizes the visual and emotional spectacle of severe weather events over their safety-informational content, or that sustains audience engagement during events by emphasizing dramatic imagery and elevated emotional affect in ways that may not serve protective action decision-making. The Study 1 analysis documents sensationalism as a recognized community concern within weatherfluencer practice, and the #WxTwitter corpus documents the community's active norm-enforcement activity around this boundary, including quote-tweet practices that highlight dramatized titles after event underperformance as evidence of engagement-motivated exaggeration.<sup>6</sup> These norm-enforcement practices are themselves evidence of the structural gap: the community is attempting to perform an accountability function that, for professional actors, is performed by organizational editorial oversight. The absence of that organizational layer means the accountability work falls to informal community mechanisms whose consistency and effectiveness are not guaranteed.

The tension persists because platform presentation happens before later evidence can calibrate whether the framing was warranted. Titles, thumbnails, pacing, and affective narration help a stream or forecast video find viewers and keep them watching before viewers know whether the eventual hazard will match the presentation. Even a creator who is genuinely safety-motivated operates within a platform infrastructure that rewards engagement and within a competitive attention environment where more sensationalized competitors can draw audiences toward more dramatic coverage. These conditions create pressure toward dramatic presentation: urgent titles, high-contrast thumbnails, affective narration, and a sustained sense of threat can help a stream or forecast video attract attention before viewers know whether the eventual hazard will match the presentation. Responsible creators can resist or calibrate these choices, and #WxTwitter criticism can impose reputational costs after overstatement. Those forms of correction remain informal and uneven, however, rather than operating as the kind of editorial or professional review that would set a consistent presentation standard before coverage circulates.

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<sup>6</sup>Examples of this discourse are reproduced in Table A.2 in Appendix A.

### 3.8.4 Centralized Interpretation Within a Participatory Interface

The Live Chat interface gives weatherfluencer streams a visibly participatory form. Viewers appear alongside one another in the chat, asking about towns, reporting local conditions, repeating warnings, reacting to radar changes, correcting place names, and trying to direct the creator's attention. The format is interactive in ways broadcast television usually is not: audience activity remains visible beside the creator's narration while the event is ongoing.

A viewer contribution may or may not change the public account. A viewer question, hail report, siren report, road identification, or warning comparison may pass by unread, receive a moderator response, prompt a verbal acknowledgment, or be incorporated into the creator's account of the storm. The chat can supply situated inputs and make audience concern visible, but the public synthesis still runs primarily through the host. The creator decides which radar product to show, which warning to keep on screen, which chaser feed to bring into the display, which place to name next, and which audience inputs become part of the narrated interpretation.

Broadcast meteorology and distributed crisis-information work organize participation differently. Broadcast meteorologists also centralize interpretation through a named presenter, but that interpretation is embedded in a newsroom, production staff, editorial routines, and professional accountability structures. Digital volunteer networks and VOST-like arrangements organize public-facing crisis information through distributed roles, procedures, shared documents, responder-facing products, and cross-checking practices. Weatherfluencer streams combine visible audience participation with host-centered synthesis. They do not give most audience members formal roles, stable task assignments, or durable coordination infrastructure, yet they also do not reduce viewers to passive recipients. Viewers can still question, report, compare, and correct; the issue is that those inputs become publicly consequential only when they are surfaced, acknowledged, or taken up within the hosted stream.

Accountability becomes difficult when correction depends on that selective uptake. If the creator misreads a radar signature, overstates a threat, misses a correction, or amplifies a misleading report, the chat may contain information that could challenge the account. Whether that challenge becomes visible to the broader audience depends on moderation, chat speed, creator attention, and the creator's willingness to revise. The structural analysis cannot determine how often audience monitoring succeeds or how much it compensates for the absence of newsroom or institutional review. It does identify what Study 3 must examine empirically: whether Live Chat participants engage in ground-truth contribution, discrepancy identification, source comparison, and repair, and how often those practices become part of the public record.

### 3.8.5 Objects of Trust: What Audiences Evaluate

Audiences can evaluate any number of cues and data points surfaced in these livestreams. A creator may accurately characterize storm motion while using titles, thumbnails, or donation practices that raise doubts about their safety orientation. Another may align closely with NWS products while giving viewers little access to the reasoning behind that alignment. A creator may also reason transparently on screen and still misread how a storm will behave. Collapsing these judgments into a single credibility score would miss how viewers can find a creator strong on one dimension and weaker on another. The four objects developed below are forecast accuracy, interpretive reasoning, ethical orientation, and institutional alignment.

Forecast accuracy is the most legible object after the fact, and precisely for that reason the most directly implicated in credibility accumulation. A creator who calls a tornado threat before the warning issues, accurately characterizes storm mode, or correctly anticipates the spatial trajectory of a squall line is producing checkable claims against which subsequent outcomes can be assessed. Over multiple events and multi-

ple seasons, track records on this dimension accumulate and become a primary basis on which audiences calibrate their reliance. This is also the dimension on which community accountability practices are most active: #WxTwitter discourse following major events includes systematic retrospective evaluation of which creators' characterizations proved accurate and which proved exaggerated, and this retrospective accountability constitutes an informal but real checking mechanism on interpretive performance over time. But retrospective accuracy is also the last of the four objects viewers can actually check, and they must calibrate reliance across all four in real time, before outcomes are known.

Interpretive reasoning becomes available before retrospective accuracy does. Viewers can evaluate whether the creator shows the evidentiary path through which an interpretation is being built: which radar product is on screen, how warning polygons, storm reports, chaser feeds, and local observations are being weighed, whether uncertainty is named, whether contradictory evidence is addressed, and whether the account is revised as new scans or reports arrive. The spectacle tension bears on this object because dramatic affect, urgent framing, or sustained high-intensity narration can make the stream compelling while giving viewers fewer visible cues for assessing how the interpretation was produced. A creator may later prove accurate about storm motion or severity while still offering viewers less opportunity, during the stream itself, to inspect the reasoning behind that assessment. Forecast accuracy and visible reasoning can diverge, which means audiences may evaluate the same creator differently across the unfolding stream and the later outcome.

Ethical orientation is the object the monetization tension most directly threatens: the question of whether the creator is prioritizing public safety over engagement metrics, platform revenue, or audience entertainment value. Audiences cannot evaluate this dimension from outcome data alone, because a creator can achieve accurate forecasts while operating with a primarily engagement-motivated orientation, and can prioritize safety genuinely while occasionally producing inaccurate forecasts. Audience evaluation of ethical orientation depends primarily on behavioral cues: whether the creator interrupts safety narration to acknowledge Super Chat donations, whether thumbnail and title choices appear calibrated to threat reality or to attention maximization, whether the creator continues coverage without commercial interruption during active warnings, and whether on-stream statements about motivations are consistent with observable practice choices. The #WxTwitter data documents that audiences and community members actively evaluate this dimension, and that community trust in individual creators is sensitive to perceived violations of the safety-over-engagement priority.<sup>7</sup> This evaluation proceeds independently of forecast accuracy; a creator can be perceived as safety-motivated and still incorrect, or engagement-motivated and still correct, which is why the dimension requires separate treatment.

Institutional alignment, the fourth object, is analytically distinct from forecast accuracy because official guidance and independent interpretation can diverge. NWS warning polygons reflect operational thresholds, available evidence, and institutional risk tolerance, which means they may not always match a creator's live characterization of threat probability at a given moment. A creator who identifies a tornado threat before an official warning is issued may be more accurate than the official product at that moment, as the Whitman case illustrates. But deviation from official guidance, even when accurate, creates a specific kind of trust evaluation challenge for audiences who use NWS products as a reference point and who may experience divergence between creator characterizations and official products as a signal of unreliability even when the creator's reading is closer to the evolving situation. Study 3 documents that Live Chat participants routinely compare creator characterizations against NWS products in real time and query creators when divergences appear, suggesting that institutional alignment is a live and continuous object of audience evaluation rather

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<sup>7</sup>Examples of this discourse are reproduced in Table A.2 in Appendix A; see also the broader pattern of bust-accountability discourse documented in the corpus.

than a background condition.

A creator who scores well on interpretive reasoning transparency is likely, over time, to also score well on perceived accuracy, because visible reasoning allows audiences to follow along with the analytical basis for interpretations and to develop calibrated expectations about the conditions under which the creator's assessments are most reliable. A creator whose ethical orientation appears compromised by engagement-driven presentation choices will likely see degraded evaluation on interpretive reasoning as well, because spectacle-oriented framing obscures the analytical process. The four objects are analytically separable but empirically entangled, aspects of a single complex evaluative judgment that audiences perform continuously throughout multi-hour events and across repeated events over seasons.

Study 1 takes up audience evaluation of these dimensions across source types. Study 2 examines the production practices through which creators make those dimensions visible. Study 3 examines how evaluation is managed in real time through chat, across a co-present audience as the storm unfolds.

### 3.8.6 A Working Definition

I use the term *weatherfluencer* to refer to a platform-native creator who hosts recurring live severe weather interpretation for platform audiences and organizes operational meteorological and situational evidence into a prospective account of a developing hazard from a position whose public interpretive standing is not settled by the formal roles, credentials, and accountability structures of the weather enterprise.

The five features that characterize the weatherfluencer role compose the definition. The weatherfluencer role is *platform-native*: built through channel identity, livestream infrastructure, platform monetization, and repeat creator-audience interaction, not through employment in a newsroom, weather office, or emergency response organization. The creator's screen and narration provide the *hosted* public surface through which radar products, NWS and SPC products, model guidance, chaser feeds, cameras, scanner updates, storm reports, and audience questions are selected, sequenced, and interpreted. That work is *prospective* because the hazard is still developing: changing evidence is used to assess where a threat appears to be, how it is moving, which places may be implicated, and how new information changes the account. The context is *safety-relevant* because interpretation can move toward guidance about attention, confirmation, contacting others, or possible protective action, though weatherfluencers do not issue official warnings. The fifth feature locates the role's position in the weather enterprise: it is *contested*, because weatherfluencers interpret operational evidence for public audiences from outside the formal roles, credentials, employment relationships, and accountability structures through which severe weather expertise and public guidance have traditionally been authorized.

The authority at issue in this definition is interpretive, not statutory or regulatory. Weatherfluencers do not occupy positions in the official warning chain, do not issue official warnings, and do not hold legally recognized authority over protective action directives. Yet audiences rely on them anyway to make sense of ongoing weather situations. For that reason, I treat their standing *with the weather enterprise* as an empirical and analytic problem rather than as something resolved by credentials, employment, audience size, or platform visibility alone.

The definition also separates credential possession from role location. Some weatherfluencers may have meteorological training, professional experience, or field-recognized credentials; others may not. Conversely, NWS offices, broadcast meteorologists, emergency managers, and official agency accounts do not become weatherfluencers merely by using YouTube, TikTok, Twitter/X, or other platforms. What matters for this category is the combination of creator-hosted livestreaming, operational severe weather interpretation, platform audience relations, and a position outside the formal accountability structures of the weather enterprise.

Finally, *weatherfluencer* is an analytical construct introduced for this collection of studies, not necessarily a term practitioners use to describe themselves. The label does not assert professional standing, dismiss interpretive seriousness, or resolve whether a given creator should be called a meteorologist, digital meteorologist, content creator, influencer, or something else.

### **3.9 Summary and Looking Forward**

The weatherfluencer, as defined here, is a platform-native creator who interprets unfolding severe weather prospectively for platform audiences from outside the formal accountability structures that have historically organized weather expertise and public guidance. The role is contested because that public standing develops outside the professional and institutional arrangements that have historically made weather authority recognizable: warning offices, broadcast newsrooms, credentials, editorial routines, and formal accountability structures. This structure sets up an empirical question about audience evaluation. When viewers encounter weatherfluencers and broadcast meteorologists side by side, which dimensions of evaluation continue to favor the weather enterprise, and which become available through the observable qualities of the coverage itself? Study 1 takes up that comparison directly.

## Chapter 4

# Methods

### 4.1 Overview of Research Design

This chapter establishes the shared methodological infrastructure, data sources, and analytic orientation that structure the dissertation as a whole. Study-specific procedures, including sampling strategies, coding frameworks, and analytic units, appear in Chapters 6 through 8. The three studies examine a single phenomenon at three analytic scales: audience evaluation (Study 1), production practices (Study 2), and community coordination (Study 3). All three draw from a shared data infrastructure centered on archived YouTube livestreams produced by the same three focal creators during Spring 2025 tornado outbreak periods, with Study 1 additionally drawing from a 2024 outbreak event to support cross-platform comparison between YouTube and television sources. Section 4.2 summarizes each study's corpus, analytic unit, method, and primary output.

Weatherfluencers are relatively rare and the convergence on high-salience creators is methodologically necessary: each study requires archives of sufficient depth and public profiles legible as experimentally distinct stimuli. Study 1 requires archives in which television records are available and easily captured; Study 2 requires public profiles with visible tool and coordinative affordances; Study 3 requires chat archives of sufficient volume and community depth to support systematic coding of trust and sensemaking-signaling behavior. This sampling boundary is a limitation of the shared approach and is elaborated in Section 4.8. Detailed procedural descriptions specific to each empirical study, including coding schemes, sampling procedures, and statistical analyses, are presented in the corresponding study chapters.

### 4.2 Overview of the Three Studies

The three studies examine the same information ecosystem from three analytically distinct positions. All draw from the same creator corpus and shared severe weather context, although all three are independent. Study 1 examines how lay audiences evaluate those practices when placed in direct comparison with broadcast meteorologists, specifying which dimensions of credibility are sensitive to professionally legible cues and which respond to visible interpretive reasoning. Study 2 documents the production-level practices through which creators enact interpretive authority outside institutional credential structures. Study 3 relocates the unit of analysis to the audience, examining how trust is enacted as an ongoing interactional accomplishment within livestream chat.

Table 4.1 summarizes the corpus, analytic unit, method, and primary output for each study. Study-specific methods, sampling procedures, and analytic frameworks are developed in Chapters 6 through 8.

Table 4.1: Cross-study overview: corpus, analytic unit, method, and primary outputs

| Study   | Research Focus                                                                 | Corpus / Data                                                                                                       | Analytic Unit                                                                      | Method                                                                                 | Primary Output                                                                                                                      |
|---------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Study 1 | Audience credibility evaluation across platforms and credential configurations | YouTube livestream clips (Ryan Hall, Y'all; Max Velocity); broadcast TV clips (Channel 9; KFOR); survey; interviews | 3-minute video clip (4 clips; $N = 58$ survey; $n = 8$ interviews)                 | Convergent mixed-methods: within-subject survey experiment; semi-structured interviews | Broadcast rated higher on most credibility dimensions; objectivity showed near parity across platforms                              |
| Study 2 | Creator interpretive practices during PDS escalation                           | YouTube livestreams; automatic transcripts; live chat replay (3 streams)                                            | PDS-anchored escalation window (13 windows; 453 min.)                              | Focused content analysis; trace ethnography                                            | Inspectable interpretive work: taxonomy of production practices that enact interpretive authority without institutional credentials |
| Study 3 | Audience trust work and communicative function in livestream chat              | YouTube live chat archives; 34 archived sessions across 17 outbreak episodes (March–June 2025)                      | Individual comment ( $n = 2,000$ ); reconstructed micro-conversation ( $n = 200$ ) | Systematic two-layer chat coding; quantitative summary                                 | Taxonomy of communicative functions (L1) and trust-signaling practices (L2) in livestream chat                                      |

### 4.3 Researcher Context and Positionality

My analytical engagement with this material is shaped by prior domain familiarity that carries both interpretive advantages and recognized limitations. I completed training as a National Weather Service SKYWARN Storm Spotter [194], a volunteer certification program administered through NWS local forecast offices covering severe weather recognition, radar product literacy, and official warning terminology. This training provides domain literacy relevant to the material under analysis, including the distinction between Tornado Watches and Tornado Warnings, the structure and significance of Particularly Dangerous Situation designations, the interpretive conventions associated with NEXRAD radar products, and the organizational protocols governing NWS warning issuance. In practice, this background allows recognition of when creators accurately characterize NWS products, when they depart from official terminology, and when interpretive moves that appear authoritative to a lay audience diverge from how those products function within the official warning architecture.

This domain literacy also requires reflexive attention. A researcher trained in the same conventions that creators draw upon may be more inclined to treat certain interpretive practices as routine or coherent when they may appear unusual to outside observers, or when they are more improvisational than they initially appear. Throughout the analysis, departures from institutional vocabulary or established meteorological practice are treated as analytically meaningful rather than taken as unremarkable.

Across all three studies, my role is limited to the analysis of publicly archived material. I did not participate in any analyzed stream as a viewer, chat contributor, or in any other interactive capacity during the periods under analysis.

A further distinction concerns prior engagement with the #WxTwitter professional meteorological community. Familiarity with recurring debates around creator credentialing, thumbnail practices, and #Disas-

terPorn or #Hype discourse predates and is independent of the targeted searches conducted for this project. This background informs recognition of which debates and figures are central within the community but does not itself constitute evidentiary material.

Because the relevant #WxTwitter debates and event-specific exchanges did not consistently use shared hashtags or stable search terms, I used Grok-assisted contextual search to surface candidate public X/Twitter posts for later manual verification. Section 4.4.5 describes the retrieval process and Appendix A preserves the query log. All cited posts were manually confirmed as real and publicly accessible at their original URLs. Where claims rely on researcher familiarity with community discourse rather than systematic corpus analysis, that distinction is noted explicitly.

## 4.4 Shared Data Infrastructure

### 4.4.1 YouTube as Primary Research Site

All three studies draw primarily from YouTube, a choice determined by the platform’s archival properties and weatherfluencer practices rather than simple predominance. High-salience severe weather creators are concentrated on YouTube relative to TikTok, Twitch, and Instagram Live, and the platform’s capability of preserving completed livestreams as publicly accessible archived video means that the full record of a multi-hour outbreak stream remains available for researcher access after the event. YouTube’s Live Chat Replay function preserves the chat record in its original temporal sequence, time-stamped against the video, allowing the communicative dynamics of a live event to be reconstructed from the archive with a fidelity unavailable on platforms that discard chat logs post-broadcast. Automatic transcripts provide a timestamped record of creator narration against which observation notes and coded segments can be anchored.

A methodological distinction that affects all three studies is the difference between the livestream as live event and the archived session as data object. In the YouTube portions of the corpus, I analyze the archived session, including the video, transcript, chat replay, and stream metadata available after broadcast, rather than contemporaneous observation of the live event. Claims about real-time audience experience, creator decision-making under live conditions, and the phenomenology of watching an active outbreak unfold are necessarily bounded by that distinction: what is available for analysis is the publicly archived trace of the event, not the event itself. This is consistent with the trace ethnography orientation described in Section 4.5.2 and with the observational role described in Section 4.3. Familiarity with the streams as a live viewer informs contextual interpretation, but all empirical claims are grounded in the archived record rather than contemporaneous observation notes.

All material was collected from publicly accessible archives without authentication or premium YouTube subscription. Live Chat Replay data was downloaded using YouTube Comment Search, a Google Chrome extension that exports chat logs from archived streams. No scraping tools were used, and access procedures are consistent with YouTube’s Terms of Service for non-commercial research.

### 4.4.2 Creator Selection

Creators were selected according to the five operational criteria for identifying weatherfluencers as an empirical category. A qualifying creator must conduct *synchronous* livestreams during active severe weather events rather than producing only pre-event forecasts or post-event retrospectives; must use professional-grade meteorological visualization software as the primary medium of real-time practice; must maintain sustained cross-event presence across at least one complete severe weather season; must direct their interpretive practice toward a public-facing platform audience, not toward official or professional interlocutors;

and must operate outside formal traditional employment in the weather communication field, such as being broadcaster or affiliated with an NWS office, during the period under analysis.

Candidate channels were identified through consultation with Reddit discussions, #WxTwitter discourse, and Discord communities dedicated to severe weather education. While creators operating in this format exist across platforms, YouTube concentrates the highest-visibility practitioners and provides the archival infrastructure the studies require; comparable creators on other platforms are both harder to identify systematically and less reliably archived. Within YouTube, the selection prioritized creators with substantial concurrent audience engagement, operationalized as at least 1,000 concurrent viewers per stream, reflecting the methodological requirement across all three studies for archives with sufficient audience depth to support analysis of collaborative sensemaking and trust-signaling behavior.

The three focal creators represent the highest-salience tier of this practice on YouTube at the time of data collection. Texas Weather Center operates as a team comprising a main host, two formally trained consulting meteorologists, and several affiliated storm chasers. At the times of data collection, Max Velocity was a meteorology student who had not yet completed his degree. Ryan Hall, Y'all operates with a main host and at least one formally trained meteorologist and maintains the largest audience of the three. Table 4.2 summarizes channel age, total video count, total views, and subscriber count at the time of data collection. The sample is best understood as illustrative of established, high-visibility practice within this specialized sub-niche rather than representative of the full population of weatherfluencers.

Table 4.2: Focal creator profiles: channel join date, total video count, total views, and subscriber count at time of data collection.

| Creator              | Joined YouTube | No. Videos | Total Views | Subscribers |
|----------------------|----------------|------------|-------------|-------------|
| Texas Weather Center | Sep 28, 2022   | 945        | 13.7M       | 89.1K       |
| Max Velocity         | Aug 31, 2014   | 1,568      | 200M        | 1.19M       |
| Ryan Hall, Y'all     | Dec 5, 2012    | 593        | 403M        | 2.7M        |

#### 4.4.3 Broadcast Sources (Study 1 Only)

Study 1 includes clips from two Oklahoma City broadcast television stations, KWTB-DT Channel 9 and KFOR-TV Channel 4, selected on the basis of archival availability on their official YouTube channels. Full clip selection rationale and details appear in Chapter 6.

#### 4.4.4 Outbreak Period Selection and Shared Corpus

The three studies draw on two temporally distinct outbreak contexts: the April 25–28, 2024 outbreak and multiple outbreak episodes spanning March–June 2025. Table 4.3 summarizes how each study engages these events and specifies the primary unit of analysis in each case. Full event selection rationale for each study appears in Chapter 5.

Tornado outbreaks serve as the shared analytic anchor across studies for reasons that are both substantive and methodological. Within the official warning architecture, the National Weather Service issues Particularly Dangerous Situation (PDS) designations for select tornado watches and warnings when forecaster confidence is high that significant, potentially violent tornadoes are imminent or occurring. PDS designations are rare escalations within an already elevated warning environment; they concentrate epistemic uncertainty, interpretive urgency, and public safety stakes within compressed temporal windows, making

them well-suited anchors for examining how creators and audiences manage sensemaking and trust under pressure.

Studies 2 and 3 both draw from the Spring 2025 outbreak periods. Study 2 anchors analysis in three focal livestreams from April 2, April 3, and April 29, 2025, using PDS-anchored escalation windows to examine creator-centered sensemaking during safety-critical moments. Those dates were drawn from two multi-day sequences, April 2–5 and April 27–30, 2025, both of which involved multiple PDS warnings, at least one tornado emergency, and sustained high-visibility impacts across the Southern Plains. The Study 2 focal streams are included within the broader Study 3 corpus, enabling direct comparison between creator-centered and audience-centered analyses of the same events. Study 3 extends the temporal scope to all archived severe-weather livestream sessions produced by the three focal creators across March–June 2025, capturing 34 archived files spanning 17 outbreak episodes.

Study 1 draws from a separate event. Analysis is anchored to April 27, 2024, a three-hour meteorological window during the April 25–28, 2024 outbreak, selected because it produced archival broadcast and livestream material under active tornado warning conditions. Continuous live coverage by Oklahoma City television stations and simultaneous YouTube livestreaming by the focal creators made this date the only viable candidate for the cross-platform clip comparison Study 1 requires.

Table 4.3: Outbreak periods and analytical windows across studies.

| Outbreak Period                        | Dates Sampled                                        | S1 | S2 | S3 | Primary Unit of Analysis                           |
|----------------------------------------|------------------------------------------------------|----|----|----|----------------------------------------------------|
| April 25–28, 2024                      | April 27, 2024 (12:30–3:30 PM CT)                    | X  |    |    | 3-minute broadcast clips; livestream segments      |
| April 2–5, 2025                        | April 2; April 3, 2025                               |    | X  | X  | PDS escalation windows (S2); full-stream chat (S3) |
| April 27–30, 2025                      | April 29, 2025                                       |    | X  | X  | PDS escalation windows (S2); full-stream chat (S3) |
| March–June 2025 (additional outbreaks) | All creator-archived outbreak dates, March–June 2025 |    |    | X  | Full-stream chat from archived livestream sessions |

#### 4.4.5 #WxTwitter Discourse: Collection via AI-Assisted Search

Professional meteorological community discourse on Twitter/X operates primarily under the #WxTwitter hashtag. This is a feature of the field rather than a methodological choice: the debates over creator credentialing, institutional authority, and professional boundary maintenance that Chapter 3 theorizes are conducted in this space, and there is no methodological alternative that accesses the same discourse. The posts cited in that chapter serve a specific and bounded evidential function: they document that particular arguments were made publicly, by particular people, in this community, at particular times. The claims they support are documentary and illustrative and do not warrant frequency claims or representativeness claims about community views.

Standard keyword and hashtag search is poorly suited to this material. The relevant debates are semantically embedded and do not resolve to simple keyword queries; a search for #DisasterPorn or *subtweets* regarding #hype will surface some relevant posts but miss many substantive exchanges about "social media post thumbnail" ethics, which are often conducted in ordinary prose without consistent hashtag use. I used Grok, Twitter/X's AI assistant, as a supplementary search aid for locating candidate public posts related to debates I had already identified through prior familiarity with the #WxTwitter community. X describes Grok as having access to real-time public X posts and the ability to search public X content [212]. I do

not treat Grok’s summaries as evidence. Instead, I used it to surface candidate posts, then manually verified each selected post at its original URL before including it in the corpus. Table A.2 in Appendix A gives a sampling of the posts collected through this Grok-assisted search process. Each tweet was independently verified as real and publicly accessible at the time Chapter 3 was written.

The retrieval process was expert-guided. Prior familiarity with the #WxTwitter community informed which debates, figures, and events to search for, much as domain expertise informs purposive archival search in other qualitative research contexts. This background shaped the search strategy, but inclusion still depended on my evaluation of relevance and manual verification at the original URL.

Searches were organized across topical clusters related to creator credentialing, professional boundary work, platform affordances, monetization, hype and #DisasterPorn discourse, AI-generated weather content, parasocial audience dynamics, and creator scale and variation. Queries were formulated as natural-language prompts rather than only as hashtag keyword filters. Results were evaluated for relevance, and irrelevant posts were excluded. Because AI-assisted retrieval can return inaccurate or unverifiable material, all selected posts were manually checked at the original URL to confirm both existence and continued public accessibility before inclusion. A summary of the query log is preserved in Table A.1. Cited posts are reproduced in full in Table A.2. Posts are cited in the format: Author, handle, date, platform, and URL. All retrieved material supports the field-level institutional context developed in Chapter 3; no Grok-assisted searches were conducted for the empirical studies.

## **4.5 Methodological Orientation**

### **4.5.1 Crisis Informatics Tradition**

I situate this work within the crisis informatics tradition, which itself builds on a longer history of disaster sociology research and employs a multidisciplinary approach to understanding crisis-related information behavior through digital trace data. [144]. Crisis informatics research is characteristically multi-method, iterative, and oriented toward placing digital traces within the social and organizational contexts in which they were generated rather than treating them as transparent records of behavior.

One adaptation is required by the phenomenon under study. The dominant crisis informatics model, developed primarily in the Twitter era, assumes a many-to-many distributed information environment in which collective sensemaking and verification emerge from the contributions of a large, loosely coordinated crowd [176, 199]. This dissertation examines a structurally different configuration: one-to-many, creator-directed interpretation in which a single focal actor mediates sensemaking for a large audience in real time. That shift changes what the methods can see. Rather than tracing how verification propagates horizontally across a distributed network, the analysis attends to how interpretive authority is enacted, evaluated, and sustained within a vertically structured communicative relationship. Different mechanisms are operative, and different methodological attention is required to make them visible.

### **4.5.2 Trace Ethnography**

The shared methodological anchor across all three studies is trace ethnography as developed by Geiger and Ribes [67]. Digital traces, including chat logs, creator commentary, on-screen display elements, and stream metadata, are treated as evidence of sociotechnical practices rather than as transparent records of events. What they document is not simply what happened but how participants were making sense of what was happening, and for whom. This orientation is particularly suited to the livestream environment, where the

traces left by creator narration, platform affordances, and audience interaction are the primary observable evidence of interpretive and coordinative work.

Trace ethnography permits thick description of publicly observable interactional traces across all three studies, though each draws on different trace types: archived video clips in Study 1, creator narration and on-screen display elements in Study 2, and whole-stream chat logs in Study 3. What it cannot access is equally important to state clearly. Creator intentions, off-screen coordination, and audience downstream behavior all fall outside what the archived record makes visible. Claims are bounded accordingly throughout.

### **4.5.3 Abductive and Mixed-Methods Orientation**

Movement between data and theory across the three studies is iterative rather than confirmatory. Analytic categories were developed and refined in response to what the data made visible rather than specified in advance and applied deductively. Each study employs the methods best suited to its analytic problem: a convergent mixed-methods design combining a survey experiment with follow-up interviews in Study 1, focused content analysis with critical incident sampling in Study 2, and systematic chat coding with quantitative summary in Study 3.

The mixing across studies is by analytic level rather than by instrument convergence. The three studies examine production practices, audience evaluation, and community coordination as three analytically distinct but empirically interrelated entry points into the same information ecosystem. Triangulation operates across levels of analysis rather than across methods applied to the same unit.

### **4.5.4 Summary**

These three methodological commitments, crisis informatics as a disciplinary tradition, trace ethnography as an analytic orientation toward digital evidence, and an abductive mixed-methods approach that moves iteratively between data and theory, constitute the shared methodological infrastructure of the dissertation. Study-specific procedures, including sampling strategies, coding frameworks, and analytic units, are developed within this infrastructure and described in Chapters 6 through 8.

## **4.6 Ethical Considerations**

### **4.6.1 IRB**

Study 1 received IRB approval as human subjects research involving survey participants and interview respondents. Studies 2 and 3 did not require IRB review; both draw exclusively from publicly archived digital trace data collected without researcher interaction with human subjects.

### **4.6.2 Public Data and Platform Terms of Service**

All YouTube material was accessed from publicly available archives without authentication. #WxTwitter posts were publicly posted by their authors and are cited as primary sources with full attribution. Access and use procedures for both platforms are consistent with their respective Terms of Service for non-commercial research purposes.

### **4.6.3 Creator Identification Policy**

Ryan Hall, Y'all; Max Velocity; and Texas Weather Center are named throughout this dissertation. Three considerations justify this. First, all three are public figures performing explicitly public work for public audiences; their interpretive practices, credential configurations, and platform presence are the analytic subject of the research rather than incidental personal information. Second, credential configurations are analytically non-fungible: substituting pseudonyms would obscure the variation in formal training and organizational structure that Study 2 treats as an independent variable and that the field-level analysis in Chapter 3 theorizes directly. Third, this approach is consistent with the Association of Internet Researchers ethics framework, which identifies accounts with substantial public followings engaged in public-facing work as appropriate subjects for named analysis [60]. Anonymizing creators in this chapter while naming them throughout the remainder of the dissertation would be incoherent.

Studies 1 and 2 were submitted for blind peer review with creators anonymized in accordance with venue traditions and to reduce bias in the review process. That constraint does not apply to this document, and creators are named consistently throughout.

### **4.6.4 Chat Participant Anonymization**

Study 3 draws on live chat contributions from ordinary viewers without public personas. YouTube Live Chat usernames are user-chosen public handles visible to all concurrent viewers during a stream and retained in the publicly archived chat replay. Usernames are not reproduced in the dissertation text. Quoted messages appearing in the analysis have been minimally altered to reduce the likelihood of reverse lookup while preserving communicative function and analytic relevance. The coded individual comment and conversation samples in the supplementary repository include original usernames as part of the archival record of each coded item.

### **4.6.5 Researcher Skywarn Affiliation**

My training as a National Weather Service SKYWARN Storm Spotter is disclosed in Section 4.3 and is relevant to interpreting the domain-native literacy I bring to the analysis. As noted there, I did not participate in any analyzed stream as a viewer, chat contributor, or in any other interactive capacity during the periods under analysis.

### **4.6.6 Statement on the Use of Generative Artificial Intelligence**

I used generative artificial intelligence in specific capacities during the writing of this work. My use falls into three areas: brainstorming and reflection, prose revision, and technical programming assistance. All usage falls within the scope of the AI policies set forth by the University of Washington as of May 2026.

**Brainstorming and Reflection:** I used Claude to reflect on the functional goals of specific areas of the document, such as the abstract, study summaries, study-level mini literature sections (such as reflection on which scope of topics were better suited for the mini literature review versus the main literature review), and prompting on whether or not my original writing achieved the goals of those sections. I also utilized it to brainstorm hypotheticals on how different chapter orderings could affect overall narrative tension.

**Prose Revision:** I used Claude for paragraph and sentence-level prose support throughout, but particularly for early drafts. This included improving conceptual clarity, identifying unclear phrasing, transitions, or redundancies, smoothing "wordy" passages, breaking up long paragraphs, and improving overall readability of text drafted originally by me. All suggestions were thoroughly reviewed and revised according to my

intent, voice, and tone before inclusion and no suggestions were adopted wholesale. I bear full responsibility for the final text.

**Technical Programming Assistance:** In Studies 1 and 3, I used Claude Code for assistance in writing and debugging Python code; this code was then ported over to Google CoLab for cleaning data and generating descriptive statistics run on the original data file(s). Code output and any resulting analyses were spot-checked manually via Microsoft Excel for accuracy. I also used GPT models to assist with LaTeX table formatting refinements throughout the work.

**Boundaries of Usage:** AI was *not* used for tasks such as: chapter-level outlining or structure, scholarly literature search, generating citations, citation formatting, framework development, codebook development, quantitative analysis (except for generating Python code to do so), qualitative coding of any piece of data, theme generation, analytical decisions, interpretation of data, study designs, or developing core contributions or concepts. The only AI-assisted retrieval process outside writing and code support was the Grok-assisted search of public #WxTwitter posts described in Section 4.4.5; Grok was used to surface candidate public posts without a #wx, #wxtwitter, or storm-related hashtag, not to summarize evidence, select final evidence, or conduct analysis.

## 4.7 Data and Code Availability

Analysis code and supporting data for Studies 1 and 3 are available at <https://github.com/julievera/weatherstudy>. The repository includes the Study 1 survey analysis notebook and raw Qualtrics survey data, Study 3 preprocessing and analysis notebooks, and the qualitatively coded individual comment and reconstructed conversation samples. Study 2 materials consist of structured observation notes conducted using the analysis templates and codebook included in Appendix C; no computational data files are included for Study 2. The supplementary X/Twitter corpus analysis for the Whitman, Nebraska tornado described in Chapter 1 is also available in the repository.

## 4.8 Limitations of the Overarching Approach

Several limitations of the shared methodological approach bear on how findings across all three studies should be interpreted, and are noted here in addition to the study-specific limitations addressed in Chapters 6 through 8.

The creator sample is small and purposive. Three creators were selected because they satisfy the methodological requirements of all three studies, not because they are statistically representative of the weather-fluencer population. Findings characterize practices within this high-salience sample; they do not support population-level distributional claims about weatherfluencer practice more broadly.

All three studies are YouTube-specific. The archival affordances that make this research possible, including persistent video archives, Live Chat Replay, and automatic transcripts, are not uniformly available across platforms. The creator ecosystem examined here is also concentrated on YouTube in ways that differ from TikTok, Twitch, and Instagram Live. Findings may not generalize across platforms, and platform architecture is itself a condition of the practices documented here rather than a neutral backdrop.

The empirical scope is bounded by language, geography, hazard type, and season. All material is English-language and drawn from U.S. tornado outbreak contexts. Study 1 uses archival broadcast and YouTube material from the April 25–28, 2024 outbreak, anchored to the April 27 Oklahoma severe weather window. Studies 2 and 3 draw from Spring 2025 tornado outbreak periods in the central and southern Plains, with Study 2 focusing on PDS-centered escalation windows and Study 3 extending to full archived

livestream sessions across March–June 2025. Different hazard types, such as hurricanes, winter storms, or flooding events, unfold across different temporal structures and may elicit different interpretive practices, audience participation patterns, and trust dynamics. Non-U.S. severe weather communication contexts operate under different institutional architectures and may produce different findings entirely.

The analysis is observational throughout. No access to creator intentions, off-screen coordination, or audience downstream behavior is available through archived trace data. What is documented is what was made publicly observable; the reasoning, decisions, and experiences that produced those traces remain outside the evidentiary record.

Chat participation in Study 3 is both self-selected and publicly visible. Viewers who contributed to chat are a subset of the total audience; lurkers, who may constitute the majority of concurrent viewers, are invisible in the archived record. The chat ecology analyzed in Study 3 reflects the communicative practices of the active contributing subset, and findings about trust work and sensemaking in chat should not be generalized to the full audience without that boundary condition in mind.

Finally, the two outbreak periods analyzed across Studies 2 and 3 represent a specific moment in the development of the weatherfluencer ecosystem. The Spring 2025 tornado season followed a period of rapid growth and credentialing controversy within the community. Practices, norms, and audience relationships documented here are grounded in that particular moment and may shift as the ecosystem continues to develop.

## **4.9 Summary**

The overarching methodological design links three analytic levels within the same severe weather communication ecology. Study 1 uses a mixed-methods survey experiment with follow-up semi-structured interviews to examine audience evaluation of broadcast and platform-native severe weather interpreters. Study 2 uses trace-informed focused content analysis of PDS-anchored livestream segments to examine the creator-side practices through which severe weather reasoning becomes publicly visible during escalation windows. Study 3 uses trace-informed qualitative content analysis of livestream chat to examine the audience-side practices through which viewers question, supplement, compare, monitor, and endorse creator interpretations as events unfold. The next chapter introduces the severe weather events and sampling windows that anchor these empirical materials.

## Chapter 5

# Sites of Sensemaking: Tornado Outbreak Livestreams

### 5.1 The U.S. Severe Weather Information Ecosystem

The U.S. severe weather information ecosystem spans atmospheric monitoring, probabilistic forecasting, hazard designation, and public dissemination, with broadcast television historically at the forefront. This architecture is structured around federally authorized agencies such as the National Weather Service (NWS) and Storm Prediction Center (SPC), overseen by the National Oceanic and Atmospheric Administration (NOAA), whose products are redistributed and interpreted across broadcast, digital, and platform-native media environments.

#### 5.1.1 Convective Forecasting and Risk Outlooks

The Storm Prediction Center (SPC), a national center within the National Weather Service (NWS), produces convective outlooks that forecast the probability of severe thunderstorms and tornadoes across one- to eight-day horizons. These outlooks assign categorical risk levels (Marginal, Slight, Enhanced, Moderate, High) derived from calibrated probabilistic thresholds for severe weather occurrence within a defined geographic area [181]. In addition to communicating forecast probabilities, convective outlooks structure expectations of potential escalation: broadcast stations begin preemptive planning, emergency managers stage resources, and public attention expands before any storm cell has developed.

#### 5.1.2 Tornado Watches and Warnings

Tornado warnings are issued by local National Weather Service (NWS) forecast offices when Doppler radar signatures indicate strong rotation or when trained spotters confirm tornado presence [130]. Warnings are geographically bounded using polygon-based coordinates rather than county-wide designations, reflecting a policy shift toward greater spatial precision in hazard communication [130, 124, 28]. Each warning contains standardized metadata, including issuance and expiration times, hazard type, and impact-based statements [130].

Warnings are dynamic products, updated, extended, replaced, or canceled as storm evolution unfolds following established operational procedures [130]. During outbreak conditions, multiple warnings are often active simultaneously across adjacent jurisdictions, producing overlapping hazard polygons and rapidly shifting geographic frames of reference. These successive issuances compress temporal windows within

the information environment, requiring communicators to continually integrate NWS watches and warnings while managing new radar sweeps.

### **5.1.3 Enhanced Designations: PDS and Tornado Emergencies**

Within the warning system, certain enhanced designations signal heightened severity. A Particularly Dangerous Situation (PDS) tag may accompany tornado watches or warnings when forecaster confidence is high that significant, potentially violent tornadoes are occurring or imminent [130]. Tornado emergencies, an escalated form of tornado warning language issued when a confirmed tornado poses an immediate and life-threatening risk to a populated area, represent the highest level of operational severity within current practice [130]. Prior research has examined how such enhanced language influences public interpretation and protective action decision-making [25].

These enhanced designations function as escalation markers within the warning architecture. They signal both elevated hazard magnitude and increased institutional confidence, and they frequently correspond with surges in media coverage and audience attention. Because PDS and emergency designations compress the gap between radar signature and required protective action while raising the cost of interpretive error, they are particularly productive sites for examining interpretive coordination.

### **5.1.4 Dissemination Pathways and Media Redistribution**

Official watches and warnings are disseminated through multiple channels, including NOAA Weather Radio, the Integrated Public Alert and Warning System (IPAWS), Wireless Emergency Alerts (WEA), and publicly accessible digital feeds. Broadcast stations, private weather companies, and platform-based livestreamers ingest these products and redistribute them in real time. These products are encoded in machine-readable formats (e.g., VTEC strings and Common Alerting Protocol feeds) that enable automated ingestion into broadcast graphics systems, commercial radar software, and platform-native livestream environments.

During major outbreaks, local television stations often suspend regular programming to provide continuous coverage. Simultaneously, digital livestreamers may track multiple storm cells across state lines for extended durations. Although these actors differ in organizational embedding and audience structure (examined in detail in the preceding chapter), they rely on the same underlying warning products and radar data streams. Outbreak conditions produce a shared informational substrate across heterogeneous media environments.

### **5.1.5 Outbreak Structure and Temporal Sequencing**

Tornado outbreaks may unfold over a single afternoon or across multiple consecutive days as synoptic-scale systems propagate geographically. Multi-day sequences often involve repeated cycles of atmospheric destabilization, convective initiation, warning issuance, and de-escalation. From an informational perspective, these sequences create sustained monitoring environments punctuated by episodic escalation.

Because warning issuance is event-driven, escalation episodes emerge irregularly and can overlap across regions. High-visibility metropolitan impacts further amplify these dynamics, as warnings intersect dense populations, increase media saturation, and expand cross-platform audience participation. These structural characteristics, polygon-based warnings, enhanced designations, rapid updates, and multi-day sequencing, define the temporal and geographic structure within which the analytic units examined in Studies 1–3 are embedded.

## 5.2 Tornado Outbreaks as Sites of Sensemaking

Tornado outbreaks are not only meteorological phenomena but also information-intensive events. During major outbreaks, the volume, velocity, and consequence of hazard communication escalate simultaneously. Official forecasting centers issue probabilistic outlooks, local offices generate rapidly updating warnings, storm chasers provide on-the-ground observations, broadcast meteorologists interrupt programming, and platform-native creators begin continuous livestream coverage. Under these conditions, the volume of incoming warning products exceeds what any single source can interpret alone, and audiences must actively evaluate competing accounts in real time.

The Whitman, Nebraska tornado, which struck without any preceding warning, illustrates that warning systems can operate at their functional limits. Outbreak conditions do not always produce failure, but they expose where the informational chain between radar detection and local protective action is most likely to break down. For this reason, outbreaks provide analytically powerful contexts for examining how trust, interpretation, and coordination unfold under compressed temporal conditions.

### 5.2.1 What Counts as an Outbreak?

Meteorologists have debated outbreak definitions for decades, with competing criteria based on tornado count, spatial extent, temporal clustering, and kinematic organization. The American Meteorological Society defines tornado outbreaks broadly as multiple tornado occurrences associated with a particular synoptic-scale weather system [14]. Within that general definition, Galway proposed a numerical threshold of ten or more tornadoes as constituting an outbreak, a criterion that remains influential in operational practice [64]. At the upper extreme, so-called super outbreaks involve exceptional tornado counts and geographic scope across multiple days and states [73]. Multi-day outbreak sequences, in which successive convective episodes unfold across consecutive days as a system propagates geographically, represent a distinct informational structure from single-day events [160]. For this dissertation, the precise meteorological threshold is less important than the informational structure that outbreak conditions reliably generate: sustained, high-velocity environments in which multiple warning products, interpretive sources, and public audiences are simultaneously active.

### 5.2.2 PDS Windows as Core Analytic Units

Within outbreak conditions, PDS-designated episodes concentrate the sensemaking demands that this dissertation investigates. As described in Section 5.1.3, PDS designations are issued only when institutional confidence in a significant hazard is high. PDS designations are relatively rare; non-expert audiences generally read them as escalation signals; and concurrent viewership typically spikes when one is issued. However, their analytical value goes beyond these practical features.

During routine monitoring, such as when storm cells are developing but no significant warnings are active, interpretive work proceeds in a relatively low-stakes register. Creators can hedge, update, and revise without immediate consequence. When a PDS warning is issued, that register shifts. The temporal gap between radar observation and required protective action compresses. Creators must make consequential probabilistic claims in real time, often before surface confirmation is available, and audiences must decide how to weight those claims against official guidance and their own local knowledge. That compression makes interpretive reasoning publicly visible in ways that lower-stakes monitoring does not: creators narrate their analytical process, externalize uncertainties, and respond to audience questions under conditions where a missed tornado track or a premature all-clear can directly affect whether audience members shelter in time.

Weick's account of cosmology episodes offers a useful theoretical parallel [203]. Cosmology episodes are moments in which both sense and the means of sensemaking break down simultaneously, producing a collapse of the interpretive frameworks that normally allow actors to proceed. PDS windows are not cosmology episodes in the full sense: they do not typically produce the kind of total disorientation Weick describes. But they share the feature of collapsing the taken-for-granted, routinized quality of ordinary monitoring. During PDS windows, the question of whose interpretation to rely on, which creator, which official source, and which ground-truth report, becomes acute in a way it is not when conditions are less severe. This concentration of urgency and interpretive accountability makes PDS escalation windows appropriate units for examining how collective sensemaking proceeds under conditions where interpretive authority cannot be settled in advance through professional standing.

Outbreak conditions also surface longstanding challenges in warning response research, including false alarms and over-warning fatigue [154, 166, 168]. Prior experience with warnings that did not materialize into personal impact can shape subsequent credibility judgments and protective action decisions. PDS designations occur within this historical memory. Audiences encountering a PDS window carry prior experience of false alarms, missed events, and perceived institutional overstatement, all of which shape how they weight incoming guidance.

### **5.2.3 Why High-Visibility Metropolitan Impacts Matter**

Not all outbreak events are equally suited for cross-platform comparison. Dense populations amplify both the stakes of interpretive error and the volume of audience participation in real-time sensemaking. High-visibility metro impacts also expand cross-platform coverage: broadcast television stations are more likely to preempt regular programming for continuous live coverage, weatherfluencers attract larger concurrent audiences, and social media engagement increases substantially. Methodologically, high-visibility events are more likely to have generated the archival records with continuous broadcast footage and archived livestream sessions with full chat logs that make systematic cross-platform comparison possible. The April 27, 2024 event, which produced tornado warnings threatening the Oklahoma City metropolitan area, exemplifies these conditions and is examined in Section 5.4 specifically because it satisfies them.

### **5.2.4 Multi-day Versus Single-Day Outbreak Structure**

The outbreaks sampled in this dissertation vary in temporal structure. Single-day events concentrate hazard within a compact window, producing a single cycle of anticipation, escalation, and de-escalation. The informational demands are intense but brief; audiences assemble around a specific threat and then disperse. Multi-day outbreaks, such as the April 25–28, 2024 and April 27–30, 2025 sequences, involve repeated cycles as synoptic-scale systems propagate geographically across consecutive days. This extended structure creates a different temporal relationship between creators and audiences. Viewers may return across multiple sessions, developing greater familiarity with particular creators through repeated exposure. Creators, in turn, must sustain their interpretation across both peak escalation and the lower-intensity monitoring periods between major warning moments. Multi-day structures create conditions under which repeated questioning, comparison, corroboration, and reliance can develop within a single outbreak sequence rather than being confined to one short episode. Studies 2 and 3 both sample from multi-day outbreak sequences, as detailed in Sections 5.5 and 5.6, and that temporal structure is part of what makes them appropriate sites for examining how audiences continue working with a creator's interpretation across an extended unfolding event.

## 5.3 Outbreak Periods and Analytical Windows Across Studies

PDS windows compress the time available for interpretive decisions. Metro-scale impacts expand participation beyond what any single source can satisfy. Multi-day outbreak structure sustains interpretive demand long enough for creators and audiences to establish repeated patterns of questioning, comparison, corroboration, and reliance across the course of an event. Major outbreaks concentrate all three conditions. The three studies draw on two temporally distinct outbreak contexts: the April 25–28, 2024 outbreak and multiple outbreak episodes spanning March–June 2025. The cross-study corpus overview, including dates sampled, primary units of analysis, and study assignments, is summarized in Table 4.3 in Chapter 4. Sections 5.4–5.6 describe each study’s event selection and analytical rationale in detail.

## 5.4 Study 1: Event Sampling Strategy

### 5.4.1 Temporal Scope

Study 1 examines evaluative perceptions of severe weather communication during the April 25–28, 2024 tornado outbreak, one of the most significant U.S. severe weather events of 2024. Across four days, 165 tornadoes were confirmed, including two EF4 and seven EF3 tornadoes, resulting in six fatalities and more than 150 injuries [125]. Near Oklahoma City, the storm systems produced at least two major impacts: an EF-4 tornado in Marietta, Oklahoma and an EF-3 tornado in Sulphur Oklahoma [131].

The analysis is anchored to April 27, 2024, during a three-hour meteorological window (12:30 PM–3:30 PM Central Time) when supercell development and tornado warnings were actively impacting the greater Oklahoma City metropolitan area.

### 5.4.2 Units of Analysis

The unit of analysis in Study 1 is the three-minute video clip presented to participants in a survey and follow-up interview study. Two clips were drawn from YouTube-based livestream creators and two from broadcast meteorologists (KFOR-TV Channel 4 and KWTV-DT Channel 9, Oklahoma City). All clips were selected from the same meteorological window and trimmed to approximately three minutes in length to hold storm conditions relatively constant while varying communication format and institutional affiliation. This design isolates presentational style, perceived authority, and platform context while minimizing variability in storm intensity or warning conditions. By controlling for meteorological context, Study 1 focuses on audience evaluations of trust, credibility, and legitimacy rather than on the dynamics of real-time coordination.

### 5.4.3 Rationale for Selection

The storms on April 27, 2024 featured repeated tornado warnings and extensive live coverage across both broadcast and digital-native platforms, making it well-suited for cross-platform comparison. Continuous live coverage by Oklahoma City television stations provided broadcast material structurally comparable to creator livestreams.

Unlike Studies 2 and 3, which examine interpretive processes within extended livestream ecologies, Study 1 isolates a short, matched time slice to assess how viewers evaluate severe weather information when format and institutional affiliation vary under comparable meteorological conditions.

Because both broadcast meteorologists and YouTube livestreamers rely on the same SPC outlooks, radar feeds, and NWS warning products described in Section 5.1, holding the meteorological window constant

allows Study 1 to isolate differences in presentation, institutional affiliation, and perceived authority rather than differences in underlying data.

## **5.5 Study 2: Event Sampling Strategy**

### **5.5.1 Temporal Scope**

Within these outbreaks, I focus on three specific broadcast dates: April 2, April 3, and April 29, 2025.

The April 2–5 and April 27–30, 2025 sequences were selected from the broader 2025 tornado season because they satisfied three criteria simultaneously. First, each contained multiple PDS warnings and at least one tornado emergency, ensuring analytically concentrated escalation windows. Second, these events generated sustained multi-hour livestream coverage by all three focal creators, enabling cross-creator comparison under similar meteorological conditions. Third, both sequences involved high-visibility impacts in densely populated regions of the Southern Plains, increasing audience scale and participatory intensity within chat.

Other outbreak days during Spring 2025 did not meet all three criteria simultaneously: some lacked PDS designations, others generated shorter or fragmented livestream coverage, and some involved geographically dispersed storms that did not produce concentrated metropolitan impact. The selected dates represent high-intensity, high-visibility, and high-archival-integrity cases within the 2025 season.

Across the three focal livestreams, I identified thirteen PDS tornado warnings, yielding 453 minutes of analyzed content.

### **5.5.2 Units of Analysis**

The unit of analysis in Study 2 is the PDS-centered escalation window embedded within a multi-hour livestream session. Each focal stream ranged from approximately 5.5 to 12 hours in duration, enabling observation of interpretive practices across extended monitoring periods and repeated cycles of escalation.

To operationalize escalation windows, each PDS episode was bracketed beginning five minutes prior to warning issuance and continuing through the warning duration to five minutes after cancellation. When multiple PDS warnings overlapped, they were treated as a single extended episode spanning from five minutes before the first issuance to five minutes after the final cancellation. This bracketing captures anticipation, peak escalation, and immediate de-escalation within a coherent analytic window.

Although Study 3 centers audience discourse at scale, Study 2 incorporates chat as supporting trace evidence during PDS windows. Because livestream chats may contain tens of thousands of messages per session, I purposefully sampled approximately 300 chat messages per stream during PDS escalation episodes to triangulate creator-led interpretation with audience response.

### **5.5.3 Rationale for Selection**

Study 2 concentrates on periods of PDS warnings, as these compress the interval between radar observation and protective action while raising the reputational cost of misreading what the radar shows. That compression makes visible the coordination work required to translate radar signatures, warning polygons, and institutional advisories into geographically actionable guidance.

Focusing on repeated PDS episodes across the same three focal creators keeps the creator set, event type, and escalation context comparable while shifting the analysis to creator-centered interpretation during safety-critical warning periods.

## 5.6 Study 3: Event Sampling Strategy

### 5.6.1 Temporal Scope

Study 3 examines audience discourse across archived YouTube livestream sessions spanning March through June 2025, corresponding to multiple U.S. tornado outbreak periods during the climatological peak of severe weather season.

The three focal streams analyzed in Study 2 (April 2, April 3, and April 29, 2025) are included within this broader corpus. However, the analytic unit differs. Whereas Study 2 isolates PDS-anchored escalation windows to examine creator-centered coordination during safety-critical moments, Study 3 analyzes entire livestream sessions to characterize audience interaction, trust signaling, and collaborative sensemaking across extended monitoring periods.

Because livestream coverage is contingent on creator availability and archiving behavior, Study 3 includes all archived severe-weather livestream sessions produced by the three focal creators during outbreak-active dates within the March–June 2025 window.

### 5.6.2 Unit of Analysis

The unit of analysis in Study 3 is the archived livestream session and its associated live chat, rather than the meteorological “outbreak” as defined by forecasting agencies. This distinction is analytically important: outbreak periods may span multiple days, cross midnight, or involve multiple rounds of convective development, whereas archived livestreams reflect platform-recorded session boundaries.

Across the sampling window, the Study 3 dataset comprises 34 archived YouTube livestream files produced by the three focal creators. Individual sessions range from approximately 5.5 to 12 hours in duration, reflecting the sustained monitoring format characteristic of platform-native severe weather coverage. Some outbreak dates include overlapping coverage by multiple creators, while others feature a single continuous stream.

This variation allows examination of trust practices across differing audience scales, storm intensities, and coverage densities, while keeping the focal creator set consistent with Studies 1 and 2.

### 5.6.3 Rationale for Selection

The March–June 2025 sampling window captures repeated outbreak activity across the Southern Plains, Midwest, and Texas-centered events during peak tornado season. These livestreams collectively document prolonged radar interpretation, cross-state storm tracking, episodic warning escalation, and distributed audience reporting.

Unlike Study 2, which concentrates on analytically privileged escalation windows, Study 3 adopts a whole-stream ecological perspective. This broader scope enables examination of trust-signaling behaviors not only during peak warning issuance, but also throughout extended periods of uncertainty, monitoring, anticipation, and de-escalation.

Because livestream creators frequently track multiple supercells<sup>1</sup> simultaneously across geographically dispersed regions, chat participants contribute localized observations while orienting to a shared radar-based interpretive frame. This distributed geographic participation forms a key contextual condition for the audience trust-work examined in Study 3.

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<sup>1</sup>A supercell is a long-lived, rotating convective storm characterized by a quasi-steady mesocyclone and strong vertical wind shear [12].

## **5.7 Summary**

Tornado outbreaks activate the full severe weather information ecosystem at once: official warning production, broadcast redistribution, platform-native interpretation, and public evaluation. The outbreak cases described in this chapter provide the shared empirical ground for the studies that follow. The analysis begins with audience evaluation, asking how viewers assess weatherfluencers when they encounter them alongside broadcast meteorologists during the same severe weather event.

## Chapter 6

# Study 1: Comparing Perceptions of Weatherfluencers Versus Broadcast Meteorologists

### 6.1 Study Overview

I examine how audiences evaluate weatherfluencers when placed in direct comparison with credentialed broadcast meteorologists, and what those evaluations reveal about the scope and limits of credential-based evaluation in severe weather communication. The question is whether institutional markers such as newsroom affiliation, professional certification, and established accountability structures continue to organize audience judgment when platform-native creators and broadcast meteorologists are encountered side by side during the same event.

In conventional severe weather communication, these markers ordinarily provide a legible basis for interpretive standing in advance. They signal who is recognized as an appropriate interpreter of meteorological conditions and whose guidance can be treated as authoritative for public safety purposes. Weatherfluencers test that arrangement directly. They operate outside the formal warning chain and hold professional standing inconsistently, if at all, yet they attract large audiences and are used as consequential interpretive resources during active events.

Participants viewed clips of both broadcast meteorologists and YouTube weatherfluencers covering the same severe weather event and evaluated them across multiple dimensions, including trustworthiness, credibility, objectivity, and legitimacy, as well as perceived safety utility. The findings show that credential-based evaluation remains real and durable. Broadcast meteorologists retain clear advantages on dimensions tied to professional standing and accountability, including trustworthiness, credibility, and legitimacy. Participants perceived the credential gap, and their judgments reflected it.

The findings identify a limit to what credential-based evaluation can explain on its own. Perceived objectivity does not sort cleanly along credential lines. On that dimension, platform-native creators reach statistical parity with broadcast meteorologists despite lacking the institutional markers that structure evaluation elsewhere. This exception indicates that some evaluative judgments respond to features other than formal professional standing alone.

Institutional trust in the U.S. weather enterprise remains meaningful at the level of individual evaluation; weatherfluencers do not displace it. That evaluative structure is nonetheless incomplete: it explains why broadcast meteorologists retain advantages on legitimacy-linked dimensions, but it does not fully ex-

plain why platform-native creators can approach parity on a reasoning-visible dimension such as objectivity. That gap motivates the next chapter's shift from audience judgment to creator practice, asking what weatherfluencers make publicly visible during livestreams that may provide audiences with an alternative basis for evaluation.

## **6.2 Relevant Literature**

### **6.2.1 Measuring Credibility, Legitimacy, and Trustworthiness**

Study 1 examines audience evaluation across multiple dimensions rather than treating credibility as a single global judgment. This approach follows a measurement tradition in journalism and mass communication research that operationalizes credibility as a multidimensional construct. Gaziano and McGrath developed a credibility measurement approach that included evaluative dimensions such as fairness, bias, accuracy, trustworthiness, completeness, and community concern [66]. Meyer later refined this tradition into a newspaper credibility index designed to measure audience-perceived credibility in a practical and systematic way [116]. Although these instruments were developed for news contexts, they provide a useful foundation for Study 1 because they separate credibility-related judgments that may behave differently when audiences evaluate severe weather interpreters operating under different authority configurations.

Digital credibility research extends this concern to environments where source type, platform context, and institutional cues are more variable. Metzger defines online credibility as the believability of information and/or its source, and identifies expertise and trustworthiness as central dimensions of credibility assessment [114]. Metzger and Flanagin further show that audiences often rely on heuristics such as reputation, endorsement, consistency, expectancy violation, and perceived persuasive intent when evaluating online information [115]. Hilligoss and Rieh similarly argue that credibility judgments operate across construct, heuristic, and interaction levels: people bring general ideas about what credibility means, use rules of thumb about media and source cues, and form judgments through engagement with particular content and information objects [78]. These accounts are directly relevant to Study 1 because participants encounter broadcast meteorologists and YouTube weatherfluencers through different cue environments before and during their evaluation of the clips.

The study also distinguishes credibility, trustworthiness, and legitimacy. Credibility refers to whether information or a source appears believable and well grounded. Trustworthiness refers to perceived qualities of the communicator or coverage that make reliance seem warranted, such as honesty, transparency, and competence. Legitimacy concerns a different question: whether an actor or coverage format appears appropriate, authorized, or proper within a socially recognized order [183]. In the weatherfluencer comparison, these evaluative dimensions can separate in the clip task. A presenter can appear technically competent or practically useful while still lacking institutional standing, and a broadcast meteorologist can carry legitimacy from newsroom affiliation even when a short clip gives participants limited access to how the presenter reached the interpretation.

For this reason, Study 1 separates legitimacy into two analytic targets: the legitimacy of the coverage and the legitimacy of the presenter. This distinction is motivated by the weatherfluencer case. In broadcast television, communicator, organization, and accountability structure are typically bundled: the meteorologist appears as a representative of a newsroom and its weather operation. On YouTube, those elements are less tightly coupled. A creator may control the channel, present the coverage, assemble the visual materials, and claim interpretive standing without the same organizational embedding. Separating coverage legitimacy from presenter legitimacy allows the study to ask whether audiences distinguish the perceived appropriateness of the information from the perceived standing of the person presenting it.

This measurement structure supports the study's central comparison. Rather than asking whether broadcast meteorologists or weatherfluencers are simply more credible overall, the study asks how evaluations distribute across accuracy, trustworthiness, objectivity, credibility, coverage legitimacy, and presenter legitimacy. This makes it possible to examine whether dimensions tied to professional standing behave differently from dimensions more available to direct assessment in the clip itself.

## **6.2.2 Weather Communication and Professional Standing**

Weather communication research provides the applied context for understanding why professional standing matters in severe weather evaluation. Warning response models treat source perceptions, comprehension, belief, personalization, confirmation, and protective action as linked but analytically distinct parts of warning response [117, 100]. These models do not reduce warning response to source credibility alone, but they do show that perceptions of source expertise, trustworthiness, responsibility, and message adequacy shape how people process severe weather information and decide whether additional confirmation or action is needed [100].

Broadcast meteorologists have historically occupied an intermediary role within this system. They translate official warnings, radar imagery, storm reports, and forecast information into locally meaningful guidance for public audiences. Severe weather broadcasting can include communicating National Weather Service warnings, interpreting radar, monitoring reports from spotters and emergency managers, and providing extended live coverage during active threats [167]. This role is institutional and relational: local television meteorologists work within news organizations, serve geographically defined audiences, and often accumulate familiarity across repeated forecast cycles.

Prior work suggests that this professional and relational position can shape audience response. Sherman-Morris found that parasocial interaction with local weathercasters and trust in weathercaster recommendations were associated with stated likelihood of taking shelter when urged by the weathercaster during severe weather [166]. Ripberger et al. show that perceived false alarms and missed events are associated with lower trust in the National Weather Service, indicating that perceived warning performance can shape institutional trust over time [154]. These findings support a bounded claim for Study 1: severe weather audiences do not evaluate information apart from source and performance expectations. Their judgments can be shaped by professional role, relational familiarity, and perceptions of whether prior or current communication has met the demands of the hazard.

The most direct experimental precedent for Study 1 is Spence et al.'s work comparing weather forecast presenters. In an experiment comparing a professional meteorologist, an amateur meteorologist, and a social robot delivering weather forecasts, participants rated the professional meteorologist higher on source credibility dimensions including competence, trust, and goodwill [170]. This finding indicates that professional meteorologist status can operate as an evaluative cue. Study 1 extends that question into a different comparative setting: broadcast meteorologists and platform-native weatherfluencers covering the same severe weather event, where the weatherfluencers may display technical vocabulary, radar interpretation, and sustained audience reach without the same institutional embedding as local broadcast meteorologists.

The contemporary weather source ecology is increasingly diversified. Publics use television, websites, apps, phone alerts, social media, friends and family, and other digital sources for weather information [97, 47, 120]. Recent work documents declining reliance on television for severe weather information and increasing reliance on phone notifications, websites, friends and family, and social media [96]. Digital meteorology has also emerged as a professional response to this changing environment, including efforts to extend credentialing and professional standards into online weather communication [190]. Study 1 is situated within this diversified source ecology, where broadcast meteorologists remain professionally legible

but are no longer the only visible interpreters audiences may encounter during severe weather.

### **6.2.3 Platform Cues and Comparative Evaluation**

The comparative design of Study 1 depends on the premise that audiences evaluate weather coverage through both content and context. Digital credibility research shows that online audiences often rely on source cues, interface cues, reputation signals, endorsements, and perceived persuasive intent when forming credibility judgments [114, 115]. These cues matter because they can shape evaluation before a viewer has fully assessed the technical quality of the information. In severe weather coverage, station logos, lower-third graphics, studio environments, presenter attire, and broadcast production conventions may signal institutional embedding. YouTube interfaces, channel branding, subscriber cultures, donation features, and creator-centered presentation may signal a different kind of communicative environment.

This does not mean that platform cues determine evaluation in a simple or uniform way. Hilligoss and Rieh's framework suggests that credibility judgments are layered: people bring general credibility constructs, apply heuristics, and then revise or elaborate judgments through interaction with specific content cues [78]. Applied to Study 1, this means a viewer may begin with assumptions about broadcast television or YouTube, but still attend to the presenter's composure, clarity, use of evidence, explanation of uncertainty, and connection between visual material and verbal guidance. The study's within-subject design is useful because it allows evaluation to be compared across sources while holding the meteorological event constant.

Broadcast and platform-native communicators also differ in the relational structures through which audiences may interpret them. Horton and Wohl's concept of parasocial interaction describes the apparent interpersonal relationship that can form between audiences and media personae through repeated mediated encounters [82]. Weather communication research has applied this concept to local weathercasters, whose regular appearance, direct address, and local embeddedness can make them familiar communicators during severe weather [166, 168]. Creator-centered platforms support a different relational logic. Hurcombe's newsfluencer framework describes platform-native creators who produce public information through influencer logics of self-branding, monetization, and participatory audience relationships [88]. Baym's concept of relational labor further clarifies that sustained creator-audience connection requires ongoing communicative work that helps maintain audience relationships over time [20].

These relational forms are not equivalent, and it should not be assumed that one is inherently more credible than the other. Rather, they provide different cue environments for audience evaluation. Broadcast meteorologists may benefit from local institutional continuity and professional role recognition. Weatherfluencers may benefit from visible technical engagement, sustained livestream presence, and creator-audience familiarity. At the same time, platform-native presentation may also raise concerns about monetization, sensationalism, or lack of formal accountability. The comparative question is how different evaluative dimensions respond to the combination of source cues, platform cues, and visible communicative performance.

### **6.2.4 Visibility Without Full Authority**

Crisis informatics provides a useful bounded precedent for understanding how visibility and institutional standing can diverge during emergencies. Research on Crisis Named Resources shows that social media accounts, pages, and communities named after crisis events can become visible information venues even when ownership, accountability, or authority cues are unclear [32, 33, 34]. These resources can gain attention because their names are tied to high-salience events, making them discoverable at moments when information demand is elevated [33]. The trust problem is not only whether the information is accurate, but

whether audiences can determine who operates the resource, what expertise or authority its operators have, and whether misinformation will be corrected [34].

Weatherfluencers share one important feature with this literature: platform-mediated visibility can occur without the same institutional standing that audiences associate with official agencies or broadcast organizations. However, weatherfluencers differ from Crisis Named Resources in ways that matter for Study 1. They are not usually event-named resources created around a single disaster. They are persistent creator-centered channels that accumulate audiences across events, maintain recognizable presenter identities, and provide live interpretation during unfolding severe weather. Their visibility extends beyond event-time discoverability, through subscriber networks, recommendation systems, repeated event coverage, and recurring audience familiarity. In Study 1, those pathways are background context rather than the exposure condition being tested.

Crisis informatics has already shown that non-institutional resources can become visible during emergencies. This analysis narrows the comparison to named YouTube weather interpreters and local broadcast meteorologists covering the same severe weather event. Because the clips retained their native visual contexts, participants evaluated source, presenter, platform, and visible interpretive performance together. The measures capture accuracy, trustworthiness, objectivity, credibility, coverage legitimacy, presenter legitimacy, and usefulness for safety-relevant decision-making.

## 6.3 Research Questions

Study 1 examines how audiences evaluate weather interpreters operating under different authority configurations and how those evaluations relate to perceived safety utility. Two primary research questions address cross-platform evaluation and safety-relevant usefulness. Two secondary questions examine the evaluative mechanisms underlying those judgments and the empirical structure of the credibility constructs employed.

- **RQ1:** How do audiences evaluate broadcast meteorologists and YouTube weatherfluencers across dimensions of accuracy, trustworthiness, objectivity, credibility, coverage legitimacy, and presenter legitimacy? Do platform differences vary across these dimensions?
- **RQ2:** How do audiences assess the usefulness of broadcast and platform-native weather coverage for safety-relevant decision-making, and how do these utility judgments relate to credibility-related evaluations?
- **RQ3:** What evaluative heuristics and criteria do audiences reference when forming credibility and legitimacy judgments about weather interpreters operating under different authority configurations?
- **RQ4:** How do the six evaluative dimensions examined in this study relate empirically to one another? To what extent do they function as distinct constructs versus indicators of a shared underlying evaluation?

## 6.4 Methods

To examine how audiences evaluate weatherfluencers and broadcast meteorologists across multiple dimensions of credibility, legitimacy, and perceived utility, I employed a convergent parallel mixed-methods design combining a quantitative within-subject survey with qualitative semi-structured interviews<sup>1</sup>. The two data

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<sup>1</sup>The Study 1 survey analysis notebook and raw Qualtrics data are available at <https://github.com/julievera/wea-therstudy>.

streams were developed and analyzed in parallel before being brought together in interpretation. This design was chosen because neither method alone was sufficient for the research questions at hand. The survey provided the statistical breadth and within-participant comparisons necessary to detect and quantify systematic evaluative differences across sources and platforms. In the interviews, participants explained their ratings immediately after evaluating each clip, pointing to specific moments, visual and spoken cues, platform expectations, and other communication features they treated as relevant. The interview data triangulated the survey patterns by showing how participants connected those cues to the evaluative judgments asked about in the survey.

### **6.4.1 Study Design**

The core design decision was to hold the meteorological situation constant while varying source and platform. All participants evaluated four video clips drawn from the same severe weather event: two from broadcast television and two from YouTube weatherfluencers. This within-subject structure isolates source and platform effects from content differences, because any observed variation in participant ratings cannot be attributed to differences in the underlying weather situation or the type of meteorological information being conveyed. It also enables paired statistical comparisons at the participant level, which are more sensitive to individual-level evaluative differences than between-subjects designs of comparable sample size.

Eight participants were recruited separately for the combined survey-plus-interview component through a public call posted on Twitter/X and Bluesky using severe weather and meteorology community tags. The call was amplified through retweets within weather-interested communities on both platforms, which shaped the recruitment reach toward individuals with existing interest in severe weather information. These eight participants completed the identical survey instrument administered to MTurk respondents before their interview session, and their survey responses are included in the full quantitative sample of 58. The integration of survey completion into the interview protocol enables direct comparison between each interview participant's quantitative ratings and their subsequent verbal accounts of the same clips, supporting analytic triangulation at the level of the individual participant rather than only at the aggregate level. The distinct recruitment channel for interview participants means this subgroup should not be treated as a random subset of the MTurk sample; their self-selection through a weather-community network likely contributed to the concentration of weather-knowledgeable viewers among the interview participants, a sampling characteristic discussed in Section 6.8.

### **6.4.2 Stimulus Materials**

Stimuli consisted of four approximately three-minute video clips of severe weather coverage drawn from a single tornadic outbreak occurring on April 27, 2024, in the Oklahoma City metropolitan region. This event was selected because it produced continuous live coverage across both broadcast television and YouTube livestream platforms during the same meteorological window, enabling selection of content that was structurally comparable in terms of storm phase, geographic scope, and the type of interpretive work being performed. The rationale for this event and its role across all three studies is described in Chapter 5.

Two clips featured broadcast television meteorologists from major-market stations serving the Oklahoma City region: KFOR-TV and KWTW Channel 9. Both stations maintain professional meteorological staff, operate under FCC broadcast standards, and serve the local Oklahoma City audience. Their selection was based on archival availability of footage from the April 27, 2024 event on official station YouTube channels, which provided access to the broadcast content without requiring capture from over-the-air or cable feeds.

Two clips featured YouTube weatherfluencers selected to represent distinct credential profiles and viewer reach. Ryan Hall (YouTube channel: Ryan Hall, Y’All) is a prominent YouTube-native weather communicator without formal atmospheric science credentials, though his channel collaborates with formally trained meteorologists. Max Velocity (YouTube channel: Max Velocity Weather) holds a completed formal meteorology degree and maintains a substantial severe weather audience on YouTube. At the time of data collection, Ryan Hall maintained approximately two million subscribers and Max Velocity approximately 175,000 [198].

Both YouTube creators were active during the April 27, 2024 event and produced continuous livestream coverage that included radar interpretation, warning communication, and safety-relevant guidance. Their selection enables direct comparison of platform and credential effects while holding the meteorological situation constant, and supports cross-study comparability with the creator corpus examined in Studies 2 and 3.

All four clips were selected to include comparable informational elements: active radar interpretation, warning communication of tornado or severe thunderstorm threats, and safety-relevant guidance for viewers in the affected region. Clips were drawn from similar points in the event timeline to reduce confounds associated with storm phase, warning issuance timing, or event escalation. This selection process ensured that observed differences in audience evaluation would reflect source characteristics, communicator presentation, and platform context rather than differences in meteorological content or storm phase.

All four clips retained their native visual branding as they appeared during original broadcast or livestream. Television clips included station logo overlays and lower-third graphics native to the broadcast footage, while YouTube clips included the creators’ own channel branding and on-screen graphic elements. This symmetry means no source was stripped of its visual identity while others retained theirs, which would have introduced an asymmetric familiarity advantage. Participants who recognized specific station logos or creator branding from prior exposure may have drawn on that familiarity in their evaluations, and this cannot be ruled out for any of the four sources. However, six of the eight interview participants reported no prior familiarity with either YouTube creator, and prior familiarity with the two television stations was also limited among that group, suggesting that recognition-based evaluation was not the dominant mechanism for most participants. Following survey completion, interview participants were explicitly informed of the sources they had just evaluated before the interview discussion began, and their verbal accounts were collected after this disclosure. The implications of visible branding for the interpretation of source evaluations are discussed in Section 6.8.

### 6.4.3 Survey Instrument

The survey instrument was administered in Qualtrics, with video clips embedded directly in the survey interface. The four clip blocks were presented in varying order across participants. Following each clip, participants rated the source on six evaluative dimensions using five-point rating scales with dimension-specific verbal anchors. The six dimensions were objectivity, accuracy, trustworthiness, credibility, coverage legitimacy, and presenter legitimacy. The instrument was informed by multidimensional credibility measurement traditions, including Meyer’s Credibility Index, while modifying and extending those traditions to fit the present comparison between broadcast meteorologists and platform-native weatherfluencers [116]. Brief operational definitions were embedded in the survey instrument immediately preceding each item to support consistent interpretation across participants, because prior work on credibility evaluation suggests that without explicit definitional anchors, respondents may conflate dimensions such as trustworthiness and credibility that are conceptually distinct but phenomenologically similar in a single viewing context.

*Objectivity.* Participants read: “How objective does the weather coverage seem overall? Objectivity:

how well the coverage relies on scientific data, measurable facts, and established meteorological principles rather than personal opinions, speculation, or subjective interpretations.” The scale ran from “not at all objective” to “extremely objective.”

*Accuracy.* Participants read: “How accurate does the weather coverage seem overall? Accuracy: how well the information presented matches reality, including the verbal reporting and the visual information.” The scale ran from “not at all accurate” to “extremely accurate.”

*Trustworthiness.* Participants read: “How trustworthy does the weather coverage seem overall? Trustworthiness: how much the viewer believes the information is presented honestly and transparently, without manipulation or sensationalism, regardless of the source’s reputation or credentials.” The scale ran from “not at all trustworthy” to “extremely trustworthy.”

*Credibility.* Participants read: “How credible does the weather coverage seem overall? Credibility: how much the viewer trusts the source based on perceived expertise, qualifications, reputation, and professional authority in meteorology and weather reporting.” The scale ran from “not at all credible” to “extremely credible.”

*Coverage legitimacy.* Participants read: “How legitimate does the weather coverage seem overall? Coverage legitimacy: how much the coverage appears to come from an established, recognized, and properly authorized weather information source that follows professional standards and practices in meteorology.” The scale ran from “not at all legitimate” to “extremely legitimate.”

*Presenter legitimacy.* Participants read: “How legitimate does the weather *presenter* seem overall? Presenter legitimacy: how much the coverage appears to come from an established, recognized, and properly authorized weather information source that follows professional standards and practices in meteorology.” The scale ran from “not at all legitimate” to “extremely legitimate.”

Although the study treats coverage legitimacy and presenter legitimacy as analytically distinct targets, the administered instrument did not fully differentiate them at the definition level. The two items used the same embedded operational definition, and the distinction was carried by the question stem: one directed participants to evaluate the *coverage*, while the other directed them to evaluate the *presenter*. The results should be interpreted as testing whether participants responded differently to these two evaluative targets under a constrained operationalization, not as a definitive validation of coverage legitimacy and presenter legitimacy as fully distinct measured constructs. This measurement constraint is addressed directly in the findings and limitations.

Following the rating tasks for all four clips, participants completed three forced-choice ranking tasks asking them to rank all four sources on applied criteria relevant to emergency decision-making. Each ranking task displayed thumbnail images of all four clips alongside their source labels, allowing participants to identify clips by visual memory rather than abstract names alone. Participants assigned each source a unique rank from 1 to 4, with no ties permitted, where 1 indicated the most favorable source on each criterion. The three ranking criteria were clarity of presentation, effectiveness of visual information, and usefulness for making safety decisions during the event. Embedded operational definitions accompanied each ranking task to support consistent interpretation: clarity was defined as how well information was presented in an understandable, well-organized, and accessible manner; effectiveness of visual information was defined as how well graphics, maps, and other visual elements conveyed weather information clearly and meaningfully; and usefulness for safety decisions was defined as how well the coverage provided practical, actionable information to support informed personal safety decisions during the event.

Because each construct was measured with a single item, no within-construct internal reliability estimate is applicable. The tradeoff between parsimony and psychometric depth inherent in single-item measurement was deliberate: the within-subject design required participants to rate four sources in sequence, and expand-

ing each dimension to multiple items would substantially increase cognitive burden and introduce response fatigue across the battery. The implications of single-item measurement for construct validity, particularly the question of whether the six dimensions function as analytically distinct constructs or primarily index a shared evaluative response to source quality, are addressed empirically through exploratory factor analysis reported in the measurement validation section of the findings.

#### 6.4.4 Participants

The total survey sample consisted of 58 participants. Fifty participants were recruited via Amazon Mechanical Turk (MTurk) and completed the survey instrument only. An additional eight participants were recruited separately through a public call posted on Twitter/X, Bluesky, and Reddit using severe weather and meteorology community tags; these participants completed the same survey instrument and subsequently participated in a one-hour semi-structured video interview. All eight interview participants' survey responses are included in the quantitative analysis.

MTurk participants were recruited through a brief eligibility screener administered prior to the main survey. Eligibility required participants to be 18 years or older, have prior experience with severe weather events, and regularly consume weather information. A total of 245 screener responses were received; many were excluded before accessing the main survey on the basis of indicators consistent with low-quality or automated completion, including nonsensical geographic responses, blank responses, and otherwise inconsistent or incomplete entries. Screener tasks were compensated at \$0.15–\$0.30; main survey tasks were compensated at \$2.00–\$4.00 depending on worker qualification tier. Recruitment continued until 50 eligible participants completed the main survey. The full sample ( $N = 58$ ) consisted of adults aged 18 and older; the largest age cohort was 25–44 years old, followed by 45–54. Participants were distributed across U.S. regions, with the strongest representation from the South and Midwest, followed by the West and Northeast. All participants reported prior experience with severe weather, including tornadoes, hurricanes, floods, and winter storms; most indicated encountering severe weather seasonally or monthly.

Quality screening occurred at the eligibility stage prior to survey access, where submissions showing indicators of low-quality or automated completion were excluded, including nonsensical geographic responses, inconsistent response patterns, and entries that appeared to be spam. No participants were excluded from the main survey on attention-check grounds.

Interview participants were purposively sampled to represent two distinct viewer orientations. Four participants were recruited as everyday weather-checkers, defined as individuals with no formal meteorological training and no substantial hobbyist involvement in severe weather monitoring (P1, P4, P5, P7). Four participants were recruited as weather-knowledgeable viewers, defined as individuals with either formal atmospheric science training or extensive self-directed experience with severe weather interpretation (P2, P3, P6, P8). Table 6.1 summarizes participant characteristics across both groups.

Six of the eight interview participants reported no prior familiarity with either YouTube creator before the study. Two participants reported awareness of Ryan Hall, Y'All prior to participation, with one noting general familiarity from social media without extensive viewership. No interview participant reported prior familiarity with Max Velocity. Prior familiarity with the two television stations varied: one participant recognized KFOR from a specific incident associated with past storm coverage advice; most participants reported no familiarity with Channel 9.

All interview participants received \$15 compensation for their one-hour sessions. MTurk participants received compensation through the standard HIT structure. All study procedures were reviewed and approved by the University of Washington Institutional Review Board.

Table 6.1: Interview participant characteristics ( $n = 8$ ). Category: WK = weather-knowledgeable; AWC = average weather-checker. Gender: F = woman; M = man; NB = non-binary.

| Participant | Category | Gender | Residential Setting | Highest Education |
|-------------|----------|--------|---------------------|-------------------|
| P1          | AWC      | F      | Suburban            | Master's          |
| P2          | WK       | M      | Suburban            | Master's          |
| P3          | WK       | F      | Suburban            | Bachelor's        |
| P4          | AWC      | F      | Urban               | Doctoral          |
| P5          | AWC      | M      | Urban               | Master's          |
| P6          | WK       | M      | Suburban            | Doctoral          |
| P7          | AWC      | NB     | Rural               | Master's          |
| P8          | WK       | F      | Urban               | Doctoral          |

## 6.4.5 Analysis

### Quantitative Analysis

Survey responses were analyzed using a within-subject design appropriate to the study structure, in which each participant rated all four sources. Because each participant provided two ratings per platform, platform-level comparisons required aggregation at the participant level before inferential testing. For each evaluative dimension and each participant, I computed platform means by averaging ratings for the two television sources and the two YouTube sources respectively, yielding a single paired observation per participant per dimension. All inferential tests at the platform level were conducted on these 58 paired participant-level platform means. Descriptive means reflect the full set of individual source ratings, but SDs reflect the variability of participant-level platform means rather than pooled individual source ratings.

Platform-level contrasts across the six evaluative dimensions were tested using paired-samples  $t$ -tests. The within-subject design justifies the paired structure, and the five-point rating scales are treated as approximately interval-level, a standard assumption in survey research. Effect sizes are reported as Cohen's  $d_z$ , the appropriate effect size for paired designs.<sup>2</sup> Because six conceptually related platform comparisons were conducted simultaneously, I applied the Benjamini-Hochberg false discovery rate procedure at  $q = .05$  to all six tests as a single family. This procedure was selected over familywise corrections (e.g., Bonferroni) because it controls the expected proportion of false positives among rejected hypotheses, making it appropriate for a battery of related comparisons where some effects are expected to be genuine.<sup>3</sup>

Platform-level findings were robust to distributional assumptions under nonparametric testing.<sup>4</sup>

To further stress-test the platform effect against alternative model specifications, I estimated participant fixed-effects ordinary least squares models with cluster-robust standard errors clustered by participant. These models regress ratings on a binary platform indicator (TV = 1, YouTube = 0) while absorbing all stable between-participant variance through participant fixed effects. Unlike the paired platform means ap-

<sup>2</sup> $d_z$  divides the mean of the within-participant difference scores by the standard deviation of those difference scores. The paired design typically yields larger  $d_z$  values than the equivalent between-groups Cohen's  $d$  for the same data; conflating the two would misrepresent the magnitude of observed differences.

<sup>3</sup>The Benjamini-Hochberg procedure controls the false discovery rate (FDR) rather than the familywise error rate. Where Bonferroni controls the probability of any false positive across the family, BH-FDR controls the expected proportion of false positives among the tests that are rejected. For batteries of theoretically motivated comparisons with mixed expected effect sizes, BH-FDR is less conservative while maintaining interpretive discipline.

<sup>4</sup>Wilcoxon signed-rank tests were applied to the same paired participant-level platform means, with BH-FDR correction at  $q = .05$  applied as a parallel correction family. Directional consistency between parametric and nonparametric results held across all six dimensions.

proach, this specification uses all four individual clip-level observations per participant and per dimension, allowing within-participant variability across the two clips in each platform to contribute to the estimate. BH-FDR correction at  $q = .05$  was applied across the six per-dimension fixed-effects results. A platform-by-dimension interaction model was additionally estimated to test whether the platform advantage was uniform across dimensions or varied in magnitude by construct.

Within-platform presenter comparisons examined whether the two sources within each platform were evaluated differently. Paired  $t$ -tests compared Ryan Hall and Max Velocity within the YouTube platform and Channel 9 and KFOR within the television platform, separately for each of the six evaluative dimensions. BH-FDR correction at  $q = .05$  was applied within each platform separately, treating the six within-YouTube tests as one correction family and the six within-TV tests as a separate correction family. This approach is appropriate because the two platform families reflect theoretically distinct comparisons. Wilcoxon signed-rank tests were computed as nonparametric robustness checks for all within-platform comparisons and confirmed the parametric results.<sup>5</sup>

Rankings across the four sources were analyzed using Friedman omnibus tests across all four source ranks per criterion, followed by platform-level contrasts using Wilcoxon signed-rank tests on participant-level platform mean ranks.<sup>6</sup>

To assess the degree to which the six evaluative dimensions function as distinct constructs or primarily index a shared evaluative response to source quality, I conducted an exploratory factor analysis on participant-level mean ratings averaged across all four sources per dimension. Using participant means as input rather than clip-level ratings reduces the influence of source-specific variability on the estimated factor structure. Prior to extraction, I computed the Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity to confirm data suitability for factor analysis. Factor extraction used the `factor_analyzer` library default estimation method (minimum residual; `minres`). Varimax rotation was applied to the two-factor solution to facilitate interpretability. Where the sign of a factor was indeterminate, loadings were reflected so that higher item scores correspond to positive factor loadings, following standard practice.

Within each of the four sources, paired  $t$ -tests compared participants' coverage legitimacy and presenter legitimacy ratings. BH-FDR correction at  $q = .05$  was applied across the four source-level tests. Within-source Pearson correlations between the two legitimacy items were computed to characterize the degree of association between participants' content-level and presenter-level legitimacy judgments for each source.

To characterize the degree of between-exemplar agreement within each platform, Pearson correlations were computed between the two YouTube sources' ratings per dimension and between the two television sources' ratings per dimension. These correlations are treated as a stimulus sensitivity check rather than a measure of psychometric reliability: they characterize the extent to which participants responded similarly to the two exemplars within a platform category, not the internal consistency of a multi-item scale. Low inter-exemplar correlations indicate that participants differentiated between the two sources within a platform rather than treating them as interchangeable instances of the same category, which has implications for how platform-level estimates should be interpreted<sup>7</sup>.

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<sup>5</sup>BH-FDR correction at  $q = .05$  was applied to the Wilcoxon within-platform tests using the same correction families as the paired  $t$ -tests.

<sup>6</sup>Platform mean ranks were computed by averaging each participant's assigned ranks for the two sources within each platform. BH-FDR correction at  $q = .05$  was applied across the three ranking criteria. Pairwise Wilcoxon signed-rank post-hoc tests were computed for all six source pairs within each criterion, with BH-FDR correction applied within each criterion separately as distinct correction families.

<sup>7</sup>All quantitative analyses were conducted in Python using SciPy, statsmodels, and the `factor_analyzer` library. BH-FDR correction used the `multipletests` function from `statsmodels.stats.multitest`.

## Qualitative Analysis

Interview sessions were conducted via video call following survey completion. Each session began with a structured review of the participant's survey ratings, inviting elaboration on their numerical responses before moving to open-ended discussion of credibility, trust, and safety decision-making more broadly. Following this review, participants were permitted to re-watch selected clips and were asked to verbalize their impressions and reasoning as they re-engaged with the content. Sessions concluded with discussion of how participants would use each source during an actual emergency event, and what features of the four sources they found most and least convincing. Sessions lasted approximately one hour. All sessions were audio-recorded with participant consent and transcribed verbatim.

Transcripts were analyzed using reflexive thematic analysis following Braun and Clarke [24]. A single researcher conducted iterative open coding across all eight transcripts, developing an initial code structure through close reading and progressive abstraction, and refining it through repeated engagement with the data across multiple passes. The reflexive approach treats the researcher's interpretive engagement as a resource for analysis rather than a source of bias to be systematically eliminated, and is appropriate for a small purposive sample in which contextual depth and explanatory adequacy are prioritized over cross-case generalizability.

Analytic triangulation was supported by systematic comparison of each participant's qualitative accounts against their quantitative ratings for the same sources. This comparison was enabled by the study design, in which interview participants completed the survey before the interview, and by the structured review segment that opened each session and invited participants to explain their ratings verbally. Participant quotes are presented verbatim in the findings, with minor edits for readability where indicated.

Supplementary materials for inspecting the Study 1 analysis workflow are listed in Appendix B.5.

## 6.5 Findings

Study 1 findings are presented in two parts: first, quantitative survey results ( $n = 58$ ) documenting evaluation patterns across six evaluative dimensions and three practical utility criteria, followed by qualitative interview findings ( $n = 8$ ) showing how participants explained those patterns and connected source, platform, and communication cues to their ratings. This ordering reflects the convergent mixed-method design: statistical differences establish the empirical pattern, while interviews specify how participants interpreted the clips and linked visible cues to legitimacy, credibility, and usefulness in practice. *Participant quotes are presented verbatim with minor edits for readability.*

### 6.5.1 Survey Findings

#### Platform-Level Differences: Television vs. YouTube

Across participant-level platform means (paired within-subject comparisons,  $n = 58$ ), broadcast television meteorologists were rated higher than YouTube weatherfluencers on five of six evaluative dimensions: accuracy, trustworthiness, credibility, coverage legitimacy, and presenter legitimacy (all BH-FDR  $p < .01$ ; Table 6.2). The largest disparities emerged in legitimacy judgments, where television showed medium advantages for both coverage legitimacy ( $\Delta = 0.54$ ,  $d_z = 0.632$ ) and presenter legitimacy ( $\Delta = 0.52$ ,  $d_z = 0.596$ ), indicating that institutional and organizational affiliation functioned as a dominant heuristic for appropriate authority and trust in this study. Television advantages were also observed for accuracy ( $\Delta = 0.40$ ,  $d_z = 0.534$ ), credibility ( $\Delta = 0.43$ ,  $d_z = 0.501$ ), and trustworthiness ( $\Delta = 0.33$ ,  $d_z = 0.408$ ).

Table 6.2: Platform differences by evaluative dimension. Values are participant-level platform means (YouTube = mean of Ryan Hall and Max Velocity ratings; TV = mean of CH9 and KFOR ratings;  $n = 58$  paired observations).  $\Delta$  is TV minus YouTube. Effect sizes are Cohen's  $d_z$  (mean of within-participant difference scores divided by SD of difference scores), appropriate for paired designs.

| Dimension        | $n$ | YouTube $M$ ( $SD$ ) | TV $M$ ( $SD$ ) | $\Delta$ | $t$   | $p$   | $p_{FDR}$ | $d_z$ |
|------------------|-----|----------------------|-----------------|----------|-------|-------|-----------|-------|
| Objectivity      | 58  | 3.69 (0.83)          | 3.89 (0.73)     | 0.20     | 1.719 | .091  | .091      | 0.226 |
| Accuracy         | 58  | 3.62 (0.69)          | 4.02 (0.65)     | 0.40     | 4.070 | <.001 | <.001     | 0.534 |
| Trustworthiness  | 58  | 3.51 (0.79)          | 3.84 (0.68)     | 0.33     | 3.106 | .003  | .004      | 0.408 |
| Credibility      | 58  | 3.54 (0.85)          | 3.97 (0.62)     | 0.43     | 3.814 | <.001 | <.001     | 0.501 |
| Coverage Legit.  | 58  | 3.42 (0.90)          | 3.97 (0.71)     | 0.54     | 4.810 | <.001 | <.001     | 0.632 |
| Presenter Legit. | 58  | 3.49 (0.88)          | 4.01 (0.69)     | 0.52     | 4.536 | <.001 | <.001     | 0.596 |

Note. BH-FDR correction applied across all six dimensions as a single family ( $q = .05$ ). Wilcoxon signed-rank robustness checks on the same paired platform means confirmed all parametric results: objectivity remained non-significant ( $W = 367.0$ ,  $p_{FDR} = .128$ ); all other dimensions significant at  $p_{FDR} \leq .002$ . Descriptive means reflect the full set of individual source ratings; SDs reflect the variability of participant-level platform means rather than pooled individual source ratings.

Objectivity was the sole dimension where platforms achieved statistical parity (YouTube  $M = 3.69$ , TV  $M = 3.89$ ; BH-FDR  $p = .091$ ; Table 6.2). This parity suggests that while professionally legible cues continue to structure perceived legitimacy and credibility, platform-native creators could match broadcast meteorologists in perceived neutrality of presentation.

### Within-Platform Variation: Individual Presenter Effects

Within-platform differences between the two YouTube creators were substantial and consistent, demonstrating that platform category alone did not determine evaluation outcomes. Because the survey presented only the embedded video clips with their native on-screen branding (rather than presenter biographies), any credential or expertise cues available to participants were those visible or inferable from the clip itself (e.g., station affiliation, production conventions, and self-presentation); interview participants were informed of the specific sources only after survey completion, prior to the interview discussion. Across all six dimensions, the second YouTube creator outperformed the first (Table 6.3), with statistically reliable advantages on accuracy ( $\Delta = 0.48$ , BH-FDR  $p = .011$ ), trustworthiness ( $\Delta = 0.40$ , BH-FDR  $p = .027$ ), credibility ( $\Delta = 0.40$ , BH-FDR  $p = .011$ ), coverage legitimacy ( $\Delta = 0.40$ , BH-FDR  $p = .011$ ), and presenter legitimacy ( $\Delta = 0.53$ , BH-FDR  $p = .004$ ). These within-YouTube differences approached the magnitude of the platform-level TV–YouTube gaps reported above, indicating that individual presenter characteristics could meaningfully mitigate (or exacerbate) platform disadvantages.

Within television, the two broadcast exemplars also differed (Table 6.4). One station outperformed the other on objectivity ( $\Delta = 0.47$ , BH-FDR  $p = .016$ ), accuracy ( $\Delta = 0.41$ , BH-FDR  $p = .035$ ), coverage legitimacy ( $\Delta = 0.38$ , BH-FDR  $p = .035$ ), and presenter legitimacy ( $\Delta = 0.43$ , BH-FDR  $p = .035$ ), reinforcing that presenter- and production-level features shaped evaluations even within the same format.

Table 6.5 summarizes source-level descriptive patterns across all four communicators, situating platform comparisons alongside meaningful within-platform heterogeneity.

### Coverage Legitimacy vs. Presenter Legitimacy: Within-Source Patterns

To test whether participants distinguished evaluations of the *information* from evaluations of the *communicator*, I analyzed the two legitimacy items both as separate outcomes and as within-source paired comparisons.

Table 6.3: Within-platform presenter variation: YouTube (Ryan Hall vs. Max Velocity). Paired  $t$ -tests compare participant-level ratings for the two YouTube creators.  $\Delta$  is Max minus Ryan. BH-FDR correction applied within the YouTube family of six tests ( $q = .05$ ). Wilcoxon signed-rank tests reported as robustness checks.

| Dimension        | $n$ | Ryan $M$ ( $SD$ ) | Max $M$ ( $SD$ ) | $\Delta$ | $t$ | $p$   | $p_{FDR}$ | $W$   | $p_{wilcox, FDR}$ |
|------------------|-----|-------------------|------------------|----------|-----|-------|-----------|-------|-------------------|
| Objectivity      | 58  | 3.60 (0.97)       | 3.78 (1.06)      | 0.17     | —   | .273  | .273      | 220.5 | .268              |
| Accuracy         | 58  | 3.38 (0.97)       | 3.86 (0.89)      | 0.48     | —   | .005  | .011      | 173.5 | .016              |
| Trustworthiness  | 58  | 3.31 (1.08)       | 3.71 (0.96)      | 0.40     | —   | .022  | .027      | 273.0 | .041              |
| Credibility      | 58  | 3.34 (1.02)       | 3.74 (1.00)      | 0.40     | —   | .008  | .011      | 177.5 | .016              |
| Coverage Legit.  | 58  | 3.22 (1.08)       | 3.62 (1.02)      | 0.40     | —   | .008  | .011      | 212.0 | .016              |
| Presenter Legit. | 58  | 3.22 (1.04)       | 3.76 (1.05)      | 0.53     | —   | <.001 | .004      | 173.0 | .005              |

Note.  $t$ -statistics omitted for brevity; exact values available in the analysis notebook. Participants were not informed of creator identities during survey completion; evaluations reflect clip-based first-impression judgments.

Table 6.4: Within-platform presenter variation: Television (Channel 9 vs. KFOR). Paired  $t$ -tests compare participant-level ratings for the two broadcast sources.  $\Delta$  is KFOR minus CH9. BH-FDR correction applied within the television family of six tests ( $q = .05$ ). Wilcoxon signed-rank tests reported as robustness checks.

| Dimension        | $n$ | CH9 $M$ ( $SD$ ) | KFOR $M$ ( $SD$ ) | $\Delta$ | $t$ | $p$  | $p_{FDR}$ | $W$   | $p_{wilcox, FDR}$ |
|------------------|-----|------------------|-------------------|----------|-----|------|-----------|-------|-------------------|
| Objectivity      | 58  | 3.66 (1.10)      | 4.12 (0.70)       | 0.47     | —   | .003 | .016      | 113.0 | .020              |
| Accuracy         | 58  | 3.81 (1.02)      | 4.22 (0.80)       | 0.41     | —   | .017 | .035      | 183.0 | .039              |
| Trustworthiness  | 58  | 3.66 (1.05)      | 4.02 (0.87)       | 0.36     | —   | .049 | .059      | 184.5 | .056              |
| Credibility      | 58  | 3.81 (1.12)      | 4.14 (0.71)       | 0.33     | —   | .079 | .079      | 228.0 | .056              |
| Coverage Legit.  | 58  | 3.78 (1.01)      | 4.16 (0.87)       | 0.38     | —   | .023 | .035      | 206.0 | .039              |
| Presenter Legit. | 58  | 3.79 (1.12)      | 4.22 (0.77)       | 0.43     | —   | .017 | .035      | 165.0 | .039              |

Note.  $t$ -statistics omitted for brevity; exact values available in the analysis notebook. Trustworthiness and credibility between-station differences did not survive BH-FDR correction ( $p_{FDR} = .059$  and  $.079$  respectively), indicating these two dimensions were less sensitive to within-TV presenter differences than the remaining four dimensions.

Within each source, coverage legitimacy and presenter legitimacy were strongly correlated ( $r = .66$  to  $.80$ ; Table 6.6), indicating that content-level and person-level legitimacy judgments moved together in practice.

However, paired comparisons showed no systematic tendency for presenter legitimacy to exceed coverage legitimacy within a given source (all BH-FDR  $p \geq .527$ ; Table 6.6). This pattern supports treating legitimacy as analytically separable at the construct level while recognizing that, empirically, participants often bundled content and communicator authority when making legitimacy judgments in safety-critical contexts.

## Performance Rankings Reinforce Platform Hierarchies

In addition to Likert ratings, participants ranked all four sources on three practical criteria: clarity of information, effectiveness of visual presentation, and usefulness for making safety decisions. On all three criteria, television sources significantly outperformed YouTube sources (paired Wilcoxon tests on participant-level platform mean ranks; BH-FDR  $p = .031$  for each criterion; Table 6.7). Participants evaluated TV meteorologists as more legitimate, more credible, and more operationally useful for real-time decision-making.

Omnibus Friedman tests confirmed significant differences across the four individual sources for each criterion (Table 6.8). Pairwise posthoc comparisons showed that the lowest-ranked source was consistently one of the YouTube creators: across clarity, visual effectiveness, and safety utility, this creator performed

Table 6.5: Source-level descriptive statistics by evaluative dimension. Cells report mean (SD) for each source. These individual source-level descriptives situate platform-level comparisons alongside within-platform heterogeneity. All  $n = 58$ .

| Dimension        | Ryan Hall   | Max Velocity | Channel 9   | KFOR        |
|------------------|-------------|--------------|-------------|-------------|
| Objectivity      | 3.60 (0.97) | 3.78 (1.06)  | 3.66 (1.10) | 4.12 (0.70) |
| Accuracy         | 3.38 (0.97) | 3.86 (0.89)  | 3.81 (1.02) | 4.22 (0.80) |
| Trustworthiness  | 3.31 (1.08) | 3.71 (0.96)  | 3.66 (1.05) | 4.02 (0.87) |
| Credibility      | 3.34 (1.02) | 3.74 (1.00)  | 3.81 (1.12) | 4.14 (0.71) |
| Coverage Legit.  | 3.22 (1.08) | 3.62 (1.02)  | 3.78 (1.01) | 4.16 (0.87) |
| Presenter Legit. | 3.22 (1.04) | 3.76 (1.05)  | 3.79 (1.12) | 4.22 (0.77) |

Table 6.6: Within-source comparison of coverage legitimacy and presenter legitimacy ratings. Paired  $t$ -tests compare presenter minus coverage ratings within each source;  $r$  is the within-source Pearson correlation between the two items. BH-FDR correction applied across the four source-level tests ( $q = .05$ ). No source showed a statistically significant difference between the two legitimacy items after correction.

| Source       | Platform | Cov. Legit. | Pres. Legit. | $\Delta$ | $t$   | $p$   | $p_{\text{FDR}}$ | $d_z$ | $r$ | $n$ |
|--------------|----------|-------------|--------------|----------|-------|-------|------------------|-------|-----|-----|
|              |          | $M (SD)$    | $M (SD)$     |          |       |       |                  |       |     |     |
| Ryan Hall    | YouTube  | 3.22 (1.08) | 3.22 (1.04)  | 0.00     | 0.000 | 1.000 | 1.000            | 0.000 | .77 | 58  |
| Max Velocity | YouTube  | 3.62 (1.02) | 3.76 (1.05)  | 0.14     | 1.529 | .132  | .527             | 0.201 | .78 | 58  |
| Channel 9    | TV       | 3.78 (1.01) | 3.79 (1.12)  | 0.02     | 0.148 | .883  | 1.000            | 0.019 | .66 | 58  |
| KFOR         | TV       | 4.16 (0.87) | 4.22 (0.77)  | 0.07     | 1.000 | .322  | .643             | 0.131 | .80 | 58  |

*Note.* Strong within-source correlations ( $r = .66-.80$ ) indicate that coverage and presenter legitimacy judgments moved together in practice. The absence of systematic divergence between the two items is discussed in Section 6.5.1. See also the measurement constraint noted in Section 6.8: the two legitimacy items shared identical embedded operational definitions in the administered instrument, with the distinction carried only by the question stem.

significantly worse than the other YouTube creator and both television sources (Table 6.9). The ranking results reinforce the platform-level hierarchy observed in the rating dimensions while also showing that within-platform presenter differences materially shaped perceived usability.

## Robustness and Construct-Structure Checks

Robustness checks using participant fixed-effects models (clustered standard errors) replicated the paired-test results: television retained significant advantages on accuracy, trustworthiness, credibility, coverage legitimacy, and presenter legitimacy (all BH-FDR  $p \leq .009$ ), while objectivity remained non-significant (BH-FDR  $p = .137$ ). Interaction models further indicated that the platform effect was broadly consistent across dimensions, with no strong evidence that the TV advantage differed meaningfully by dimension beyond the objectivity attenuation.

To assess whether the two exemplars within a platform behaved as interchangeable instances, I computed within-platform inter-exemplar correlations per dimension. Inter-exemplar correlations were generally low to moderate and in several cases near zero, indicating meaningful stimulus sensitivity: participants did not respond to the two YouTube creators (or the two TV meteorologists) as equivalent tokens of a platform category, consistent with the within-platform differences reported above.

Finally, exploratory factor analysis on the six evaluative dimensions indicated strong shared variance across constructs (KMO=.901; Bartlett's  $\chi^2 = 345.33$ ,  $p < .001$ ), with a dominant first factor (eigenvalue=4.858) and a two-factor solution that separated legitimacy most clearly from the remaining evaluative

Table 6.7: Platform ranking performance across three applied criteria (lower rank = better performance). Paired Wilcoxon signed-rank tests compare participant-level platform mean ranks ( $n = 58$ ). BH-FDR correction applied across the three ranking criteria ( $q = .05$ ).

| Criterion            | $n$ | YouTube Mean Rank | TV Mean Rank | $\Delta$ | $W$   | $p$  | $p_{\text{FDR}}$ | Winner |
|----------------------|-----|-------------------|--------------|----------|-------|------|------------------|--------|
| Clarity              | 58  | 2.71              | 2.29         | -0.41    | 197.0 | .016 | .031             | TV     |
| Visual Effectiveness | 58  | 2.69              | 2.31         | -0.38    | 247.0 | .024 | .031             | TV     |
| Safety Utility       | 58  | 2.69              | 2.31         | -0.38    | 241.5 | .031 | .031             | TV     |

Table 6.8: Friedman omnibus tests across all four sources for each ranking criterion, confirming significant rank differences before platform-level contrasts were examined.

| Criterion            | $n$ | Friedman $\chi^2$ | $p$   |
|----------------------|-----|-------------------|-------|
| Clarity              | 58  | 12.46             | .006  |
| Visual Effectiveness | 58  | 13.37             | .004  |
| Safety Utility       | 58  | 18.27             | <.001 |

dimensions. This structure aligns with the interpretation that credibility assessments are multidimensional in theory but often collapse into a global evaluation in practice, with legitimacy retaining partial distinctiveness as an authority judgment.

## 6.5.2 Interview Findings

Eight participants completed follow-up interviews after the survey. Four participants were weather/knowledgeable with formal training and/or substantial severe-weather experience and four reflected general-public perspectives. Most participants were unfamiliar with the YouTube weather livestreamers prior to the study, enabling analysis of first-impression evaluations. Interview findings show how participants explained the survey patterns and connected credibility, legitimacy, and platform cues to perceived usefulness for safety decision-making.

### Trust, Credibility, and Legitimacy Evaluations (RQ1)

**Institutional Authority and Professional Gatekeeping.** Participants consistently described broadcast television meteorologists as more credible because broadcast affiliation implied institutional vetting, credentialing, and accountability structures. Television was treated as a curated environment in contrast to YouTube as an open publishing context. As P6 explained, "Being associated with a news station to me instantly made me feel they were more credible, because I know kind of what goes into selecting people. whereas anyone can kind of start a stream." P3 similarly emphasized assumed credential requirements for broadcast roles: "In order to get a position as a TV meteorologist, you have to have a degree in meteorology or atmospheric science. versus on YouTube, anybody can start a YouTube channel." P2 extended the accountability logic to regulatory structure, contrasting the broadcast context where staff are "fully vetted" before going on air with YouTube, where "it's not the Federal Communications Commission regulating it... so there's not as many guardrails." Weather-knowledgeable participants referenced specific professional markers such as AMS standards as additional legitimacy cues, while general-public participants expressed similar expectations in less technical terms, suggesting that institutional affiliation operated as a heuristic even without detailed knowledge of meteorological credentialing pathways. Legitimacy was not treated as entirely fixed by all participants. Several noted that explicit endorsement from professional meteorolo-

Table 6.9: Pairwise Wilcoxon signed-rank posthoc comparisons between all four sources for each ranking criterion. BH-FDR correction applied within each criterion separately ( $q = .05$ ). Ryan Hall is consistently and significantly ranked lower than all other sources; Max Velocity, Channel 9, and KFOR are statistically indistinguishable from one another on all three criteria.

| Criterion            | Source A     | Source B     | $p$   | $p_{FDR}$ |
|----------------------|--------------|--------------|-------|-----------|
| Clarity              | Ryan Hall    | Max Velocity | .004  | .013      |
| Clarity              | Ryan Hall    | Channel 9    | .002  | .010      |
| Clarity              | Ryan Hall    | KFOR         | .011  | .021      |
| Clarity              | Max Velocity | Channel 9    | .343  | .515      |
| Clarity              | Max Velocity | KFOR         | .950  | .950      |
| Clarity              | Channel 9    | KFOR         | .472  | .566      |
| Visual Effectiveness | Ryan Hall    | Max Velocity | .006  | .012      |
| Visual Effectiveness | Ryan Hall    | Channel 9    | <.001 | .006      |
| Visual Effectiveness | Ryan Hall    | KFOR         | .004  | .012      |
| Visual Effectiveness | Max Velocity | Channel 9    | .737  | .885      |
| Visual Effectiveness | Max Velocity | KFOR         | .984  | .984      |
| Visual Effectiveness | Channel 9    | KFOR         | .706  | .885      |
| Safety Utility       | Ryan Hall    | Max Velocity | <.001 | .001      |
| Safety Utility       | Ryan Hall    | Channel 9    | <.001 | .002      |
| Safety Utility       | Ryan Hall    | KFOR         | .002  | .003      |
| Safety Utility       | Max Velocity | Channel 9    | .906  | .906      |
| Safety Utility       | Max Velocity | KFOR         | .532  | .638      |
| Safety Utility       | Channel 9    | KFOR         | .531  | .638      |

gists or NWS forecasters could increase confidence in a platform-native creator, indicating that institutional validation could transfer across contexts even when the creator’s own credential standing was uncertain.

**Platform Familiarity and Expectation Effects.** A recurring pattern was that platform-based expectations shaped evaluation before content assessment began. Several participants expressed immediate skepticism toward YouTube creators’ motivations, treating the platform as incentivizing attention and monetization. P5 characterized one creator as *“just trying to like, induce fear, and be like ‘this is the end of the world’ and news-y. So it’s good for his channel... he’s probably getting views and [is getting] money,”* applying a monetization frame even without prior knowledge of that creator’s background. In contrast, participants assumed different default motivations for broadcast meteorologists. P6 drew an explicit distinction: *“on the broadcast side... the motivation is very much safety. Protect people. Alert the local communities, whereas on the YouTuber side... [they’re] more there for providing entertainment, which turns into monetization.”* One participant explicitly rejected default platform judgments as an evaluative rule, stating: *“I wouldn’t by default, choose like TV media just over the other ones... I would just watch a few... to see how legitimate and how accurate they are.”* However, even this participant described defaulting to *“going to YouTube and finding a news outlet”* rather than independent creators, suggesting that platform expectations shaped behavior even when consciously resisted.

**Visual and Production Environment** Participants frequently treated production cues including studio polish, equipment quality, attire, and institutional branding as legible signals of professionalism, though they did not treat appearance alone as sufficient. P4 noted that even formal attire did not compensate for

perceived instability in delivery: "even this last guy, he wore a suit, but I still didn't trust him... so in that case it didn't really matter. It was more of like his body language and what he was saying." Institutional branding also functioned as a credibility scaffold: P4 described content as more credible when a recognizable logo appeared, indicating that visual institutional markers could elevate perceived legitimacy even within streaming contexts. P8 offered a more measured account of the production environment effect: "there is a little bit of a downgrade in credibility when you see some guy in his bedroom, which is not fair, because experts are in their bedroom sometimes." The credibility penalty for informal production environments was recognized as a heuristic that participants could name and partially interrogate, even when they acknowledged still applying it.

**Technical Competency and Communication Effectiveness.** Technical accuracy operated as a baseline requirement. Participants described errors in warning interpretation as immediately credibility-damaging. As P6 noted after a warning-related mistake, "this mistake kinda instantly put me off a little bit." Participants also evaluated presenters based on their ability to move between technical and accessible registers. P6 contrasted formats by emphasizing that television broadcasters "explained things a little bit more to be a little bit more accessible to audiences without meteorological backgrounds. Whereas the streamers very much seem to be focusing on a lot of that technical jargon." P8 added a more precise formulation of what effective translation looked like in practice: a presenter who was "seamlessly transitioning between jargon and plain language and back again, which made it seem like they knew what the jargon meant, and they hadn't just memorized it." P8 also valued visible articulation of the relationship between on-screen radar and official warning products, describing a presenter who "would describe what was happening on the screen with the radar in relation to warnings from the NWS... there's another team that has put out this warning, and then they can tell me why." P4 identified a temporal orientation difference across formats: television meteorologists "were more focused on the broader picture... what's coming ahead," while streamers were "more focused on what's going on right now," with less emphasis on prediction and trajectory.

**Entertainment vs. Information Tension.** A recurring tension in participants' accounts was concern that attention-optimization and entertainment cues undermined credibility in a safety-critical context. P7 described one presenter's delivery as attention-engineered: "his voice was trying to get my attention... That was the kind of voice that... you use that kind of voice to get into people's dopamine systems and get them to really engage with your content." P7 continued: "I resent the fact that he's using this voice... It feels like very manipulative." Participants also linked spectacle to monetization incentives. P2 suggested that dramatic visual capture shaped what draws attention: "if they happen to catch the tornado on camera, that's what's drawing [a lot of] clicks." P8 framed the stakes mismatch directly: "it's like they're doing a spectator sport around me... And I'm trying to figure out, is this somebody who's actually going to try and help me." Visible commercialization signals also reduced confidence for some participants; P6 noted that sponsorship overlays "brings down probably a little bit of this." Against this, P7 observed that the most useful approach was "calming in a way that I think is valuable... just in terms of headspace," identifying affective calibration as a practical communicative quality rather than merely a stylistic preference. Participants recognized that entertainment orientation was not exclusive to YouTube: P7 described one television meteorologist as making them "feel anxious and uncomfortable" due to excessive energy, suggesting that affective dysregulation could undermine credibility across formats.

## Information Sensemaking Processes (RQ2)

**Temporal Information Processing and Prediction Needs.** Across all participants, effective coverage was defined in part by its ability to locate present conditions within a temporal narrative of storm evolution (what happened, what is happening, and what is likely to happen next). P1 described the value of comparing time-stamped snapshots and then projecting forward: *“figures in different [places] separated in different times... [they] provided some suggestions... what’s the weather going on in next few hours?”* Participants framed this temporal contextualization as necessary for decision-making rather than merely informational. P5 emphasized a prospective orientation: coverage should help viewers understand *“how severe this storm is going to be, overall”* by the time it reaches them. Participants also noted differences in temporal orientation by format: some characterized television as more oriented toward the broader trajectory and what comes next, whereas streamers were described as more anchored to what is happening in the immediate moment.

**Place-Based Expertise Requirements and Geographic Context.** Participants repeatedly emphasized that weather guidance becomes actionable only when it is geographically grounded. P8 articulated the need for interpreters to demonstrate local terrain and place knowledge: *“I want somebody to actually know where I am... know which cities, know how to explain to me the path of a storm.”* Weather-knowledgeable participants framed local meteorologists’ advantage as community-embedded expertise. Weather-knowledgeable participants described this advantage as contextualization: knowing not only where places are on a map, but how local terrain, community conditions, and social vulnerabilities shape what storm information means in practice. P6 explained that local broadcasters *“know their local areas... different social vulnerabilities of different areas,”* whereas a streamer *“probably isn’t necessarily living in the spot where the storms are going through.”* P3 described what this looked like in practice with a veteran meteorologist who was *“reading the map like the back of their hand... they knew that area so well that they were able to say locations of businesses and buildings and stuff that weren’t even on the map.”* Not all participants weighted local knowledge equally, however. P5 argued that credibility depended more on *“how they process the data that they get... how they’re reading the data”* than on geographic familiarity, suggesting that data interpretation competence could substitute for place-based embeddedness in some evaluative frameworks.

**Accessibility and Emotional Regulation Dimensions.** Participants evaluated coverage as informational content as well as experience that could either stabilize or destabilize them during a safety-critical moment. Multiple participants identified accessibility problems across both formats, emphasizing that essential safety guidance was frequently conveyed through on-screen text rather than being clearly verbalized. P7 noted that *“the only practical information for me, as a person, was like in the banner... running across the bottom... there was like a little message, like ‘do not panic.’ And then in that same banner, there were other things like get to an inner room in your house.”* P7 concluded that the coverage was *“completely visual... if you are like vision impaired, or you don’t have access to the visuals... the content is like the actual information. Content is very, very low.”*

Participants were also acutely sensitive to how presentational style shaped emotional regulation. P7 described how some approaches provided *“that calming effect... [that] actually jumped out at me in a way that I didn’t expect,”* while other approaches *“actively made me feel... anxious and uncomfortable.”* This affective response was not limited to YouTube; one participant described a broadcast meteorologist as producing anxiety through heightened delivery. In the P7 transcript, the participant explained that *“none of them felt awesome, but some of them made me feel a little less ungrounded,”* and contrasted a preferred broadcaster with another who *“actively made me feel... anxious and uncomfortable,”* adding that the most practically usable guidance appeared in the on-screen crawl. For this participant, emotional response was

not incidental: they reported being surprised that the broadcast could make them feel panicked despite prior storm experience.

These responses show how participants evaluated the clips under post-event, prompted viewing conditions. In that setting, safety-relevant usefulness involved more than accuracy or credibility for these participants. They also attended to whether critical instructions were accessible in the clip and whether presentation style felt orienting, actionable, or unnecessarily fear-amplifying.

## 6.6 Discussion

Audiences evaluated severe weather interpreters unevenly across the six dimensions. Broadcast meteorologists held advantages on accuracy, trustworthiness, credibility, coverage legitimacy, and presenter legitimacy. Objectivity reached statistical parity. The factor analysis indicated a dominant first factor across all six items, with legitimacy partially distinct as an authority sub-judgment. Within-platform variation between the two YouTube creators was, in descriptive terms, comparable to the cross-platform variation on several dimensions.

### 6.6.1 What the Platform Comparison Shows

Coverage legitimacy and presenter legitimacy produced the largest broadcast advantages, with credibility, trustworthiness, and accuracy following the same pattern. These qualities depend on evidence that a three-minute clip can only partially supply. Audiences cannot fully inspect a presenter's training, accountability structures, or organizational oversight from the clip itself, so they read those qualities from the cues a broadcast environment supplies: station branding, professional production, newsroom affiliation, and locally embedded delivery. Participants articulated this reasoning explicitly. Several described television as a vetted environment because broadcast roles imply credentialing pathways and editorial oversight, while YouTube was characterized as an open-entry platform where, as one participant put it, anyone can start a channel.

That open-entry nature of YouTube carried specific evaluative content. Participants treated it as operating outside the sanctioning structures they associated with public-safety communication. Several described YouTube as monetized in ways that reward attention rather than accuracy, regulated through platform terms of service rather than through professional standards or broadcast oversight, and lacking the accountability mechanisms that follow institutional employment. Some applied this reading to creators about whom they had no other information, inferring monetization-driven motivation from the platform context alone. Others reacted to specific delivery features, including heightened vocal energy or sponsorship overlays, as evidence of attention-optimization that felt incongruent with safety-critical communication. The legitimacy gap expressed concern that the conditions under which platform-native severe weather interpretation is produced and distributed do not include the *structural features and cues* audiences associate with trustworthy public-safety communication.

This bundled cue structure reduces evaluative burden in ways that matter for how participants approached the four clips. Viewers do not need to infer from first principles whether a broadcast meteorologist is an appropriate interpreter of severe weather. The role itself carries much of that judgment in advance. Formal weather enterprise embedding communicates that the presenter has been selected, vetted, and made accountable through a professional organization whose legitimacy extends to the coverage. Participants repeatedly relied on those signals. Broadcast meteorologists were described as more regulated, more bounded by standards, and more clearly oriented toward public safety. Even relatively small cues of geographic embeddedness carried weight. Local familiarity, including whether a presenter seemed to know the area well

enough to speak about it fluently and naturally, contributed to the sense that broadcast meteorologists were embedded in the communities they served rather than addressing an undifferentiated platform audience. The CDM legibility gap sharpens this point. Formal standards for digital meteorological communication may exist, but their existence does not guarantee that audiences can recognize them when they encounter a creator on-platform. A credential that is structurally legible inside the weather enterprise can remain effectively invisible inside the interface through which evaluation occurs.

The durability of the U.S. weather enterprise in audience judgment remains strong. Broadcast meteorologists were rated higher precisely because the role structure they occupy continues to organize audience evaluation effectively. Professional vetting, professional standards, geographic embeddedness, and clear accountability are doing real work for audiences trying to determine whose interpretation should be treated as appropriate during a tornado outbreak. The platform-native ecosystem I document here has not displaced that structure, but it operates alongside a still well-functioning broadcast meteorology system that audiences continue to recognize and evaluate favorably.

The legitimacy items collapsed empirically in a way that clarifies how this evaluation actually proceeded. The instrument was designed to separate coverage legitimacy from presenter legitimacy, but within-source correlations ranged from .66 to .80, and within-source paired comparisons showed no significant difference between the two items. Participants did not, in practice, separate the appropriateness of the information from the appropriateness of the person presenting it. For broadcast meteorologists, the institution and the presenter were bundled tightly enough that participants treated them as a single evaluative target. For weatherfluencers, no separable institutional layer existed; the channel and the creator were the same evaluative object. The collapse means that legitimacy, in this domain, is constituted through the bundle rather than through analytically separable judgments about content and communicator.

Within-platform variation operated at a magnitude similar in descriptive terms to the cross-platform gap. Max Velocity outperformed Ryan Hall by 0.53 on presenter legitimacy; the cross-platform difference on the same dimension was 0.52. While the two effects are not identical statistical objects, their descriptive magnitudes are close. Platform category supplied a baseline evaluative cue, and presenter performance moved evaluation within that baseline by a comparable amount. Audiences were not flattening YouTube into a single judgment. They distinguished sharply between creators operating under identical platform conditions, drawing on what each clip made directly observable: composure, pacing, explanatory clarity, and how the presenter handled radar interpretation in real time. Both effects were present in the data, and neither absorbed the other.

## **6.6.2 Popularity Without Legitimacy**

The ratings in this study placed weatherfluencers at a legitimacy disadvantage relative to broadcast meteorologists. Their audience trajectories show something different. Ryan Hall grew from roughly two million subscribers at the time of data collection to more than three million by early 2026, while Max Velocity grew from roughly 175,000 to 1.7 million over the same period. Legitimacy and attention are separable phenomena, and they do not move together reliably in the contemporary severe weather information environment.

The subscriber growth figures set a boundary around how the Study 1 ratings should be interpreted. Lower perceived legitimacy in the clip task did not mean that weatherfluencers were peripheral in the broader severe weather information environment. The ratings show how participants evaluated short clips in a controlled comparison; the subscriber trajectories show that these creators were becoming recurring severe-weather destinations outside that task. This evidence does not show that the same participants who perceived the legitimacy gap relied on the streams. It shows that legitimacy disadvantage and large-scale visibility can coexist. Weatherfluencers can remain weaker on credibility and legitimacy in the clip-comparison

setting while occupying a visible, recurring position in severe weather communication.

Crisis Named Resources provide a specific precedent for this visibility-standing split: event naming and platform search can make a crisis-specific resource visible during a high-demand information moment, even when audiences have limited cues for judging who operates it, whether it is official, what expertise it carries, and how it handles correction [32, 33, 34, 35]. Weatherfluencers shift that pattern from event-named resources to recurring creator channels. Their visibility is organized through subscriber relationships, platform recommendation, and return viewing across outbreaks, so attention can accumulate around the creator rather than only around a single crisis name.

Participants' evaluations point to a source-portfolio pattern rather than a replacement pattern. Broadcast meteorologists occupied the strongest legitimate-authority position, while weatherfluencers remained available as supplemental sources that participants could compare, monitor, or use selectively. Participants did not need to have a stance on weatherfluencers' credibility before watching clips (none had experience with them), comparing them with other sources, or making selective use of their interpretations. They formed provisional assessments and maintained distinct judgments across multiple dimensions at once. Engagement proceeded through continued assessment, which helps explain how platform-native interpreters can remain in audiences' evaluative repertoires while their interpretive standing remains unresolved.

### **6.6.3 The Objectivity Exception**

Objectivity was the only dimension on which the platform penalty failed to apply. The factor analysis cautions against treating objectivity as wholly independent from the other evaluative dimensions; the dominant first factor captured strong shared variance across all six items, and the items behaved largely as indicators of a unified credibility judgment with legitimacy partially distinct as an authority sub-judgment. The objectivity finding demonstrates that one component of an otherwise-unified credibility judgment did not respond to platform the way the others did.

What participants described attending to on this dimension specifies what produced the exception. Objectivity judgments tracked observable features of the communicative act: whether presenters named the data they were using, narrated their reasoning, acknowledged uncertainty, and connected conclusions to visible evidence. These features were available in the clip itself in a way that authorization and accountability were not. When evaluation depended on inspecting how interpretation was being conducted, platform-native creators could match broadcast meteorologists. When evaluation depended on inferring institutional standing, they could not. The platform penalty applied where the cues organizing it were the relevant ones, and lifted where they were not.

The within-platform variation strengthens this reading. Ryan Hall and Max Velocity operated under identical credential ambiguity and identical platform conditions, yet participants rated them differently on objectivity-adjacent qualities including accuracy. Whatever audiences were responding to was visible in the clip and operated within platform as well as across it. That observation is consistent with the interpretation that some component of audience evaluation is responsive to inspectable features of how interpretation is conducted, separate from the role-based cues the chapter's literature review identifies as central to credential evaluation.

Why does the gap narrow on the dimension of objectivity? The data suggest that this dimension of audience evaluation is responsive to features of communicative performance that are visible within the clip itself. This study cannot specify, however, what creators do during livestream coverage to make their interpretations appear more or less objective. Study 2 takes up that question by examining the production-side practices through which weatherfluencers make severe weather interpretation publicly observable.

#### **6.6.4 Practical Utility Partially Decouples from Credibility**

Practical rankings followed the credibility hierarchy at the platform level while resisting full reduction to it. Television sources outranked YouTube sources on clarity, visual effectiveness, and safety utility. Within those rankings, Max Velocity was statistically indistinguishable from both broadcast sources across all three criteria. One YouTube creator produced ranking performance equivalent to broadcast meteorology on operational utility despite the platform-level legitimacy disadvantage that the same participants applied to him on the rating dimensions. Operational utility tracked credibility partially and individual presenter performance more closely than platform category alone would predict.

Participants drew on features that were directly available in the clips when forming utility judgments. Several identified accessibility problems across both formats, including critical safety guidance conveyed primarily through on-screen crawls rather than verbal narration. Affective calibration also entered utility judgments. One participant described a broadcast meteorologist whose heightened delivery produced anxiety and contrasted that with a creator whose calmer delivery felt more useful for protective decision-making. Utility judgments responded to features of the communicative performance that operated alongside the credibility hierarchy rather than collapsing into it, even though the broader hierarchy remained visible at the platform level.

The rankings also reflect judgments about three-minute clips rather than about extended coverage during a live event. Within that bounded task, Max Velocity's equivalence with the two broadcast sources suggests that participants sometimes separated practical usefulness from platform standing. A YouTube clip could rank comparably when participants judged the coverage as clear, visually effective, and actionable, even though YouTube sources remained disadvantaged on the broader credibility and legitimacy ratings.

#### **6.6.5 What Individual Audience Evaluation Can and Cannot Explain**

Study 1 specifies what individual audience evaluation does in this comparison and where its analytic reach ends. Audiences distinguish among severe weather interpreters across multiple dimensions, apply credential-based reasoning where institutional cues are the relevant ones, and respond to features of communicative performance where the clip itself supplies the evidence. Broadcast meteorologists retained the strongest legitimacy position. One platform-native creator approached broadcast sources on practical utility, and weatherfluencers as a category reached parity on objectivity. The findings do not support a replacement situation in which platform-native creators displace broadcast meteorologists, and they do not support a flat dismissal of platform-native interpreters either. Audiences evaluate broadcast meteorologists and weatherfluencers as different kinds of bundled interpretive offerings, and they apply different evaluative resources to each. What audience evaluation cannot, on its own, specify is what is happening on the production side that allows visible features of communicative performance to function as evaluative resources at all. That question requires a different vantage point on severe weather livestream coverage.

### **6.7 Implications**

#### **6.7.1 Implications for the Weather Communication Field**

Study 1's findings indicate that institutional credibility remains durable under new visibility conditions. Across rating dimensions tied to institutional accountability, legitimacy, and safety-relevant trust, broadcast meteorologists retained consistent advantages. Credential-linked evaluative signals remain legible and consequential for audiences even when creators demonstrate interpretive competence. The evidence here does

not support a displacement model. Platform-native interpreters can approach or match broadcast performance on dimensions tied to analytic transparency and evidentiary presentation, but institutional affiliation continues to organize judgments about appropriate authority and safety utility. The evaluative landscape is differentiated rather than zero-sum.

The findings surface a specific legibility issue for Certified Digital Meteorologists and other credential-bearing interpreters operating on platforms. Participants did not uniformly recognize or reference formal meteorological training when it was not structurally embedded within an institutional broadcast context. Credential signals are most legible when bundled with professional and organizational context that audiences already know how to read, and less legible when presented in platform-native environments that structurally resemble open-entry creator ecosystems. For professional meteorologists operating on digital platforms, credential visibility and contextualization matter for how institutional legitimacy is perceived, not just whether credentials formally exist.

Participants' safety-utility rankings and interview explanations both pointed to the importance of local embeddedness. Participants did not treat local broadcast authority as reducible to formal meteorological training alone, they also associated it with geographic familiarity, sustained local presence, and organizational position within local news infrastructures connected to public warning systems. In their evaluations, local accountability helped explain why severe weather guidance from broadcast meteorologists seemed more actionable for affected places.

### **6.7.2 Implications for Crisis Informatics and Emergency Management**

Study 1 shows that severe weather livestreams create an attention problem for crisis informatics rather than a simple credibility replacement problem. Participants rated broadcast meteorologists higher on credibility and legitimacy, but weatherfluencers remain part of the severe weather information environment because audiences encounter, follow, and return to them during events. They occupy a middle position: unofficial sources that can still draw consequential public attention. That position creates two risks for emergency communication: treating high-visibility creators as if they were official warning sources, and ignoring streams where viewers are already asking questions, comparing interpretations, and looking for help making risk actionable.

For emergency management, the practical implication is preparation for adjacent coordination before an outbreak rather than improvisation during active threat conditions. Agencies and public information officers can identify high-attention weather streams, monitor public broadcasts for recurring confusion or misinterpretation, and publish clarifications through official accounts in formats creators and viewers can reference. In some cases, official accounts may clarify or correct in a public chat while keeping warnings, corrections, and protective guidance anchored in official channels. Coordination should be selective, especially with credentialed or locally knowledgeable platform-native communicators whose audiences already treat them as severe weather resources. The within-platform variation in Study 1 reinforces this operational point: two YouTube creators using the same platform were evaluated differently, so emergency-management strategies should distinguish among specific creators, streams, and communication practices rather than treating weatherfluencers as one category.

## **6.8 Limitations**

The limitations of Study 1 fall into three categories: constraints arising from the study design and exposure conditions, measurement constraints, and constraints on sample composition and transferability.

### 6.8.1 Study Design and Exposure Conditions

Participants evaluated three-minute clips rather than extended livestream sessions or repeated exposure across multiple events. In naturalistic severe weather consumption, audiences may develop familiarity with specific presenters, accumulate reputational knowledge, or form parasocial relationships that shape credibility judgments over time. The design captures prompted, post-event evaluations of short excerpts rather than the experience of following a source through extended live coverage, repeated events, or an ongoing audience community. The study also does not explain how viewers first encounter, return to, or become familiar with weatherfluencer channels through recommendation systems, subscriber networks, or cross-platform weather communities. This is a topic for future work. The objectivity parity finding and the within-platform variation results should be interpreted with this constraint in mind: both findings emerge under conditions that minimize accumulated reputational priors. Whether the same patterns hold under naturalistic accumulated exposure is an open empirical question.

The forced-ranking tasks required participants to assign unique ranks without ties, which may exaggerate perceived differences between sources relative to naturalistic evaluation where multiple sources might be treated as comparably useful. The ranking results should be read as reflecting relative ordering preferences rather than as evidence that participants perceived clear performance gaps between all sources on all criteria.

An observability constraint applies to the interview data. Interview sessions followed survey completion, which may have shaped participants' reflective accounts. The structured review segment that opened each interview was designed to leverage the post-survey sequencing constructively, enabling direct comparison between ratings and explanations. However, the sequencing differs from naturalistic media consumption during unfolding events, where evaluative reflection and real-time attention compete with safety-relevant decision demands. Participants' interview explanations may differ from the evaluative processes that would operate under actual threat conditions.

All clips were drawn from a single severe weather event. This design choice held meteorological content constant across sources, which is analytically necessary for controlled comparison. It also constrains generalizability: different event types, hazard categories, or levels of forecast uncertainty may activate different evaluative heuristics. Legitimacy judgments organized around institutional accountability may vary depending on hazard severity and forecast uncertainty. The findings characterize evaluation under active tornado outbreak conditions; their extension to other meteorological scenarios requires direct investigation.

### 6.8.2 Measurement Constraints

Each evaluative dimension was measured with a single item. Single-item measurement reduces respondent burden in a within-subject design where cognitive load across four sequential source evaluations is a genuine concern, but it precludes within-construct reliability estimation and limits psychometric depth. The factor analysis speaks to the covariance structure of the six dimensions as composites but cannot decompose item-level error from construct-level signal.

The two legitimacy items, coverage legitimacy and presenter legitimacy, shared identical embedded operational definitions in the administered survey instrument. The distinction between the two items was carried entirely by the question stem, which directed participants toward "the weather coverage" in one case and "the weather presenter" in the other. Participants may have applied a single operational concept when rating both items, using the question stem to orient their attention without necessarily applying distinct evaluative criteria to each. The strong within-source correlations between the two legitimacy items are consistent with this interpretation. Any observed divergence between coverage and presenter legitimacy ratings is consistent with genuine construct differentiation but cannot be attributed to it with confidence. Future work

measuring this distinction should provide item-level definitions that explicitly specify and differentiate the evaluative target for each construct.

Within-platform inter-exemplar agreement was low for several dimensions, including within the television platform. Source-level descriptives indicate that one broadcast station consistently received higher ratings than the other across multiple dimensions, suggesting that the television platform advantage reported at the aggregate level reflects averaging across heterogeneous broadcast stimuli rather than uniform evaluation of broadcast meteorology as a category. This heterogeneity within platforms reinforces the within-platform variation argument developed in the discussion but also introduces stimulus-specific influence that a two-exemplar design cannot fully isolate. Future work should sample more exemplars per platform to reduce the degree to which platform-level estimates are shaped by individual stimulus characteristics.

The Certified Digital Meteorologist credential was not explicitly surfaced in the study interface, which reflects current platform conditions but limits conclusions about how visibly displayed digital certifications might alter evaluation. The CDM legibility finding should be interpreted as characterizing the current platform environment rather than as a fixed property of how audiences respond to digital credentials under all conditions.

### **6.8.3 Sample Composition and Transferability**

The qualitative sample of eight interview participants was purposively constructed to represent two viewer orientations, weather-knowledgeable and general-public, and was designed to illuminate evaluative mechanisms rather than exhaustively represent the full diversity of public sensemaking practices. The interview findings should be interpreted as explanatory and illustrative rather than as a frequency claim about how commonly each mechanism operates across the broader population of severe weather audiences.

Participants were recruited from a national online sample and through weather-interested communities on social media. This recruitment approach may underrepresent populations most directly affected by severe weather, including rural communities, non-English-speaking households, and audiences with limited broadband access, all of whom face distinct accessibility and information environment conditions. Whether heavy platform-native viewers with established prior relationships with specific weatherfluencers exhibit different evaluative patterns than participants with limited prior exposure remains an open question.

The study compares two source types and does not address how audiences integrate evaluations across weather apps, cable channels, NWS direct products, or automated alerting systems; how those alternatives shape reliance on broadcast and platform-native interpreters is outside the study's scope.

Credibility and legitimacy cues may operate differently in regions with weaker local broadcast meteorology infrastructure, for other hazard types, or among audiences with substantially different prior severe weather experience. The present findings characterize evaluation within a specific regional and hazard context rather than a universal severe weather communication environment. Study 1 characterizes how individual participants evaluate discrete clips under controlled conditions; it does not claim to describe evaluative processes operating during live threat exposure, nor does it establish that the dimensional structure of credibility judgments found here generalizes beyond the U.S. domestic tornado-outbreak context.

## **6.9 Summary**

Study 1 establishes that participants evaluated weatherfluencers and broadcast meteorologists through a differentiated set of cues. Broadcast meteorologists retained advantages on dimensions tied to professional standing, accountability, and legitimacy, while objectivity was more responsive to visible features of the

coverage itself. That pattern identifies the limit of what audience evaluation data can explain on their own. The next study turns to the production side of severe weather livestreaming, examining what weatherfluencers make publicly visible as they interpret unfolding events.



## Chapter 7

# Study 2: Making Sense of the Weather, Together

### 7.1 Study Overview

Study 1 showed that survey and interview participants did not evaluate weatherfluencers and broadcast meteorologists in the same way across credibility-related dimensions. Broadcast meteorologists retained consistent advantages on dimensions tied to accountability and professional standing. Objectivity was the only dimension on which platform-native creators reached statistical parity despite lacking the credential markers that structured evaluation elsewhere. That pattern suggests that some evaluative judgments respond to something other than professional standing alone. Having examined audience judgments, this chapter turns to what weatherfluencers do during live severe weather coverage: how they assemble sources, display reasoning, incorporate selected chat input, and keep a changing threat intelligible on stream. I examine what weatherfluencers do during severe weather livestreams: what interpretive practices they enact, how those practices are made publicly visible, and under what conditions that visibility is sustained, strained, or interrupted. The analysis is anchored in the production-level conditions under which platform-native interpretation becomes visible enough to be examined as an object of evaluation.

The study focuses on creator-centered interpretive practices during Particularly Dangerous Situation (PDS)-designated escalation windows across three YouTube severe weather livestreams. PDS designations are relatively rare escalations within an already heightened warning environment, and they often mark moments of intensified interpretive demand and elevated stream activity. They provide a useful analytic anchor for examining how creators construct and communicate situational understanding under conditions of heightened threat urgency. Using PDS windows as the unit of analysis supports comparison across creators and incidents within an otherwise heterogeneous corpus of multi-hour streams. The central question is what creators make publicly visible during severe weather livestreams, and how those visible practices provide audiences with access to the interpretive process itself.

Building on the prior published analysis [197], this chapter extends that account in two ways. First, it develops *inspectable interpretive work* as an organizing concept for the production-level configuration through which interpretive reasoning becomes publicly observable during severe weather livestreams. Second, it incorporates additional practices and boundary conditions surfaced through structured observation notes, including off-screen hyper-local mapping and moments of affective transparency under peak threat intensity. In professional meteorology, credentials and organizational affiliation often provide audiences with a legible basis for reliance before any specific act of reasoning is observed. In these streams, that basis

is less settled. The interpretive process itself becomes more consequential as a visible object of attention.

## **7.2 Relevant Literature**

### **7.2.1 Temporal and Distributed Sensemaking**

The main literature review establishes sensemaking as the process through which actors construct plausible accounts under uncertainty, and reviews the enacted, ongoing, social, and retrospective properties emphasized in foundational work on sensemaking (Section 2.2). This chapter focuses on a narrower production-level problem: how severe weather interpreters make their reasoning publicly observable during moments when conditions are changing quickly and the account must remain usable for action.

Klein's data-frame theory provides a useful vocabulary for this problem. In data-frame theory, interpreters work with frames that organize incoming evidence, generate expectations, and support projection about how a situation may develop [95]. Sensemaking proceeds as interpreters elaborate, question, compare, or revise these frames in response to new data. PDS-designated windows of time are analytically useful because they concentrate moments in which rapid projection and revision may be required. For this chapter, Klein's vocabulary directs attention to the visible updating of a working account: which evidence creators bring forward, how they revise claims as radar signatures and reports change, and how they narrate uncertainty while the storm unfolds.

This interpretive work is also materially distributed. Distributed cognition shifts the unit of analysis from cognition inside an individual actor to cognitive activity organized across people, artifacts, representations, and time [89, 81]. Severe weather livestreams are dense with such materials: radar products, warning polygons, storm tracks, chaser feeds, maps, timestamps, chat messages, and on-screen annotations all shape what can be noticed, compared, and revised. Goodwin's account of professional vision further clarifies how domain-specific seeing is socially organized through coding, highlighting, and graphic representation [72]. For Study 2, these concepts support attention to the visible organization of interpretation: what evidence the creator foregrounds, how features are marked or explained, and how the screen becomes a site where reasoning is displayed rather than merely reported.

Work on disaster response provides a related, but bounded, analogy. Fischer et al. show how disaster responders collaboratively construct a shared operational picture through mixed physical and digital resources, including maps, overlays, annotations, and collaborative work around uncertain information [54]. Severe weather livestreams differ from command-and-control settings: they are public, creator-centered, and not organized around a formal response team. The mechanism is nevertheless useful. Maps, overlays, annotations, and visible information arrangements can make an evolving interpretation available as a shared reference point. In livestreamed weather coverage, the screen similarly functions as a surface on which the creator assembles and revises an account of the threat.

### **7.2.2 Livestreaming as Publicly Witnessed Interpretation**

The platform and livestreaming literatures reviewed in Section 2.5 establish that livestreams are synchronous, creator-anchored environments in which video, narration, and chat unfold together. Hamilton et al. describe livestreams as mixed-media environments organized around shared real-time events, while Recktenwald emphasizes the asymmetry through which a broadcaster monitors an unfolding activity while selectively responding to audience messages [75, 152]. In severe weather coverage, this structure matters because the creator must interpret changing meteorological evidence while also maintaining a public-facing account for a co-present audience.

This differs from much crisis informatics research on asynchronous social media. Prior work has shown that publics contribute to situational awareness, distributed verification, and correction during emergencies through posts, reports, questions, and repairs that circulate across networked platforms [199, 112, 175]. That work is essential for understanding public-side information work, but the livestream setting reorganizes the analytic problem. Here, interpretation is continuous, visually mediated, and centered on a focal creator. Claims, revisions, evidentiary sources, and uncertainty can appear within the same ongoing stream rather than as separable posts in a claim trajectory. This makes the public display of reasoning itself a central object of analysis.

High-volume chat also shapes what can be incorporated into the stream. Ford et al. show that massive livestream chats may not operate as orderly dyadic conversation, yet can still produce coherent collective forms through repetition, shorthand, and rapid alignment around shared events [58]. Recktenwald similarly shows that audience members in livestream settings often produce quick, brief, single-turn messages, while broadcasters respond selectively and in more extended ways [152]. For Study 2, this means audience input is relevant less as a complete conversational record than as one stream of possible cues, questions, and reports that creators may selectively incorporate into visible interpretation.

### 7.2.3 Platform Affordances and Interpretive Visibility

Platform affordances shape what interpretive work can be made publicly observable. Following the main literature review, I treat platform affordances as action possibilities made available through particular sociotechnical arrangements rather than as neutral features of a communication channel. In weather livestreams, multi-window display, screen sharing, annotation tools, chat replay, moderation, and monetized message features can all affect what evidence appears, what can be marked, and which audience contributions become salient.

These affordances support visibility but do not guarantee inspectability. A radar product may be displayed without its interpretive basis being explained; an off-screen lookup may shape narration without being visible; a chat report may be incorporated, ignored, or displaced by stream velocity. Drawing on infrastructure studies, I use *interpretive burden* to name the additional work required when platform features, tool breakdowns, or decontextualized signals must be translated before they become useful for ongoing interpretation [174]. The analysis asks how platform infrastructure supports, limits, or complicates the visible production of severe weather interpretation during PDS-designated escalation windows.

This focus provides the basis for the study's central construct, *inspectable interpretive work*: the visible practices through which creators make severe weather reasoning available for audience evaluation while the event remains unsettled.

## 7.3 Research Questions

Study 2 is guided by four research questions. The first three characterize production-level interpretive practices and their infrastructural conditions during PDS-designated escalation windows. The fourth synthesizes these findings to address how interpretive authority is enacted in the absence of institutional credentials.

- **RQ1:** What interpretive practices do weatherfluencers enact during PDS-designated escalation windows, and how are those practices made publicly observable within livestream environments?
- **RQ2:** How do weatherfluencers enact and make publicly observable temporal sensemaking across multiple time horizons during severe weather events?

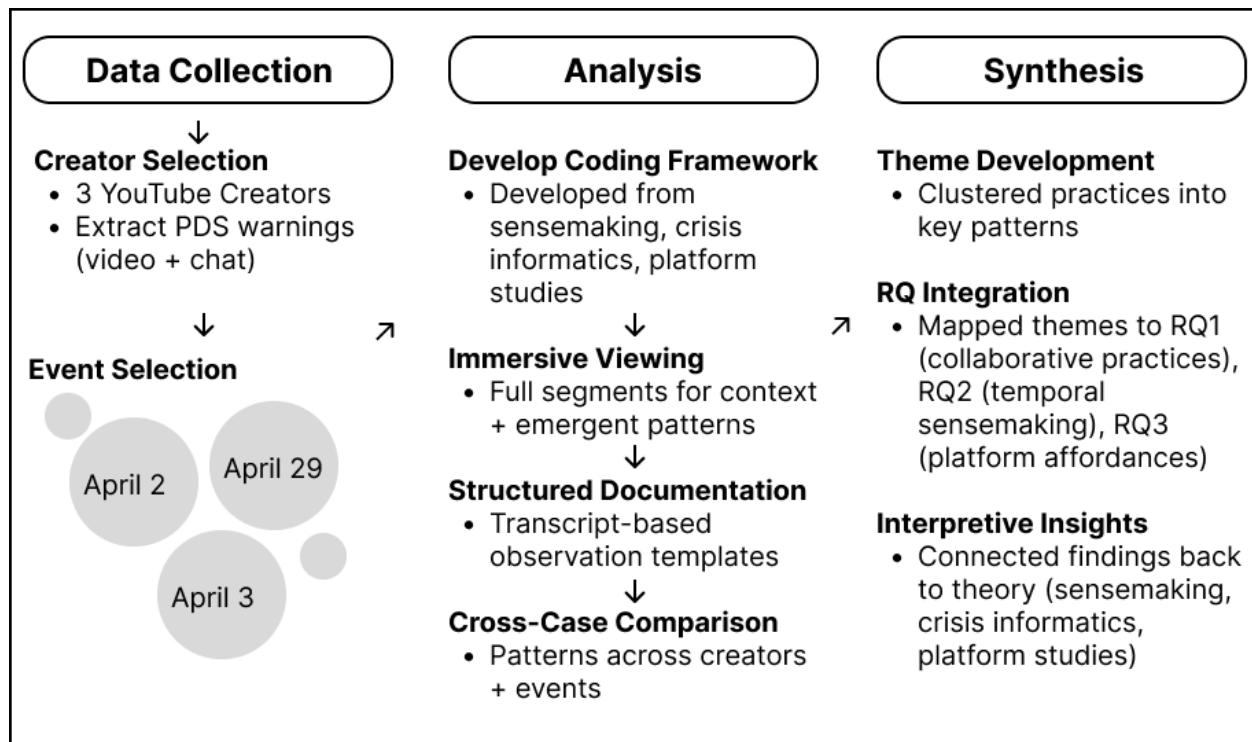


Figure 7.1: Study 2 data collection and analysis pipeline for PDS-anchored critical incident sampling.

- **RQ3:** How do platform affordances shape what interpretive work can be made publicly visible, and under what conditions do platform features introduce interpretive burden rather than reduce it?
- **RQ4:** How do the publicly observable interpretive practices documented in this study constitute and support the enactment of interpretive authority under conditions where professional standing does not, by itself, settle the basis on which an interpreter is worth orienting to?

## 7.4 Methods

I use focused content analysis to examine how creators made interpretive practices visible during PDS warning windows. PDS warnings are used as critical incidents to anchor analysis around moments when routine monitoring transitions into safety-critical interpretation under conditions of temporal pressure and uncertainty. The analysis is grounded in theories of sensemaking, crisis informatics, and platform studies, and is conceptually informed by the trace ethnography lens developed by Geiger and Ribes [67], which describes how digital traces such as chat logs, creator commentary, and on-screen visuals reflect the sociotechnical practices of participants. While this study does not involve full ethnographic immersion, the trace ethnography perspective orients analysis toward what participants leave behind as they navigate uncertainty and urgency in real time: not as transparent records of what happened, but as evidence of how participants were making sense of what was happening, and for whom.

This approach prioritizes rich description and theoretical insight over systematic frequency counts. The goal is not to quantify how often practices appear but to characterize what they are, when and how they function, and what interpretive work they accomplish during safety-critical escalation windows.

| Channel                         | Joined YouTube            | No. Videos | No. Views | No. Subscribers <sup>1</sup> |
|---------------------------------|---------------------------|------------|-----------|------------------------------|
| Creator A, Texas Weather Center | Sep 28, 2022              | 945        | 13.7M     | 89.1K                        |
| Creator B, Max Velocity         | Aug 31, 2014 <sup>2</sup> | 1,568      | 200M      | 1.19M                        |
| Creator C, Ryan Hall, Y'all     | Dec 5, 2012               | 593        | 403M      | 2.7M                         |

Table 7.1: Creator profiles: Date the creator joined YouTube, number of videos, number of total views, and total number of subscribers

### 7.4.1 Corpus and Case Selection

Study 2 draws from three YouTube severe weather livestreams produced during two Spring 2025 outbreak periods: April 2–5, 2025 and April 27–30, 2025. From these periods, analysis focuses on three specific broadcast events, one per creator: April 2, April 3, and April 29, 2025. Each selected stream corresponds to a single severe weather event within these outbreak periods and serves as a focal case for analysis.

The outbreak periods were selected because they simultaneously met three criteria: they contained multiple PDS-designated tornado warnings, producing concentrated escalation windows within each stream; they generated sustained multi-hour livestream coverage by the focal creators, enabling cross-case comparison under broadly comparable meteorological conditions; and the events involved widespread impacts across the central and southern United States during peak tornado season, increasing the likelihood of large-scale audience participation within livestream chat.

Creator A (Texas Weather Center; 89.1K subscribers at time of study) operates as a team comprising a main host, two formally trained consulting meteorologists, and several affiliated storm chasers. Creator B (Max Velocity; 1.19M subscribers) operated solo during the analyzed stream and at the time of these events was a meteorology student who had not yet completed his degree. Creator C (Ryan Hall, Y'all; 2.7M subscribers) operates with a main host and at least one formally trained meteorologist. Table 7.1 summarizes creator profiles including channel join date, total video count, total views, and subscriber count. Observable variation exists across the three streams in how interactively creators engaged with Super Chat, ranging from highly interactive to more broadcast-adjacent in style. This variation is not a limitation of the sample but an analytically productive feature of it, enabling comparison of how interpretive practices operate across different stream configurations.

I analyze one event per creator. This decision enables close, sustained comparison of sensemaking practices under broadly comparable threat conditions across all three cases, while keeping the corpus manageable for the kind of thick description that the analytical approach requires.

### 7.4.2 Critical Incident Sampling: PDS Warnings as Analytic Anchors

Because severe weather livestreams often span many hours, this study employs critical incident [56, 27] sampling anchored to PDS-designated tornado warnings. PDS designations are applied by National Weather Service forecasters to select watches and warnings when they anticipate unusually severe and life-threatening conditions. These designations are relatively rare escalations within an already elevated warning environment and reliably mark moments of intensified interpretive work by creators and heightened engagement by audiences.

For each identified PDS tornado warning, I extracted a bracketed segment consisting of five minutes before warning issuance, the full warning duration, and five minutes after cancellation. This bracketing

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<sup>2</sup>As of May 7, 2025

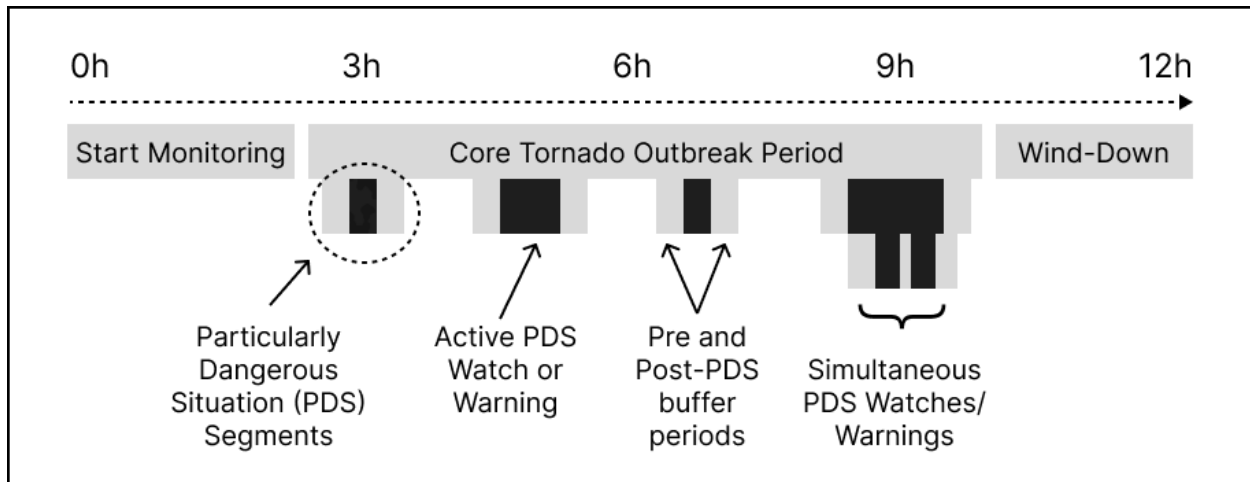


Figure 7.2: Critical incident sampling and PDS watch/warning structure within a typical livestream timeline.

strategy captures anticipatory interpretation as conditions develop toward the issuance threshold, the peak communication period during active warnings, and the immediate post-cancellation phase during which creators typically narrate what occurred and reorient audience attention. In cases where warnings overlapped, I sampled from five minutes before the first PDS warning through five minutes after cancellation of the last. Figure 7.2 illustrates this sampling structure.

Across the three focal streams, this strategy produced 13 PDS-anchored escalation windows totaling 453 minutes of analyzed content. Max Velocity’s April 3 stream accounted for 8 of the 13 windows and 200 minutes of analyzed content, reflecting the unusual density of PDS-level activity during that outbreak and the reality that multiple simultaneous warnings produced overlapping windows. Texas Weather Center’s April 2 stream produced a single window of 73 minutes, and Ryan Hall’s April 29 stream produced 4 windows totaling 180 minutes. This uneven distribution across creators enables comparison between streams characterized by high-density overlapping warning activity and those with fewer, more sustained critical incidents. Table 7.2 summarizes PDS warnings and total analysis time by creator.

| Creator              | Event Date     | PDS Warnings | Total PDS Time Analyzed |
|----------------------|----------------|--------------|-------------------------|
| Texas Weather Center | April 2, 2025  | 1            | 73 minutes              |
| Max Velocity         | April 3, 2025  | 8            | 200 minutes             |
| Ryan Hall            | April 29, 2025 | 4            | 180 minutes             |
| <b>Total</b>         | 3 Events       | 13           | 453 minutes             |

Table 7.2: Summary of PDS Warnings Observed Across Livestreams

### 7.4.3 Data Extraction and Annotation Materials

Each escalation window was annotated using archived livestream materials and exported chat records. The archived video and audio provided the primary record for creator narration, on-screen displays, source switching, visual annotation, and stream context. YouTube transcripts were used as timestamped aids for locating creator speech and anchoring observation notes; quoted or analytically consequential passages were

checked against the archived video and audio. For chat analysis, I used the YouTube Comment Search Chrome extension to export the recorded Live Chat associated with each archived stream. The export included timestamp, author screen name, message text, and formatted indicators for donation or Super Chat messages where present. Given the volume of chat activity typical in multi-hour severe weather streams, which often reaches tens of thousands of messages across a full event, I filtered the exported chat to the PDS-designated escalation windows and drew an approximately 300-message random sample per creator in Excel. I also reviewed chat in the replay interface while watching the archived video so that sampled messages could be interpreted in relation to the surrounding stream context. Chat messages quoted in the findings are reproduced verbatim. Chat messages were analyzed using the same coding framework applied to creator communication, described in the following section.

#### 7.4.4 Coding Framework and Analytical Approach

I developed a qualitative coding framework grounded in three theoretical traditions: sensemaking theory [204, 207], crisis informatics [144, 87], and platform studies [71, 26]. The framework organized observations into four core domains:

- **Collective Sensemaking:** Practices through which creators construct situational understanding in interaction with audience inputs and distributed reports, including information triangulation across multiple sources and query-driven redirection of creator attention.
- **Sensemaking Processes:** Creator-led interpretive strategies that scaffold understanding, including knowledge scaffolding and analytical transparency.
- **Temporal Orientation:** Management and communication of time under unfolding uncertainty, including retrospective framing, real-time interpretation, anticipatory projection, and acknowledgment of temporal limits.
- **Platform Affordances and Constraints:** How YouTube’s features and limitations shape communication, including visual annotation tools and responses to technical constraints.

While these domains were informed by established theoretical traditions, the specific codes within each domain developed through an abductive analytical process that integrated theory with close, iterative engagement with the data. I did not apply a fully deductive codebook derived from prior literature. Instead, I began with theory-informed sensitizing concepts and refined them through repeated viewing of livestream segments and associated chat interactions during PDS-designated windows. The broader Sensemaking domain, for example, was motivated by sensemaking theory, while specific practices such as Knowledge Scaffolding and Transparency emerged from observing how creators explained complex meteorological data in real time during the coding process itself. In this study, I prioritized identifying recurring patterns and analytically distinctive practices across creators rather than quantifying code frequency. Appendix B provides the full coding schema with descriptions and representative examples.

To support systematic cross-case comparison, each escalation window was documented using a structured observation template capturing stream metadata, warning bracket timestamps, and coded instances across the four domains. Table 7.3 provides a representative populated row from the observation template to illustrate how structured documentation operated in practice.

| Domain                 | Code                      | Example/Quote                                                                                                                                                   | Notes                                   |
|------------------------|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| Collective Sensemaking | Information Triangulation | "[storm chaser] if you're listening, I think it's reforming a new circulation farther north I think this one.. Oh boy, that's not good."                        | Bringing in NOAA weather radio directly |
|                        | Query-driven              | "Those of you watching.. Now you know, you can help answer questions via the chat. Tell them what's going to be happening."                                     |                                         |
| Sensemaking Processes  | Knowledge Scaffolding     | "Back over to [the map] to the which way the winds are blowing mode..."                                                                                         |                                         |
|                        | Transparency              | "Folks if I'm not talking about where you are right now or talking about anywhere near you right now, you have nothing to worry about."                         | Reaction to the chat                    |
| Temporal Orientation   | Real-time Interpretation  | "Let me show you what we're looking at, this is a big problem folks. This could be a significant tornado trying to develop."                                    |                                         |
|                        | Anticipatory Projection   | "This storm is going to be moving towards Maybel, eventually the storm is going to pose a threat to either southern Wichita County or Archer County... by 8pm." |                                         |
| Platform Affordances   | Visual Affordances        | "Well the radar hates you, but I'll show you a different source real quick."                                                                                    | Referring to tool issues                |
|                        | Platform Limitations      | Issues with third party tools                                                                                                                                   |                                         |

Table 7.3: Structured Documentation Template for Observations

#### 7.4.5 Cross-Case Synthesis

Following incident-level annotation, the analysis proceeded through cross-incident and cross-creator comparison to identify recurring interpretive practices and to characterize how these practices vary across escalation tempo and stream conditions. I developed analytical memos grounding emergent themes in specific examples and connecting them to the theoretical framework. A practice was treated as analytically significant when it recurred across multiple escalation windows and, where possible, across more than one creator, rather than appearing as an isolated instance within a single stream. This comparative step supports the movement in the Findings section from incident-specific description to practice-level characterization across cases.

### 7.5 Findings

Across 13 PDS-anchored escalation windows and 453 minutes of analyzed content, four analytic categories of work emerged: the specific practices through which creators made their reasoning publicly visible, the temporal strategies through which they navigated a continuously evolving threat landscape, the ways platform affordances and constraints shaped what interpretive work could be made visible, and a distinct communicative layer in which affective response to unfolding events co-occurred with ongoing technical interpretation. The practices identified here elaborate those reported in the prior published analysis [197]: multi-source triangulation, temporal bridging, and platform-specific adaptation. The present analysis extends those accounts by specifying the production-level mechanisms through which interpretive reasoning is made publicly observable. A final subsection addresses variation and boundary conditions across the sample. The findings are presented as practice-level characterizations rather than event-by-event accounts; representative examples are drawn from across the three streams. These findings characterize what creators

make available for observation during escalation windows; they do not assess how audiences evaluate or act on what is made visible.

### **7.5.1 Interpretive Practices**

During PDS-designated escalation windows, creators did not simply relay institutional alerts or narrate radar conditions. They actively constructed and displayed interpretive reasoning in ways that made the basis of their claims visible to audiences in real time. Across the sample, the five practices documented in the prior published version [197] also appear here, alongside two additional practices surfaced through the structured observation notes.

#### **Visible Triangulation**

Visible triangulation refers to the practice of actively cross-referencing multiple information sources on-stream, making the alignment process (including where sources agree, where they diverge, and what each source contributes) publicly observable. Creators drew on institutional products (e.g., NWS and SPC warnings and polygons), radar products, storm chaser video and audio, and audience-submitted ground reports. The key feature of this practice is that the triangulation itself is narrated or displayed rather than occurring off-screen: audiences see which sources are being consulted, what each shows, and how the creator resolves or holds open any discrepancy between them.

Max Velocity exemplified this during an escalating warning sequence, toggling between radar and chaser feeds while narrating the alignment process: "[storm chaser] is on the storm, I think near Trumann, guys, this is now down to an observed [warning]. Bottom right of your screen. I'm not seeing anything completely consolidated right now." The uncertainty is held open rather than resolved, and the audience can follow why. Ryan Hall similarly escalated concern when a chaser's report of "Multiple power flashes!" coincided with on-screen rotation, using the convergence as the basis for heightened urgency. Texas Weather Center integrated audience-submitted ground reports, incorporating observations such as "18 wheeler just turn over on highway 82 near Seymour, TX just now" as real-time field verification of radar-indicated severity.

In these windows, creators used triangulation to make source alignment publicly observable rather than presenting conclusions as standalone assertions.

#### **Source Hierarchy Narration**

A related but analytically distinct practice involves creators narrating the epistemic hierarchy among their sources, explicitly telling audiences not only what different sources show but which are more reliable and for what purpose. Triangulation shows sources being used; source hierarchy narration tells audiences how to weight them.

This appeared most clearly in moments when radar data was ambiguous or a source was compromised. Texas Weather Center described a tool problem while simultaneously providing interpretive guidance: "Well the radar hates you, but I'll show you a different source real quick." Ryan Hall made this hierarchy explicit as a methodological principle during a period of radar ambiguity: "I don't want to be too precise [about the storm location], but if we can be extremely precise, the way to do that is with real-time video and not just through radar."

In these examples, hierarchy narration appears when radar was ambiguous or when a tool was compromised. In both instances, what becomes visible to the audience is not only which source the creator is using but the creator's assessment of its reliability relative to alternatives.

## Off-Screen Hyper-Local Mapping

A third practice, observed in Max Velocity's stream, involves using off-screen consumer mapping tools to identify specific named institutions in a tornado's projected path and surfacing that information on stream. The structured observation notes record Max Velocity triangulating with consumer mapping tools off-screen (e.g., Google Maps/OpenMaps) to identify landmarks not visible in radar products, then incorporating that output into stream narration.

During PDS Warning #1, as a significant tornado approached Latty, Missouri, Max Velocity narrated: "This is about to hit Latty, which is just north of Potosi, Missouri. Unfortunately in Latty there is a Little Learners Academy that's on the South Side. Let's hope the tornado misses that." Later in the same stream, tracking the Monette sequence, the observation notes record: "There is a senior care center here that is in the path...Robertson Brothers Furniture."

In these moments, the stream makes the output of off-screen lookup visible, namely named institutions and landmarks, without making the lookup process itself visible.

Because this practice was observed in Max Velocity's stream only within this sample, I treat it as an observed variant rather than claiming it as a shared practice across all three creators.

## Query-Driven Redirection

Across the sample, audience questions functioned as redirection inputs that shaped creator attention in real time. Rather than treating the audience as passive recipients, creators explicitly solicited input and incorporated it into ongoing interpretation. Texas Weather Center verbally invited viewers into this distributed role: "Those of you watching.. Now you know, you can help answer questions via the chat. Tell them what's going to be happening." Max Velocity solicited ground reports through associated community channels: "Do we have any reports, er, people on discord or anything, just throw anything in the chats and I'll try to relay it." These prompts were answered with location-specific reports (hail size, wind intensity, power outages) that functioned as rapid field verification for radar-indicated severity.

The practice was regulated in both directions. Moderators often responded to routine or repetitive questions, enabling creators to maintain interpretive focus during high-intensity periods. In Max Velocity's stream, moderators also enforced epistemic norms that constrained what information circulated in chat: "Please do not pre-rate tornadoes, that is done days later by NWS."

Query-driven redirection was most visible during moderate-intensity periods. During the most severe escalation windows, creator attention was concentrated on interpretation and protective action guidance, and direct responsiveness to chat diminished. This variation is addressed further in Section 7.5.5.

## Knowledge Scaffolding

Creators repeatedly translated meteorological terminology, radar conventions, and institutional categories into accessible language, enabling broader audience participation in interpretation without abandoning technical precision. The scaffolding operated at multiple levels simultaneously: definitional translation, analogical explanation, and embedded safety guidance.

Ryan Hall offered definitional translation: "If you're new and you don't know what a PDS tornado warning is, it's a particularly dangerous situation..." Texas Weather Center used analogy to make the velocity product accessible, describing it as "the which way the winds are blowing mode." Max Velocity demonstrated scaffolding in response to a chat question about debris ball identification, narrating the reasoning process in detail: "How can you tell if it's a debris ball and not clutter? I mean, I've done this for a while and that's like the main reason, but the other reason is I mean you could just well, on this one in

particular, this is just a classic supercell, it's right where our debris ball is and I mean this is literally a debris ball over Selmer right now." The response moves from general principle to specific case, making both the rule and its application observable to the audience.

### **Transparency and Uncertainty Narration**

Across the analyzed windows, creators narrated the limits of their interpretive claims alongside the claims themselves, explicitly marking the boundary between what radar indicated, what it implied, and what remained unresolved. Uncertainty narration was not occasional or reactive; it was a consistent feature of how creators communicated interpretive claims throughout PDS windows.

Texas Weather Center demonstrated this during a velocity reading sequence: "Let me show you what we're looking at, this is a big problem folks. This could be a significant tornado trying to develop. Now we have extremely strong velocities, bright blue against bright pink. Winds moving away from the radar now at 85mph. We have winds moving towards the radar about 70mph, so we're about 140 to 150mph gate to gate. Shear now with what could be a large rain-wrapped tornado. We do not yet see indications of a debris signature." The negative finding (the absence of a debris signature) is made as explicit as the positive indicators. Max Velocity narrated the same kind of bounded uncertainty during a debris signature assessment: "Latest tornado warning still showing a strong area of rotation over the east side of Bakersfield, this might be a tornado debris signature, it's also contaminated with some level of hail so cannot fully verify it, but rotation again is still on the strong side of things, we may have a tornado here near Bakersfield." The hedge, the complicating factor, and the qualified conclusion are held together in the same utterance. Max Velocity returned to this pattern later: "It's too early to tell whether it's strong, but we'll have another radar scan in a moment," naming uncertainty alongside a temporal resolution promise.

Ryan Hall managed transparency alongside audience reassurance rather than as a standalone epistemic statement: "I don't want to incite any panic here, I don't want...to scare anybody. I know we've got a ton of people in this part of the world right here that are watching right now and I think we're going to be okay, alright, but I wouldn't be doing my job here if I didn't express some enhanced concern about this storm specifically." Here the transparency is about the creator's own interpretive position rather than a technical account of what the radar does and does not show.

### **Distributed Warning Networks**

The final recurring practice involves creators functioning as relay nodes for information originating outside the stream, incorporating official NWS statements, emergency management reports, and spotter confirmations into the ongoing interpretive account. The sourced information is relayed with explicit attribution and contextualized within the stream's ongoing account, sometimes alongside other evidence.

Max Velocity demonstrated this most explicitly. During PDS Warning #1: "This [tornado] has also been confirmed by emergency managers." And: "Moments ago there was a report from Emergency Management of 70-75mph winds." In both cases the source of the information is named and the content is delivered without amplification, preserving the institutional attribution. Max Velocity also made visible the limits of his own network: "there's a report in [town]...tornado has been reported, this is a PDS tornado, I don't know if I missed it, but there was a large stove pipe tornado reported approximately 10 minutes ago heading towards Trumann." The acknowledgment of the potential gap is itself a form of transparency about the coverage limits of the distributed warning network.

Chat participants extended this network from below, posting local impact reports that supplemented official channels, making warning information visible through multiple simultaneous layers: institutional

channels, creator narration, and distributed audience observation.

### **7.5.2 Temporal Sensemaking**

A second major dimension of inspectable interpretive work involves how creators managed time. Weatherfluencer streams do not present events as a sequence of static snapshots; they construct a continuous temporal narrative that links past conditions to present indicators to anticipated futures. Across the analyzed windows, five temporal strategies recurred, with variation in how they were deployed depending on stream density and warning tempo.

#### **Retrospective Framing**

Creators regularly drew on past events as comparative anchors that helped audiences situate current conditions. These retrospective references established severity baselines, contextualized unusual patterns, and built continuity in audience understanding across what were, in all three cases, multi-hour streams.

Texas Weather Center used recent stream history to contextualize a new storm structure: "I'll show you a loop of this over the last 20 minutes or so and again you'll see how the first hook occluded or wrapped into the storm and now we have this new hook that is particularly concerning." Max Velocity contextualized a PDS warning through rarity: "the last time we had a PDS tornado warning was March 15...these aren't that common." Max Velocity also used within-stream historical comparison during the Tornado Emergency to make the current event's scale observable relative to earlier events in the same stream: "Also, debris from this tornado and the tornado emergency is being lofted 31,000 feet into the atmosphere. This is a substantial tornado. For reference, our tornado that happened earlier, about 3 hours back...that one was lifting debris up about 12,000 feet. That tornado is not nearly as significant as what we're seeing with this tornado right now." Ryan Hall framed retrospection at the scale of multi-day outbreak continuity: "This has just been the wildest roller coaster, it feels like Groundhog Day. Every day I wake up, I come here, I talk to you guys, I go to sleep, I wake up, I come here, I talk to you guys. And I'm talking about the same places every time, it's like I am reliving the same day over and over again."

#### **Real-Time Interpretation**

When conditions escalated, creators shifted into urgent, action-oriented narration oriented to the immediate present. Texas Weather Center's velocity reading sequence, documented in the transparency section, exemplifies this structure: evidence is named and evaluated in the same utterance, with no gap between observation and interpretive claim. Ryan Hall anchored immediacy in visual confirmation: "...there it is...producing a tornado RIGHT NOW!" Max Velocity managed escalation while holding uncertainty open: "this might not be a very big tornado, but it's a strong tornado," a real-time judgment that is both precise and appropriately bounded.

#### **Anticipatory Projection**

Outside peak urgency moments, creators translated radar patterns into projected storm timelines that allowed audiences to orient at different time horizons. Texas Weather Center made the projection logic explicit and publicly accountable: "We're going to put a track on this at 35 miles an hour...Tornado developing west of Maybel again, I'll put it on the map...at this point maybe six miles from Maybel." A speed, a direction, a landmark, and a distance estimate are each stated as revisable claims. Max Velocity used countdown framings: "T-minus three minutes, probably..." Ryan Hall named geographic areas of concern, sometimes

without explicit narration of the evidential basis: "The areas I'm most concerned about at this very moment is honestly going to be right here around Marked Tree, Lepanto." Ryan Hall also explicitly extended the actionable threat area beyond the official warning boundary based on real-time assessment: "I'm getting increasingly concerned with our rotation here near Farmersville, Louisiana. I would say if you're to the northeast of the town, I know you're in a warning, but [the tornado] might go outside of that warning polygon."

### **Overlapping Warning Management**

Max Velocity's April 2 stream presented a temporal management condition that did not appear in the same form in the other two streams: four simultaneous PDS warnings active during a single analyzed window, with multiple additional tornado warnings running concurrently. Max Velocity named this condition explicitly: "We have tornado warnings again everywhere, it's going to be impossible for me to cover every single tornado warning."

In response, Max Velocity adopted an explicit triage framework, focusing on the most severe storm while using on-screen overlays to maintain peripheral awareness of other active warnings. Ryan Hall used geographic prioritization to manage concurrent threats, releasing portions of the audience from vigilance as threat diminished in their areas: "For our friends in TN, I know we had a bunch of people watching from TN because we had a crazy tornado situation of our own up there not too long ago, the severe weather threat is diminishing quickly for the vast majority of Tennessee." Texas Weather Center offered geographic reassurance during periods when stream attention was directed elsewhere: "Folks, if I'm not talking about where you are right now or talking about anywhere near you right now, you have nothing to worry about!"

The triage logic makes the creator's attention management decisions publicly visible: which storm is receiving interpretive focus, which is being tracked peripherally, and how the creator is orienting different subsets of the audience based on their geographic position relative to active threats.

### **Explicit Timing Limitations**

Across the sample, creators named lags, notification mismatches, and information gaps as features of the real-time environment, making the limits of their temporal precision publicly observable rather than concealing them. Max Velocity narrated a notification lag explicitly: "My system isn't slow, by the way, our tornado warning notifications come in faster a lot of the time than Radar[Scope]'s do, I'm just letting you guys know like a warning will come in soon and it just takes a minute or whatever." Max Velocity demonstrated the same pattern when acknowledging a possible information gap: "there's a report in [town]...tornado has been reported, this is a PDS tornado, I don't know if I missed it, but there was a large stove pipe tornado reported approximately 10 minutes ago heading towards Trumann."

## **7.5.3 Platform Affordances and Interpretive Burden**

Platform features shaped what interpretive work could be made visible. Across the sample, creators used recurring display and coordination practices, and the data also include instances where platform interventions or breakdowns introduced additional interpretive burden.

### **Multi-Window Visual Presentations**

All three creators used multi-window layouts that coordinated radar, warning overlays, traffic cameras, chaser feeds, and chat within a single visual field. During PDS-designated periods, multi-window complex-

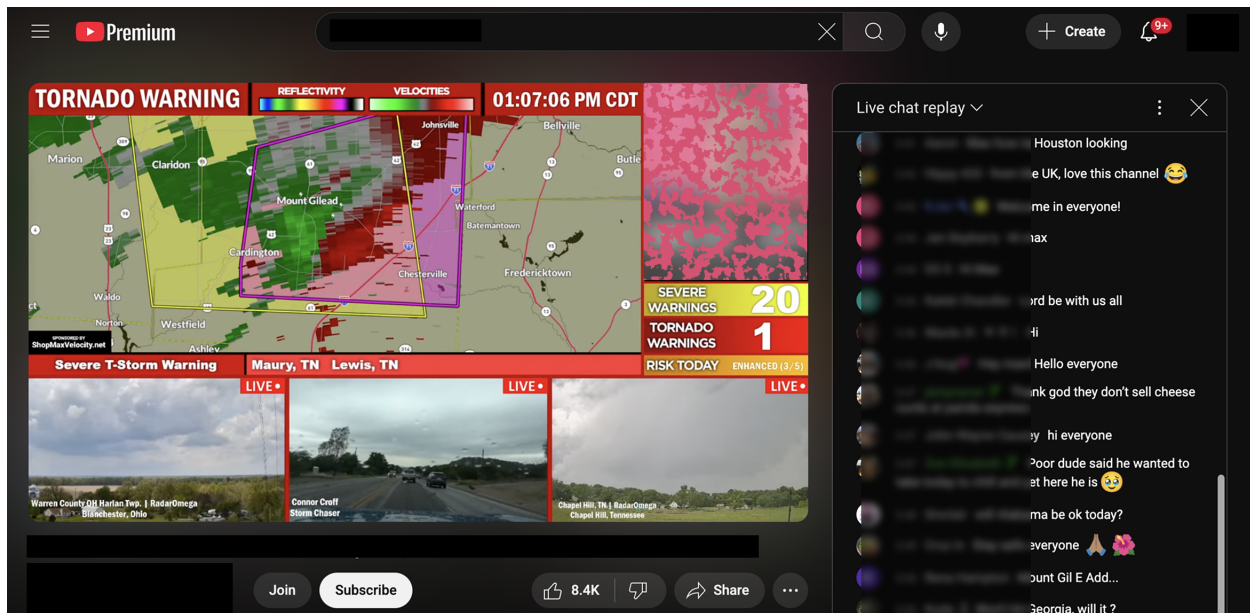


Figure 7.3: Multi-window livestream interface during a PDS escalation window, showing simultaneous radar display, creator narration, and live chat.

ity typically increased, often reaching two to four simultaneous visual elements, accompanied by overlays that maintained a running account of active warnings even when the creator's spoken attention was elsewhere.

Ryan Hall articulated the function of this configuration: "What you're looking at on these traffic cameras is some of the strong winds and heavy rain moving into the areas that are getting overtaken by the bow echo that we're watching [on radar]." Multi-window configurations made the evidentiary basis of interpretive claims simultaneously visible with the claims themselves. Texas Weather Center narrated across windows while tracking chaser position relative to circulation; Max Velocity frequently switched among multiple intercept feeds to confirm evolving reports; Ryan Hall integrated public cameras to render impacts observable under conditions of heavy rain and reduced visibility.

### Visual Annotation Techniques

Creators used digital pen tools and on-screen markup to render spatial-temporal reasoning visible, particularly when communicating projected paths, identifying rotation, or marking locations under threat. Max Velocity annotated radar during an escalating sequence: "Big debris signature. [circling rotation]. This is likely going to be a longtrack supercell. This is currently producing a large and extremely dangerous tornado." Texas Weather Center used annotation to localize risk: "I'll put it on the map..." Annotations appeared most frequently when creators needed to translate a complex spatial-temporal claim into a quickly graspable visual form, making them a signal of interpretive intensity as well as a display tool.

### Platform Alert Translation Burden

In one analyzed instance, YouTube's automated safety system generated an audio and visual alert for a tornado warning. The observation notes record the content of this alert as: "There is a tornado warning.

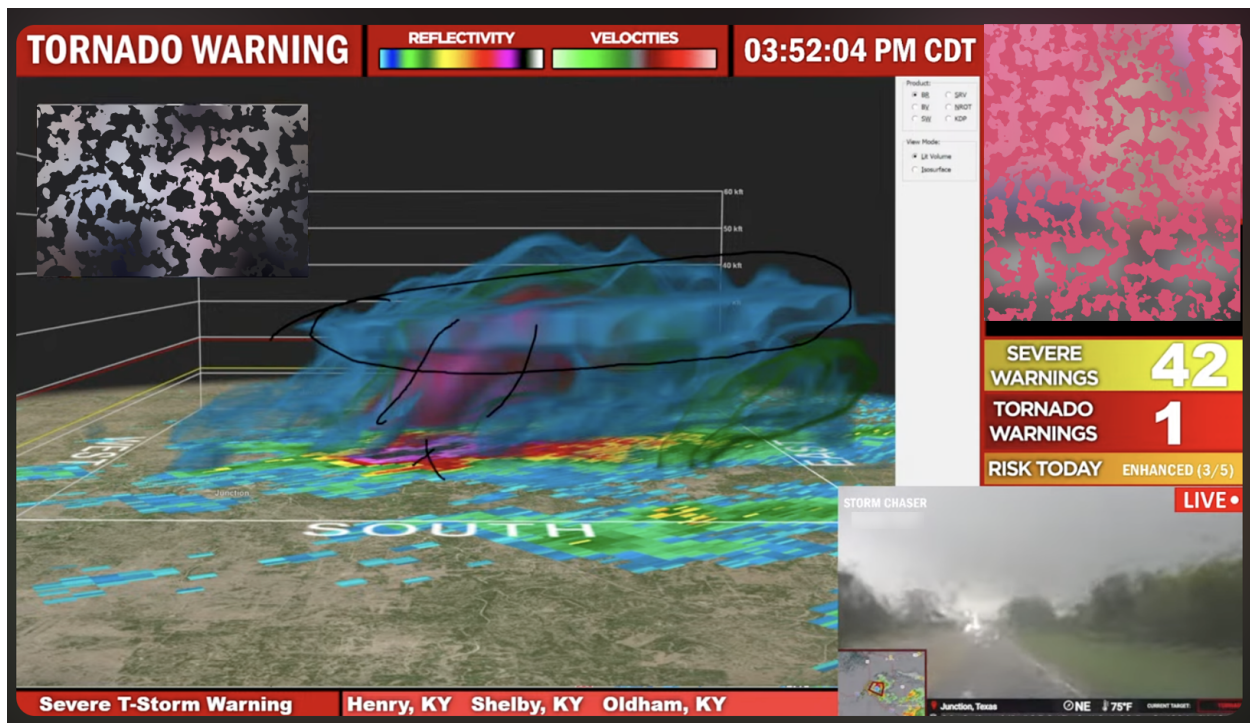


Figure 7.4: On-screen annotation during a PDS escalation window, showing spatial-temporal reasoning made visible through digital markup.

Seek Shelter immediately," with both audio and visual notification but no geographic context specifying where the warning was in effect. Max Velocity's immediate response was to put the warning text on screen for the audience: "Let me put this on the screen so you can actually see it."

In this instance, the platform's safety intervention produced an additional layer of interpretive work rather than completing it. The creator, who could read the NWS text and knew which counties were affected, had to contextualize the platform's decontextualized alert in relation to a specific warned area. The observation notes characterize this as "an extra layer of sensemaking that the creator has to navigate and take the audience along with them." The platform's attempt at safety communication became the object of creator interpretation rather than a substitute for it.

### Moderator Infrastructure as Distributed Affordance

Across Max Velocity's stream particularly, moderators functioned as a sociotechnical layer that extended the stream's interpretive and safety capacity. The observation notes record moderators posting shelter-in-place instructions and shelter locations during PDS windows, adding information that complemented the creator's spoken narration. Moderators also enforced epistemic norms in chat: "Please do not pre-rate tornadoes, that is done days later by NWS."

By often responding to routine questions and managing norm violations in chat, moderators supported the creator's ability to sustain interpretive focus during high-intensity periods. This is a structural feature of the platform's moderation infrastructure, not incidental audience behavior.

## Technical Workarounds

Because creators relied on third-party radar tools and stable network conditions, breakdowns were common, and creators managed them openly rather than concealing them. Max Velocity narrated a primary tool failure in real time: "Ah okay. RadarOmega has broken. I gotta go to RadarScope here for a second." Texas Weather Center used a tool limitation as an occasion to narrate source hierarchy: "Well the radar hates you, but I'll show you a different source real quick." Max Velocity also acknowledged a moment of genuine information gap during a breakdown period: "To be honest, I have no idea where [this tornado warning] is."

### 7.5.4 Affective Responses During Technical Interpretation

Peak-threat interpretation sometimes included audible emotional response alongside the regular storm analysis. The most concentrated example in the analyzed corpus occurred in Max Velocity's April 2 stream, as a large wedge tornado prompted an Tornado Emergency near Lake City, Arkansas.

The technical layer ran throughout the sequence. Max described the radar evidence quite directly: "On the radar at the bottom right we have a huge debris signature on the east side of town that's...that's going to be a deadly tornado." The tornado's scale was communicated in observational terms: "This is in Bay, Arkansas right now. This thing is growing in size, rapidly. This is a significant tornado. This is going to wedge." Town-by-town protective action guidance continued in parallel: "Guys if you're in Lake City, you need to get to your safe place. Tornado on the ground. If you're in Lake City, if you're in Black Oak, Monet, you've got to be in your safe place. If you're in a mobile home or trailer park, got to ride it out in a ditch or get to a sturdy structure. This is a major tornado right now heading towards Black Oak, Monet, and Lake City."

Emotional response appeared inside that same narration. Max said, "This is.. I hate to say this, but this is probably a deadly tornado." As the storm approached Lake City, he added, "scary God please don't hit Lake City" and "God can hear it roaring I can hear it." Radar interpretation, path description, and protective-action guidance remained active while fear about the tornado's likely consequences became audible in the stream.

The conditions around Lake City were unusually intense: a Tornado Emergency designation, a large wedge tornado, chaser and radar evidence, and a populated area in the projected path. The other analyzed streams, while in more of a frenzy during PDS warnings, did not show the same form of audible alarm. For example, in Ryan Hall's analyzed PDS windows, concern was voiced through reassurance and panic-management. During one high-risk moment, Ryan stated, "I don't want to incite any panic here, I don't want...to scare anybody," before explaining that he still needed to express "enhanced concern" about the storm. Texas Weather Center, with fewer PDS warning windows, did not have any emotionally-heightened moments. While these production-level observations show where emotional response appeared and where it was paired with technical interpretation, audience interpretation of those moments remains outside of reach for this study.

### 7.5.5 Variation and Boundary Conditions

The practices described in the preceding sections are not uniformly distributed across creators or uniformly robust across all escalation windows. This section characterizes where practices attenuated, where stream conditions pushed them toward their limits, and where the data surface moments of error or uncertainty.

Cross-creator variation in interactivity was the most consistent structural difference in the sample. Max Velocity frequently engaged directly with chat, responding to questions, incorporating audience reports, and coordinating with moderators in ways that were observable on-stream. Texas Weather Center also incorporated chat interaction during analyzed windows. Ryan Hall's stream showed longer stretches of

sustained narration without direct chat interaction, and fewer instances of audience reports being explicitly incorporated into the interpretive account. Ryan Hall's anticipatory projections were sometimes delivered without explicit narration of the evidential basis, a judgment stated without walking the audience through the radar indicators that motivated it.

Within Max Velocity's stream, even the most chat-interactive creator showed attenuated direct engagement during the tornado emergency sequence. At peak urgency, creator attention was concentrated on radar interpretation, chaser feeds, and town-by-town guidance. Chat volume was high but direct creator responsiveness dropped. The stream shifted from collaborative interpretation to creator-led broadcast during the most severe minutes.

The data also surface moments of error and limit. Max Velocity missed a warning status change during a high-density period: "Oh my bad, I forgot to change it over, it is no longer PDS, we're back to being observed." The observation notes record occasional instances where warning status changes were not immediately reflected on-screen during high-density periods. Max Velocity also experienced a moment of genuine information loss during a platform breakdown: "To be honest, I have no idea where [this tornado warning] is."

Platform failures introduced additional boundary conditions. Max Velocity's primary radar tool crashed during an active warning window, requiring a live switch to an alternative application. The transition was narrated openly, but it introduced a period in which the visual evidence available to audiences was incomplete.

These variations establish the conditions under which the documented practices hold most robustly: some chat-responsive practices, such as query-driven redirection, were most visible during periods of moderate intensity windows when creators were not simultaneously delivering continuous town-by-town protective guidance; creator responsiveness to chat attenuated under peak threat conditions; and the technical infrastructure that enables inspectable interpretive work is contingent rather than guaranteed. These findings characterize what creators make publicly observable during escalation windows. They do not assess how audiences interpret, evaluate, or act on these practices and these questions are addressed subsequently in Chapter 8.

## 7.6 Discussion

The findings document a production-level configuration through which creators make severe weather interpretation publicly followable while events are still unfolding. Creators externalize evidence alignment, source weighting, temporal projection, uncertainty marking, and, in some moments, affective registration of stakes during PDS watches and warnings. The discussion specifies the mechanism the data establish, the conditions under which it holds, and outlines some of the limitations of this analytical perspective.

### 7.6.1 Inspectable Interpretive Work as Publicly Directed Professional Seeing

Across the analyzed PDS windows, creators made selected parts of severe-weather interpretation available on stream. They aligned evidence across sources, narrated source weighting, projected storm movement, marked uncertainty, and revised claims while conditions were still changing. *Inspectable interpretive work* refers to these publicly available traces of interpretation: the visible ways creators move from evidence to safety-relevant claims during live coverage. At the production level, inspectability concerns what the stream makes available for observation. Audience noticing, understanding, and use remain outside this claim.

Inspectable interpretive work is narrower than a general claim of transparency. A stream can disclose

sources, display a radar product, or show a warning map without making the interpretive move visible. Inspectability appears when interpretation itself becomes visible: the source named, the radar feature marked, the uncertainty narrated, the report weighed, or the projection revised. The analysis follows these visible traces rather than treating the warning, map, or verbal recommendation as a finished information product.

Goodwin describes professional vision as the socially organized work through which experts learn to see domain-relevant features in complex scenes, using practices such as coding, highlighting, and graphic representation [72]. The livestreams examined here show an outward-facing version of that work. Creators take practices associated with domain-specific weather interpretation, including reading radar products, distinguishing debris signatures from clutter, weighting source types under ambiguity, and projecting storm tracks across time horizons, and make selected parts of that work publicly followable. Texas Weather Center's gate-to-gate velocity narration, in which the absence of a debris signature is named as explicitly as the strong velocity readings that would otherwise support a tornado claim, makes a specific way of reading radar visible on stream. Max Velocity's debris-ball explanation in response to a chat question moves from general principle to specific case in a single utterance, making both the rule for identifying a debris signature and its application to the storm on screen available in the same narration. These moments make the movement from evidence to judgment visible alongside the conclusion and the source base that supports it.

Goodwin's framework also clarifies the selectivity of this visibility. Severe-weather livestreams draw from official and unofficial inputs, including radar products, warning text, chaser feeds, traffic cameras, chat reports, moderator interventions, and platform alerts. These inputs do not become inspectable by virtue of appearing in or around the stream. They become inspectable when the creator and interface turn them into visible steps in interpretation: a chaser feed used as confirmation, a radar feature marked and explained, a chat report weighed against radar-indicated severity, or a projection revised after a new scan.

Prior crisis informatics research has documented how public reports, corrections, questions, and observations can supplement official channels during emergencies [199, 175]. Livestreaming research shows that high-volume chat does not enter the broadcast evenly: chat can produce collective signals, while broadcasters respond selectively rather than conversationally [58, 152]. In the analyzed streams, distributed inputs supplied material for interpretation, but they became publicly followable only when the focal creator and stream interface surfaced them as evidence, uncertainty, revision, or judgment.

## 7.6.2 Conditions and Limits of Inspectability

Inspectable interpretive work varies within the analyzed corpus in ways that specify the conditions under which the configuration holds. Three conditions emerge from the data: tempo, degree of externalization, and infrastructural stability.

Tempo modulates which practices remain visible. Query-driven redirection, knowledge scaffolding in response to chat questions, and direct incorporation of audience reports appeared most fully during moderate-intensity periods, when creators were not simultaneously delivering continuous town-by-town protective guidance. During the Lake City Tornado Emergency sequence, even Max Velocity, the most chat-interactive creator in the sample, narrowed his attention to radar interpretation, chaser feeds, and town-by-town shelter guidance. Chat volume remained high. Direct creator responsiveness dropped. The stream continued to externalize reasoning, but the participatory structure through which chat-responsive practices made interpretation collectively followable contracted. This is a property of the mechanism rather than a failure of it. The practices that constitute inspectable interpretive work are time-sensitive, and the same PDS conditions that make the configuration most consequential also compress some of its components.

Degree of externalization varies across creators and across practices. Max Velocity's off-screen hyper-local mapping work demonstrates a specific kind of partial inspectability. When he identified Little Learners

Academy in the path of an approaching tornado near Latty, Missouri, or surfaced a senior care center and Robertson Brothers Furniture as named landmarks during the Monette sequence, the output of the lookup became publicly visible while the lookup process did not. Audiences could see that a school or care facility had entered the interpretive frame, potential places where many individuals could be taking shelter, and could not see how the creator arrived there. Ryan Hall's anticipatory projections sometimes appeared without the evidential basis being narrated, with a geographic area of concern named as a judgment without the radar indicators that motivated it. Inspectability in these streams is therefore graduated. Some inferential steps are surfaced as procedures with their basis observable. Others are surfaced as outputs whose procedures remain outside the visible scene of interpretation.

Infrastructural stability sets a third condition. The visible stream environment determines what kinds of reasoning can appear as publicly followable activity in the first place. When Max Velocity's primary radar application crashed during an active warning window, the stream lost part of the visual substrate through which interpretive reasoning had been made followable. He narrated the disruption openly and switched to an alternative tool. The visibility of the breakdown itself was preserved. The visibility of the reasoning the broken tool would have supported was not. The same point appears more concentrated in his statement, "To be honest, I have no idea where [this tornado warning] is." The interpretive activity continued. The infrastructural condition that had made it publicly inspectable did not. The YouTube automated alert instance demonstrates a related infrastructural problem. When the platform's safety system generated a decontextualized tornado warning notification with no geographic specificity, the alert could not function as actionable guidance on its own. Max Velocity put the warning text on screen and contextualized it relative to specific counties. The platform's safety intervention became an additional object of interpretive work rather than a substitute for it. This single instance does not support broad claims about platform alert behavior. It does illustrate that platform features can introduce interpretive burden as well as support inspectability, depending on how they enter the stream environment.

The affective registration documented in Max Velocity's stream during the Lake City sequence operates within these conditions rather than outside them. The technical narration continued throughout the sequence: radar indicators, debris signatures, storm scale, town-by-town shelter guidance. The affective utterances appeared interspersed within the same continuous account. What becomes publicly observable in such moments is the visible recognition of the stakes coupled with ongoing evidence. Affective registration that displaced technical reasoning would not constitute inspectability of either kind. The Lake City sequence shows that the visible proof in livestreams can include unscripted situational registration alongside the structured practices documented earlier, and that this co-occurrence appeared most fully under conditions of maximum threat intensity in one creator's stream.

### **7.6.3 What Production-Level Analysis Establishes**

I establish the production-level configuration through which interpretive reasoning becomes publicly available for observation in severe weather livestreams: what gets made observable, how that visibility is assembled across creator practices and sociotechnical arrangements, and the tempo, externalization, and infrastructure conditions under which the configuration holds, narrows, or breaks down.

However, this production-level analysis does not establish how audiences interpret, evaluate, or act on what is made publicly visible. Whether audiences treat visible reasoning as a basis for orienting to a creator, how they weigh visible reasoning against credentialed standing, and how they work with interpretation interactionally as it circulates are questions that require different analytic approaches.

## 7.7 Limitations

The claims advanced in this chapter are bounded by the corpus and analytic approach from which they are drawn. The sample is small and illustrative rather than representative: three creators across two outbreak periods cannot support claims about the prevalence or distribution of these practices across the broader population of severe weather livestreamers on YouTube, much less across other platforms. The sample was constructed to support thick description and cross-case comparison among established, high-visibility practitioners within a specific sub-niche of at-the-desk radar interpretation. Creators working in other formats, including field-based storm chasers, lower-visibility channels, or mobile-first livestreamers on other platforms, may externalize reasoning differently or operate under different infrastructural constraints.

The analysis relies on archived livestream recordings, transcripts, and chat replay rather than in-situ ethnographic engagement with creators or audiences. It documents publicly visible traces of interpretation rather than internal cognition, backstage coordination, or off-stream decision-making. This is consistent with the trace-oriented methodological approach used here, but it means that all claims are limited to what was made observable within the stream environment itself.

The chapter's critical-incident sampling strategy is also consequential. By focusing on PDS-designated escalation windows, the analysis captures interpretive practices under conditions of concentrated urgency and elevated threat. It does not characterize the lower-intensity periods that make up most of a multi-hour livestream, including how creators establish interpretive standing before escalation, how they narrate ambiguity in less acute moments, or how audience relationships are built and maintained across longer temporal spans. The practices documented here are practices under pressure.

Chat analysis was purposive rather than exhaustive. Approximately 300 messages per creator were analyzed within the sampled escalation windows. This was sufficient for identifying recurring forms of audience participation and moderator intervention relevant to the research questions, but it cannot support claims about the full distribution of chat activity during those periods.

The study is further bounded by platform and hazard type. All cases come from YouTube livestreams covering tornado outbreaks in the central and southern United States during Spring 2025. The multi-window layouts, annotation tools, moderation systems, and reporting ecologies documented here are platform-specific accomplishments rather than generic properties of crisis communication. Other hazard contexts, such as floods, hurricanes, or winter storms, may involve different temporal rhythms, evidentiary structures, and participation patterns.

Finally, this study does not assess the meteorological accuracy of creator interpretations, the downstream behavioral responses of audiences, or the correctness of claims made on-stream. Making reasoning publicly observable is not the same as establishing that the reasoning is valid. The chapter documents the structure of publicly visible interpretation, not whether the reasoning was meteorologically sound, how audiences used it, or what it produced downstream.

## 7.8 Summary

I identify *inspectable interpretive work* as the production-level configuration through which weatherfluencers make selected parts of severe-weather interpretation publicly available for observation. During PDS-designated escalation windows, creators surfaced evidentiary alignment, source weighting, uncertainty, temporal projection, and revision as part of the visible stream environment. The study also shows that this visibility is contingent: it depends on platform infrastructure, available data streams, interactional tempo, and the creator's ability to keep source use, uncertainty, and revision publicly followable under pressure.

The next study turns to the live chat surrounding these visible practices, examining how chat participants question, supplement, compare, and monitor creator interpretations as events unfold.



## Chapter 8

# Study 3: Interactional Trust Work in Severe Weather Livestream Chats

### 8.1 Study Overview

The previous study introduced *inspectable interpretive work* to name what weatherfluencers make publicly visible as they reason through severe weather and its effects in real time through narration, annotation, and on-screen revision. The first study showed that this visibility does not override the cues that audiences have long associated with the weather enterprise; even with reasoning on full display, assessments of trustworthiness and legitimacy continued to favor broadcast meteorologists. Both studies show that weatherfluencer interpretation is inspectable and at least partly evaluable, but an important question remains.

Study 1 captured viewers reasoning in isolation about a clip, and Study 2 captured the creator producing interpretation in front of an audience whose responses scrolled past too quickly to read. A weatherfluencer livestream is not watched in either of those configurations. Viewers watch alongside thousands of other co-present viewers in a chat that runs continuously beside the stream, encountering each other's questions, observations, and reactions in roughly the same temporal flow as the creator's narration itself. Whatever working orientation an individual viewer takes toward the creator's interpretation, treating it as a basis for what to attend to and what to do next, is formed within that collective setting. The broader question is how collective sensemaking makes a non-credentialed interpreter's reading of conditions actionable while the event is still unfolding. Study 3 examines how that sensemaking gets done in chat, with *trust* as the analytic lens, taken up here in the specific interactional sense the chapter develops below.

Study 3 separates trustworthiness from trust because each term names a different analytic object. Study 1 examined trustworthiness as an attributed property, a judgment a viewer assigns to a source and reports in a survey or interview. Trust, as taken up here, refers to the ongoing interactional work through which viewers continue to act on an interpretation while assessing it in real time, observable in what they do in chat as the event unfolds. The two are related; a viewer who rates a creator low on trustworthiness is unlikely to continue watching the livestream let alone remain in the chat for hours during a tornado outbreak, even if they may be directly affected by the storm. These terms are not interchangeable and the analytic move from one to the other is what makes the chat the appropriate site for this study. Trustworthiness can be elicited as an individual evaluation, but the form of trust examined here has a public, interactional dimension. In chat, viewers rely, doubt, corroborate, and repair in front of one another, making the ongoing organization of reliance visible as the interpretation unfolds.

The chat is the channel through which viewers visibly act on, contribute to, and challenge the creator's

interpretation in front of one another. Audience members sometimes tell the creator where to look by naming specific towns, storms, radar features, or warning areas. When those messages are noticed or echoed, they can help redirect the stream's attention; when they are not, they still make audience attempts to route uncertainty and attention publicly visible in chat. Within it, the audience participates in a continuously visible interactional environment where each viewer's contribution becomes immediately available to the others as part of the shared epistemic surface of the stream. Viewers ask for interpretation, share local observations, express concern, coordinate around platform logistics, and maintain community relationships, all within the same fast-moving flow. Their activities make the work of depending and *trusting* the creator visible to other viewers. Questions route uncertainty toward the creator, ground-truth reports add local evidence to the shared interpretive environment, and corrections or challenges show that claims remain open to scrutiny. This study asks how chat practices organize interpretive responsibility among co-present viewers in real time, when the creator's authority is audience-constituted rather than professionally conferred.

Answering that question requires looking at what viewers actually do in chat as events unfold, not at what they would say about the creator if asked. Because which trust-relevant practices are interactionally possible depends on the structure of the communication ecology in which they occur, the analysis proceeds in two phases. The first phase establishes the structural conditions of the ecology, including scale, participation patterns, and interactional constraints, within which trust work occurs. The second phase applies a two-layer coding framework to a stratified sample of comments and reconstructed viewer-to-viewer exchanges, distinguishing the communicative function each comment performs from the trust-relevant practice embedded within it. This layered coding allows the analysis to characterize the functional ecology of the chat, identify the trust practices through which viewers enact reliance on the creator and on one another, and trace how those practices are organized across different communicative contexts.

## 8.2 Relevant Literature

### 8.2.1 Livestream Chat as a Communication Ecology

The main literature review establishes livestreaming as a synchronous, creator-anchored form of platformed public information (Section 2.5.4). This chapter focuses on the chat environment alongside severe weather livestreams. Livestream chat is high-velocity, weakly threaded, and organized around a focal creator whose narration remains the primary interpretive frame. Audience members can ask questions, report local conditions, respond to one another, and react to the creator, but their contributions appear within a continuous flow that the creator can only selectively monitor and incorporate [75, 152]. A crisis-informatics precedent for this reading is Dailey and Starbird's study of the Watershed Post Hurricane Irene liveblog, reviewed in Chapter 2, which shows how a live public information space can be actively configured through trusted-source selection, official feeds, moderation, participant reports, and cross-channel routing [46]. The present study is not analyzing a journalist-led liveblog, but the comparison helps specify why chat should be treated as more than a stream of isolated messages. In live crisis information settings, what becomes visible and usable is shaped by the interaction among platform affordances, moderator decisions, source-linking practices, and participant efforts to move information across people and channels.

The structure of the livestream changes how conversations between viewers and between viewers and the creators can take place. Ford et al. show that massive livestream chats may be difficult to read as conventional conversation while still producing recognizable collective forms through repetition, shorthand, and rapid alignment around shared events [58]. Recktenwald's analysis further shows that audience messages may be locally meaningful without functioning as direct replies: some messages pivot around the streamed activity itself, attributing meaning to an unfolding event rather than addressing a specific participant [152].

In severe weather streams, place names, repeated questions, brief observations, and clustered reactions may matter even when they do not form orderly conversational sequences. Chat should be analyzed as a communication ecology rather than as a transcript of dyadic talk.

Moderation is part of that ecology. Research on volunteer moderation shows that moderators help maintain community norms, respond to disruption, and participate in local governance within platform communities [162]. In this chapter, I treat moderation as part of the interactional infrastructure that shapes which contributions remain visible and how participants understand the norms of acceptable participation. This does not mean that moderation guarantees accuracy. Rather, moderation helps stabilize the communicative conditions under which trust-relevant practices such as questioning, corroboration, and repair can occur.

Monetized participation is relevant as a platform-specific visibility mechanism, but it is not treated here as equivalent to trust work. Prior livestreaming research shows that viewers may support streamers through emotional, instrumental, and financial forms of support, and that financial support can operate as tangible support rather than as a purely transactional exchange [211]. In the present study, monetized messages matter primarily because platform infrastructure can make some contributions more visible than others before any visible reply, creator response, or peer response occurs.

## 8.2.2 Trust as Ongoing Reliance Work

Study 1 examined trustworthiness as an evaluative attribution: a judgment viewers reported about a source or coverage format. Study 3 uses a different analytic object. Following processual accounts of trust, trust is treated here as an ongoing accomplishment through which participants proceed under unresolved uncertainty [122, 123]. Möllering's concept of suspension is useful because it describes how actors proceed even though evidence cannot eliminate uncertainty. In severe weather livestreams, viewers may continue working with a creator's interpretation while warnings, radar signatures, reports, and projected storm paths are still changing.

This does not make trust equivalent to explicit approval of the creator. Lewis and Weigert describe trust as a social relation with cognitive, emotional, and behavioral dimensions, rather than only an individual attitude [98]. In livestream chat, trust-relevant activity can appear through ordinary participation: directing uncertainty toward the creator, contributing local evidence, endorsing or questioning a source, correcting a location or warning status, or helping another viewer interpret what is happening. These practices do not reflect an *internal* state of trust; they make reliance, doubt, corroboration, and reliability maintenance publicly observable within the interaction.

This framing also keeps trust distinct from credibility and legitimacy. Credibility concerns whether information or a source appears believable and well grounded. Legitimacy concerns whether an actor or action appears proper within a socially recognized order. Trust, as analyzed here, concerns how participants continue to work with uncertain interpretation while monitoring whether that continued use remains warranted. The chat record is useful because it preserves observable practices through which participants organize reliance during the event itself.

## 8.2.3 Trust-Relevant Practices in Crisis Chat

Crisis informatics provides an important starting point for identifying trust-relevant practices. Prior research has shown that publics contribute to crisis information work through information seeking, reporting, corroboration, correction, and distributed situational awareness [199, 112, 175]. Much of this work was developed in asynchronous, many-to-many environments where credibility work can be reconstructed through claim circulation, questioning, denial, correction, or deletion. Severe weather livestream chat reorganizes these

practices around a synchronous, creator-centered stream. The relevant question is how participants manage uncertainty while the creator's interpretation is ongoing. The analytic shift is from verification as the episodic resolution of discrete claims to monitoring as the continuous assessment of whether an unfolding interpretation remains usable.

Ethnomethodological descriptions of accountability and repair help specify how this work becomes interactionally visible. Accountability refers to the production of actions in ways that make them recognizable and assessable to others [65, 77]. Repair refers to practices through which participants address trouble in prior talk or understanding [159]. In livestream chat, these interactional processes are modified by velocity, weak threading, and asymmetry. A question may not receive a response, and a correction may scroll past without uptake. Even so, questions, corrections, clarifications, and challenges remain publicly visible practices through which participants hold interpretations and information to shared standards.

Distributed cognition further clarifies why audience contributions matter. Interpretive work in severe weather livestreams is organized across creator narration, radar and warning displays, chaser feeds, maps, and chat contributions [89, 81]. Viewer reports of hail, sirens, rotation, damage, or local conditions can extend the stream's evidentiary field, while requests for interpretation can redirect attention toward places or features not currently foregrounded. These contributions do not make the audience equivalent to the creator, but they show how the interpretive environment is sustained through distributed inputs.

The coding framework in this chapter operationalizes these ideas through two layers. Level 1 codes identify the communicative function of a comment: whether it primarily provides information, seeks understanding, maintains social connection, expresses emotion, or addresses stream operations. Level 2 codes identify trust-relevant practices embedded within those functions. Creator-directed questions route uncertainty toward the focal interpreter. Ground-truth reports add local evidence. Highlighting recruits attention to features requiring interpretation. Vouching publicly affirms or contests source credibility. Repair corrects or clarifies information when reliability is threatened. This structure allows the analysis to examine trust work as embedded within the broader communication ecology of severe weather livestream chat.

### 8.3 Research Questions

Three research questions guide this study. The first characterizes the communicative ecology of emergency weather livestream chat. The second examines how trust-signaling behaviors appear across individual messages and reconstructed viewer-to-viewer threads. The third analyzes how those behaviors are organized within the broader communication ecology.

- **RQ1:** What communicative functions characterize emergency weather livestream chat during unfolding hazards?
- **RQ2:** What trust-signaling behaviors do viewers enact in livestream chat, and how prevalent are they across messages and reconstructed viewer-to-viewer exchanges?
- **RQ3:** How are trust-signaling behaviors organized within the communication ecology; that is, how do they co-occur with different communicative functions and interactional forms?

### 8.4 Methods

To examine how trust operates as interactional work within severe weather livestream chat, I employ a mixed-methods content analysis approach grounded in the crisis informatics tradition. The analysis proceeds

in two phases: first, I characterize the full chat corpus descriptively to establish the scale, structure, and participation patterns of the communication ecology within which trust work occurs. Second, I apply a two-layer qualitative coding framework to a stratified sample of comments and reconstructed viewer-to-viewer exchanges to examine the communicative functions that structure chat participation and the trust-relevant practices embedded within them. Two units of analysis anchor the study: individual comments, which enable characterization of message-level functional and trust-practice distributions, and reconstructed conversational exchanges, which provide access to the interactional sequences through which trust work unfolds across participants. Together, these analytic moves allow the study to situate qualitative findings about trust practices within the broader ecological context from which they were drawn.

### 8.4.1 Data Collection

I analyzed YouTube livestream comments from three weather streamers covering tornado outbreaks between March and June 2025<sup>1</sup>. Comments were collected using the YouTube Comment Search Google Chrome Extension. The initial corpus comprised of 1,116,371 comments across 34 separate streams representing six distinct tornado outbreak episodes spanning 17 calendar dates. These streams captured tornado coverage of varying severity, but high-activity multi-day outbreak sequences. The data included full metadata: timestamps, usernames, word counts, and comment text. Comments were collected from archived YouTube Live Chat replay rather than intercepted during the stream itself; as a result, the corpus represents retained chat activity and does not include comments removed by moderators or YouTube’s automated systems prior to replay generation. The corpus should be understood as the publicly accessible record of each stream’s chat rather than a complete transcript of all messages sent in real time.

### 8.4.2 Dataset Overview

The Study 3 corpus consists of archived YouTube livestream chat logs from the three focal weatherfluencer channels. Across the sampling window, the dataset includes 34 archived livestream sessions associated with tornado outbreak periods in the United States.

The corpus includes more than 1.1 million livestream chat comments contributed by over 200,000 unique users during the 2025 tornado season (Table 8.2). These comments constitute the full raw chat corpus from which the human-only and substantive-comment sampling frames were constructed for qualitative coding.

### 8.4.3 Data Cleaning and Filtering

Prior to sampling for qualitative coding, I applied a multi-stage preprocessing pipeline to the livestream chat corpus. These procedures served two purposes: (1) removing platform artifacts such as automated accounts and system-generated messages to produce a human-only corpus, and (2) filtering low-substance content to construct an analytically meaningful sampling frame for qualitative coding.

From an initial corpus of 1,116,371 comments, I first removed bot accounts and moderator accounts identified through manual behavioral analysis, meaning inspection of account names, posting frequency, message length, and repeated message patterns across events. Bot accounts were identified using three markers: recognizable automated chat service names, high per-event posting volume averaging more than 100 comments per streaming event, and mean word counts consistent with scripted or templated output. Two accounts (Nightbot, StreamElements) were identified primarily through recognizable automated service

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<sup>1</sup>Study 3 preprocessing and analysis notebooks and the qualitatively coded comment and conversation samples are available at <https://github.com/julievera/weatherstudy>.

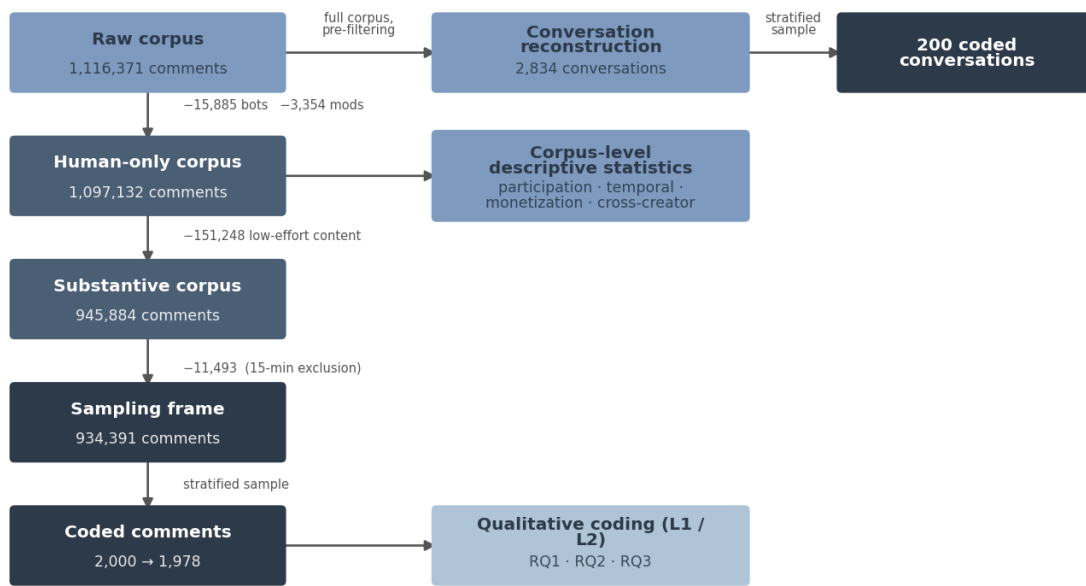


Figure 8.1: Analytical pipeline showing which corpus each component of the Study 3 analysis draws from. Conversation reconstruction ran on the full raw corpus prior to filtering. Corpus-level descriptive statistics draw from the human-only corpus. The qualitative coding sample was drawn from the final sampling frame after all filtering and temporal exclusion.

names and sustained high-volume posting (807.2 and 287.5 comments per event, respectively); two further accounts were identified through the combination of high per-event volume (116.3 and 152.1 comments per event) and mean word counts below three ( $M = 2.13$  and  $M = 2.30$ , respectively), consistent with templated output. The moderator account was identified through sustained cross-event presence and role-consistent messaging behavior. In total, bot accounts ( $n = 15,885$ ; 1.42%) and moderator accounts ( $n = 3,354$ ; 0.30%) were removed. This produced a corpus of 1,097,132 human-generated comments.

From this human-only corpus, I then filtered low-substance content. This included blank or empty comments ( $n = 1,084$ ; 0.10%), single-word comments ( $n = 121,878$ ; 11.11%), common interjections such as "lol" or "wut" ( $n = 19,825$ ; 1.81%), all-caps single words such as "YAY" ( $n = 8,913$ ; 0.81%), repeated punctuation patterns such as "???" or "!!!" ( $n = 418$ ; 0.04%), and emoji-only comments ( $n = 848$ ; 0.08%). I also excluded greeting messages throughout the streams, such as "hello [creator]" or "hi everyone" ( $n = 9,637$ ; 0.88%). In addition, I filtered promotional spam, including merchandise links and channel promotions ( $n = 141$ ; 0.01%), as well as donation or gift membership notifications ( $n = 18,531$ ; 1.69%). Because filtering categories can overlap, counts should not be interpreted as mutually exclusive. After applying all filters, the combined procedure retained 945,884 substantive comments, representing 86.21% of human-generated content.

Finally, I excluded the first 15 minutes of each livestream to reduce pre-coverage lobby chatter. During these initial periods, audience members frequently engaged in off-topic social interaction before active storm coverage began. This temporal exclusion removed an additional 11,493 comments (1.22% of the substantive corpus), leaving 934,391 comments eligible for sampling. This resulting corpus constituted the sampling frame from which comments and interaction sequences were drawn for qualitative coding.

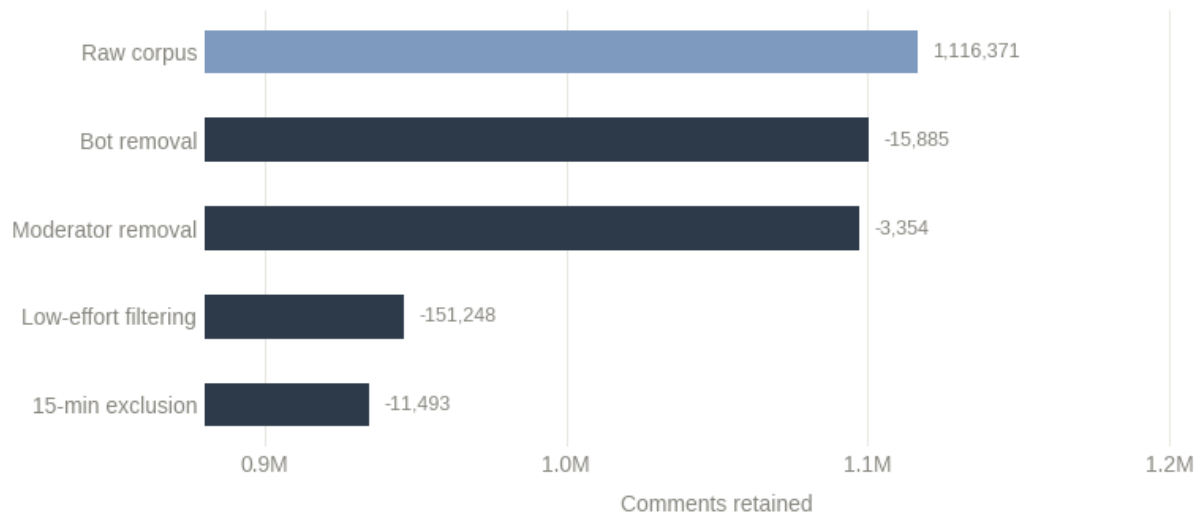


Figure 8.2: Data filtering pipeline showing comments retained at each preprocessing stage. Beginning from a raw corpus of 1,116,371 comments, sequential removal of bot accounts, moderator accounts, low-substance content, and pre-coverage lobby chat yielded a final sampling frame of 934,391 substantive comments.

#### 8.4.4 Conversation Reconstruction

In addition to the comment-level sample used for qualitative coding, a separate reconstruction pipeline was applied to the full livestream chat corpus to identify interaction sequences among viewers.

Conversation reconstruction was performed on the complete corpus of 1,116,371 comments rather than the sampled dataset. Because YouTube Super Chat messages appear as a continuous stream without threaded reply structures, reconstructing interaction sequences requires access to the full temporal context of the chat stream. Sampling comments prior to reconstruction would fragment these interaction sequences and omit relevant replies.

To identify conversational exchanges, I parsed the corpus for comments containing the platform's @-mention convention. Tokens beginning with "@" function as addressive markers indicating that a user is directing a message toward another participant. Each @-mention served as a candidate reply event. Using the extraction procedure implemented in the analysis pipeline, @-mention replies were grouped by target user and assembled into conversational sequences using a single 30-minute timeout window. The algorithm tracks @-mention pairs across each event; messages between the same pair of users occurring within 30 minutes of the prior exchange were assigned to the same conversational sequence, while a gap exceeding 30 minutes reset the pair to a new conversation. This threshold was selected to capture the fuller arc of exchanges in this environment: pilot testing with narrower windows (5 and 15 minutes) recovered a larger proportion of rapid back-and-forth replies but fragmented conversations that unfolded at the more deliberate pace typical of high-velocity chat, where participants may be watching the stream, composing a reply, and re-engaging with the chat window across several minutes. The 30-minute window retained these more extended exchanges while remaining conservative enough to avoid linking temporally distant incidental mentions. Manual inspection of reconstructed sequences confirmed that the majority of exchanges involved substantive turn-taking occurring within a few minutes of one another, with the wider window functioning primarily as a boundary condition rather than a description of typical exchange tempo. Only sequences

containing two or more messages were retained. Creator @-mentions were excluded from the reconstruction pipeline. Exchanges directed at the creator are asymmetric by design: a viewer addressing the creator in chat rarely generates a direct @-mention reply, and treating such messages as conversational openings would conflate one-sided audience address with the peer-to-peer coordination the reconstruction targets. The 2,834 resulting conversations represent viewer-to-viewer exchanges exclusively.

Because interactional structure must be inferred in non-threaded environments, this procedure may produce both false negatives (for example, replies occurring outside the response window) and false positives (incidental mentions that do not reflect genuine conversational exchange). To mitigate these risks, automatically generated sequences were manually inspected to confirm that they reflected genuine peer interaction rather than incidental tagging of creators or locations.

The resulting dataset consisted of dyadic and multi-party micro-interactions that allow examination of how viewers coordinate sensemaking, negotiate reliability, correct misinformation, and perform trust work with one another. These reconstructed @-mention chains served as analytically meaningful units for analyzing collective trust work within the livestream chat communication ecology.

### 8.4.5 Individual Chat Message Sampling Strategy

My research questions focus on characterizing communicative functions (RQ1) and describing how trust-signaling behaviors manifest (RQ2). Rather than estimating prevalence or making population-level claims, the sampling strategy was designed to ensure representation across creators, events, and temporal contexts to support systematic qualitative pattern identification.

Sampling was conducted from the filtered corpus of 934,391 eligible comments described in the previous section. I employed stratified random sampling with proportional allocation and minimum floors to balance contextual coverage with natural activity patterns. Sampling was stratified by creator and livestream event.

Because some meteorological outbreak episodes spanned multiple calendar dates or required stream restarts, each archived livestream file was treated as a distinct sampling stratum. This produced 34 strata across the three creators.

I first allocated a minimum floor of approximately 30 comments per livestream event to ensure baseline representation across all strata. The remaining allocation was then distributed proportionally according to each creator's corpus size. Within each creator, event-level allocations followed the same proportional logic with floor guarantees.

To reduce over-sampling of rapid-fire peak periods within streams, I implemented half-hourly block sampling rather than simple random sampling within events. Each livestream was divided into 30-minute blocks, and target samples were distributed across blocks, with one randomly selected comment drawn from each block. This procedure reduced bias toward high-velocity intervals that might otherwise dominate a purely random sample.

The final analytic sample comprised 2,000 comments. All sampling procedures were conducted using a fixed random seed to ensure reproducibility. Per-event allocation details, including available comment counts, floor and proportional allocations, and realized sampling rates, are provided in Appendix C, Table D.1. For events with relatively small numbers of available comments, the fixed floor allocation results in higher sampling fractions. In these cases, the sample approaches partial enumeration of the event-level comment stream, ensuring that smaller events remain analytically represented despite lower overall volume. Two Texas Weather Center events (April 2 and April 3, 2025) contained fewer than 75 substantive comments after filtering, resulting in near-exhaustive sampling rates of 42% and 52% respectively; these events are retained in the sample but interpreted cautiously given the absence of meaningful random selection at that scale.

### 8.4.6 Codebook Development

I developed a two-layer coding framework through an iterative, grounded process informed by crisis informatics scholarship on information-seeking, verification, and distributed sensemaking [85, 176, 199]. The framework distinguishes between sensemaking and communicative functions (L1 codes) and trust work (L2 codes), enabling analysis of how reliability evaluation operates within the broader multi-functional ecology of emergency livestream interaction.

#### Two-Layer Framework Rationale

Level 1 codes capture the primary sensemaking or communicative function of each comment: what the comment *does* in the conversation. L1 codes are mutually exclusive; each comment receives exactly one L1 code reflecting its dominant sensemaking orientation, whether informational, interpretive (understanding-seeking), social, emotional, or operational. This layer addresses RQ1 by characterizing the functional ecology of livestream chat.

Level 2 codes capture *trust work*: practices that make reliance, corroboration, or reliability maintenance interactionally visible. This distinction separates what a comment is primarily doing at the level of participation from how that participation contributes to the organization of trust within the interaction. L2 codes are optional and may be assigned alongside any L1 function because trust-relevant practices are typically embedded within other communicative acts (e.g., a social comment that also vouches for the creator). This layer addresses RQ2 by identifying how trust becomes actionable through observable practices rather than inferred attitudes.

This two-layer structure treats trust work as embedded within sensemaking and coordination practices rather than as a separate channel of evaluation. Trust behaviors operate alongside other communicative practices rather than constituting an independent interactional layer. Separating communicative function (L1) from trust practice (L2) enables analysis of how reliability-oriented behavior is organized within the broader multi-functional ecology of livestream chat.

Each comment was assigned at most one L2 code reflecting the dominant trust-relevant practice, where present. This constraint preserves analytic clarity while maintaining the distinction between communicative function and embedded trust work.

#### Development of Sensemaking-Function Categories - Level 1 (L1)

L1 categories emerged through open coding of an initial 500-comment sample stratified across creators and event phases. I iteratively refined categories through constant comparison, ultimately arriving at five functional types that capture the dominant sensemaking orientation of each comment. L1\_informational captures contributions of factual content, observations, or situational updates. L1\_understanding captures questions or expressions of uncertainty seeking interpretation or assessment. L1\_social captures relational or community-oriented interaction such as greetings, expressions of gratitude, or inside jokes. L1\_emotional captures expressions of affect, concern, or psychological state. L1\_operational captures comments about stream mechanics, technical issues, or platform logistics.

These categories align with information behavior taxonomies in crisis informatics (Vieweg et al., 2010) while adapting to the synchronous, interactive nature of livestreams. Unlike asynchronous platforms where informational contributions dominate (Hughes & Palen, 2009), livestream chats exhibit substantial social and emotional expression reflecting the continuous co-presence of viewers. The operational category emerged specifically from livestream affordances, as viewers frequently discussed stream quality, requested

specific radar views, or coordinated around platform features in ways not present in asynchronous social media during crises.

### **Development of Trust-Function Categories - Level 2 (L2)**

L2 codes emerged from a second phase of open coding focused specifically on behaviors through which participants made trust-relevant work visible in chat. Drawing on processual trust theory and crisis informatics work on verification, I developed codes that captured implicit reliance practices, credibility assessment, and reliability maintenance [122, 176, 175]. I treated a behavior as trust-relevant when it made one of three processes observable: directing uncertainty toward a source, adding evidence that could support or complicate an interpretation, or maintaining reliability when a claim appeared incomplete, inaccurate, or contested. This definition distinguishes trust work from general participation. A viewer asking whether a warning applies to their location positions the creator as the source whose interpretation can organize their next step. A viewer reporting hail, rotation, sirens, or local conditions adds evidence that others may use to assess the unfolding threat. A viewer correcting a location, warning status, or radar interpretation helps maintain the reliability of the shared interpretive environment. Through iterative refinement with attention to mutual exclusivity and theoretical distinctiveness, I arrived at five L2 codes.

L2\_creator\_question captures questions directed at the creator seeking interpretation, assessment, or guidance, making reliance visible through repeated orientation to the creator's expertise [122, 123]. L2\_ground\_truth captures viewer-contributed observational reports or local conditions that provide confirmatory evidence for collective threat assessment. This category draws on crisis informatics research on distributed verification and distributed cognition, capturing how locally grounded observations contribute evidence to collective interpretation [199, 89].

L2\_highlighting captures the practice of recruiting creator or chat attention to specific observable features requiring expert interpretation. This category is informed by sensemaking theory, particularly the role of cue extraction and attention in identifying salient features for interpretation under uncertainty [204].

L2\_vouching captures explicit credibility affirmation or contestation through overt reputation work that publicly ranks or endorses sources [78]. L2\_repair captures explicit correction or clarification of factual, geographic, procedural, or interpretive error, functioning as trust maintenance work that preserves reliability when threatened [159].

Each code was justified in terms of how it constitutes trust work rather than general communication. For example, L2\_creator\_question captures trust-relevant work because choosing to ask the creator rather than self-evaluate or consult other sources positions the creator as the relevant interpreter for the moment at hand. This theoretical grounding distinguishes trust work from mere information-seeking and ensures each code captures a distinct dimension of how reliability becomes visible and actionable in the livestream context.

Although understanding-seeking sensemaking functions and creator-directed questioning practices co-occur frequently, they capture analytically distinct aspects of interaction. The former identifies the orientation of a message toward interpretation and clarification, while the latter captures the specific practice through which that orientation is enacted. High co-occurrence reflects ecological alignment rather than construct redundancy.

The full coding framework is summarized in Table 8.1.

### **8.4.7 Coding Procedure and Refinement**

I coded an initial stratified sample of 2,000 comments in four phases; after excluding 22 context-dependent fragments that could not be reliably categorized, the final coded sample contained 1,978 comments. Phase

Table 8.1: Study 3 Coding Framework

| Code                | Layer                  | Description                                                                                                                  |
|---------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------|
| L1_informational    | Communicative Function | Provides factual information, situational updates, or observational reports related to weather conditions.                   |
| L1_understanding    | Communicative Function | Expresses uncertainty or requests clarification or interpretation of weather information.                                    |
| L1_social           | Communicative Function | Relational interaction such as greetings, humor, appreciation, or community-oriented exchange.                               |
| L1_emotional        | Communicative Function | Expressions of concern, fear, relief, or other affective responses to unfolding weather events.                              |
| L1_operational      | Communicative Function | Discussion of stream logistics, technical issues, or platform-related coordination.                                          |
| L2_creator_question | Trust Work             | Questions directed at the creator seeking interpretation or guidance, enacting reliance on creator expertise.                |
| L2_ground_truth     | Trust Work             | Viewer-provided local observations contributing confirmatory or situational evidence.                                        |
| L2_highlighting     | Trust Work             | Recruiting attention to specific information, radar features, or observations requiring interpretation.                      |
| L2_vouching         | Trust Work             | Explicit credibility affirmation or contestation of the creator or other participants.                                       |
| L2_repair           | Trust Work             | Correction or clarification of factual, geographic, procedural, or interpretive error to maintain informational reliability. |

1 involved open coding of 500 comments to develop initial L1 categories. Phase 2 consisted of focused coding on an additional 500 comments specifically examining trust behaviors to develop the L2 framework. Phase 3 involved applying the finalized coding scheme to the remaining 1,000 comments while continuing to refine boundary cases. Phase 4 consisted of systematic review of all coded comments for consistency and pattern identification.

Throughout coding, I maintained detailed memos documenting boundary cases and coding decisions, emergent patterns requiring codebook clarification, and theoretical connections between empirical patterns and trust literature. Ambiguous cases drove iterative refinement of the coding scheme. For instance, early coding collapsed multiple question types under a single "verification\_seeking" code, but subsequent analysis revealed that definitional questions such as "What is PDS?", location-specific queries such as "Nashville at 3pm?", and explicit confirmation requests such as "Is this confirmed?" performed different trust work despite all being questions directed at the creator. This led to the core distinction between continuous dependence captured by L2\_creator\_question and punctuated evaluation moments that would be analyzed through comment content rather than requiring separate codes. Similarly, initial coding included a code for systemic trust commentary about institutional conditions affecting information reliability, but with fewer than ten examples in the full sample, this was removed as a distinct code and instead noted as a qualitative pattern for discussion.

## **Coder Reflexivity**

Single-coder analysis is well-established practice in interpretive qualitative research, where the goal is theoretical insight and systematic pattern identification rather than measurement reliability across independent raters [157]. Qualitative content analyses of online interaction have frequently proceeded with a single analyst applying a theoretically grounded scheme across iterative coding phases, and the analytical value of this approach lies in the sustained engagement a sole coder develops with the full dataset: sensitivity to boundary cases, evolving pattern recognition, and coherent theoretical integration across all coded material.

My positionality as an observer of expert-public interaction rather than a meteorological domain expert shaped the analysis in ways that are analytically productive for this study's focus: it heightened sensitivity to how viewers signal uncertainty, dependence, and deference, which are precisely the practices the L2 framework is designed to capture. Technical distinctions legible primarily to weather-literate viewers are noted where they arise in the qualitative material, rather than treated as coding criteria.

To ensure rigor and auditability, coding proceeded across four iterative phases: open coding of an initial sample to develop L1 categories, focused coding to develop the L2 trust-behavior framework, full-sample application with ongoing boundary-case refinement, and systematic consistency review across all 1,978 coded comments. Throughout, I maintained a structured decision log documenting boundary cases and code refinements, developed explicit decision rules with examples for each category, conducted weekly consistency checks against earlier coding decisions, and grounded codes in established crisis informatics taxonomies where applicable. This iterative, memo-supported process provides a systematic record of how analytic judgments were made across the full dataset and follows established practice for rigorous solo interpretive analysis [157]. In lieu of formal inter-rater reliability procedures, which are not applicable to single-coder interpretive analysis, consistency was assessed through repeated independent re-engagement with the full dataset across approximately seven coding sessions separated by intervals of days to weeks. Each session involved returning to the material without reference to prior coding decisions before reconciling divergences, providing a temporal analog to cross-coder reliability that surfaces category drift and boundary instability over time rather than across coders.

## Theoretical Grounding

The coding scheme is grounded in processual accounts of trust that emphasize action under uncertainty [122, 123] and crisis informatics work that treats reliability as an interactional accomplishment supported by distributed contribution and correction [176, 199, 175, 89]. Rather than treating trust as an internal attitude, the scheme operationalizes it as observable practices through which participants *enact* reliance, provide corroboration, and maintain reliability when misunderstandings arise. The L1\_understanding category is further informed by sensemaking theory, capturing efforts to interpret unfolding conditions under uncertainty and to seek clarification through interaction [204].

This approach is particularly suited to livestream settings where most coordination work occurs in real time and where explicit credibility evaluation may be interactionally or reputationally costly. By distinguishing between communicative functions (L1) and trust-relevant practices (L2), the scheme surfaces how reliability-oriented action is embedded within the everyday work of chat. The full codebook, including code definitions, examples, and decision rules, is provided in Appendix D.

### 8.4.8 Analysis Approach

The analysis proceeds in three stages. First, I report descriptive distributions of L1 communicative functions and L2 trust practices across the coded comment sample and reconstructed micro-interactions. These descriptive summaries characterize the functional composition of livestream chat communication and identify the relative prevalence of trust-relevant practices within the interaction ecology.

Second, to examine organizational structure within the communication ecology (RQ3), I analyze L1  $\times$  L2 co-occurrence patterns using a chi-square test of association and standardized residuals. This analysis identifies combinations of communicative functions and trust practices that occur more or less frequently than expected under independence, revealing patterned relationships between sensemaking activities and trust work.

Third, I conduct close reading of illustrative excerpts and reconstructed micro-interaction sequences to interpret how these patterned relationships operate in context. This interpretive stage examines how viewers coordinate sensemaking, route interpretive responsibility, and contribute corroborating information during unfolding severe weather events.

Supplementary materials for inspecting the Study 3 analysis workflow are listed in Appendix D.3.

## 8.5 Findings

Trust work in severe weather livestream chat is common, structurally organized, and embedded within a broader communicative ecology rather than operating as a discrete evaluative layer. Across 1,978 coded comments and 200 reconstructed viewer-to-viewer micro-interactions, trust-signaling behaviors appeared in 42.5% of individual comments, concentrated within specific communicative contexts rather than distributed uniformly across chat activity. Interpretive delegation to the creator and distributed empirical corroboration accounted for the majority of trust-relevant activity; explicit credibility evaluation through vouching and repair, while analytically significant, remained comparatively rare, appearing primarily in moments of localized breakdown rather than as a routine coordination mechanism. Creator-level variation in communicative function and trust practice distribution is examined as a cross-cutting analysis following the three core findings.

Table 8.2: Overview of the livestream chat corpus

| Measure                    | Value               |
|----------------------------|---------------------|
| Total comments             | 1,116,371           |
| Unique users               | 217,874             |
| Distinct event dates       | 17                  |
| Creator–event combinations | 34                  |
| Date range                 | Mar 14–Jun 21, 2025 |
| Mean message length        | 7.43 words          |
| Median message length      | 6 words             |

### 8.5.1 Descriptive Statistics: The Larger Dataset

The larger livestream chat corpus comprised 1,116,371 comments posted during severe weather broadcasts between March 14 and June 21, 2025. Across this period, 217,874 unique users participated in chat discussions spanning 17 distinct event dates and 34 creator–event combinations. Descriptive figures throughout this subsection report the full corpus; a parallel calculation excluding bot and moderator accounts (1.7% of comments, 5 accounts) produced participation patterns that differed only at the second decimal place across all reported metrics, with the exception of the recurring-participant comment range, which is addressed below.

Participation volumes were substantial. The two primary weatherfluencers in the dataset accounted for the vast majority of activity: Ryan Hall’s streams generated 578,662 comments from 148,366 unique users across 12 events, while Max Velocity’s streams generated 520,287 comments from 81,955 unique users across 14 events. Individual livestream events frequently generated tens of thousands of comments. Peak hourly comment volumes clustered between 7pm and midnight Eastern Time, with the single busiest hour at 10pm ( $n = 103,902$  comments). This temporal distribution reflects the meteorological structure of tornado occurrence: the vast majority of tornadoes develop in the late afternoon and early evening, when atmospheric instability peaks after a full day of solar heating, with roughly half of all events occurring in the 4–9pm CDT window [169]. Livestream activity peaks at the trailing edge of this window and extends beyond it, as coverage continues through active warning periods, storm reports, and post-event damage summaries.

Despite this scale, participation patterns were highly skewed. Most users contributed only a small number of comments: 43.2% of participants posted a single message, and a further 47.9% posted between two and ten comments. A smaller subset contributed more substantially: 7.9% posted between 11 and 50 comments, and 1.0% posted more than 50 comments, including a small group of highly active participants (0.3%) who posted more than 100 comments each. Message length was similarly concise across the corpus ( $M = 7.43$  words, median = 6), reflecting the rapid conversational tempo typical of livestream chat environments.

Audience participation also spanned multiple severe weather events. While 64.5% of users appeared in only one event, 25.9% participated in two or three events and smaller subsets appeared repeatedly across many broadcasts. Across the three creators sampled, a core group of 752 participants (0.3%) appeared in eleven or more events, contributing between 18 and 9,686 comments across the full streaming season and averaging roughly 14 comments per event<sup>2</sup>. These recurring participants represent a community layer that

<sup>2</sup>The upper bound of this range is driven by an automated chat assistant (Nightbot) operating on Ryan Hall’s stream; once such accounts are excluded, the comparable range among recurring human participants is 18 to 2,869 comments, with an average of 12.5 per event. The recurring-participant count itself shifts only marginally (752 to 748), indicating that the inflated upper bound

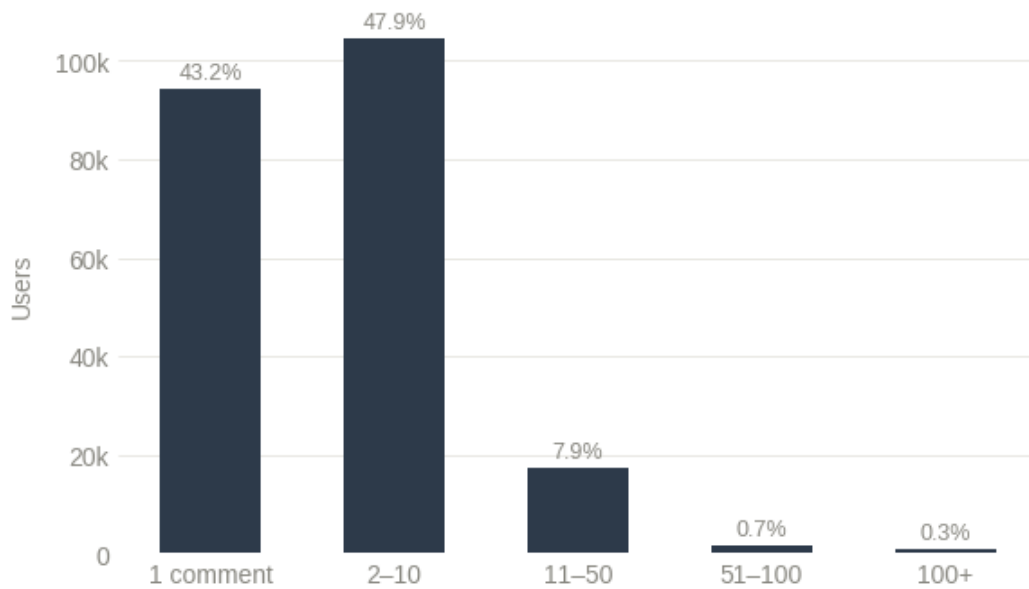


Figure 8.3: Comment volume distribution across 217,874 unique users. Participation was heavily right-skewed, with most users contributing only a small number of comments and a small group of highly active contributors accounting for a disproportionate share of activity.

Table 8.3: User participation across events in the livestream chat corpus

| Events Participated In | Users   | Percent |
|------------------------|---------|---------|
| 1 event                | 140,539 | 64.5%   |
| 2-3 events             | 56,359  | 25.9%   |
| 4-5 events             | 13,231  | 6.1%    |
| 6-10 events            | 6,993   | 3.2%    |
| 11+ events             | 752     | 0.3%    |

persists across outbreak episodes, distinct from the majority of viewers who appeared in only one or two events.

Cross-creator participation was uncommon: 92.6% of users appeared in only one creator's chat across the full dataset, with meaningful overlap concentrated almost entirely in the Ryan–Max pair ( $n = 15,694$ ; 7.2% of all users). This overlap was asymmetric relative to each creator's audience size: cross-watching users represented 10.6% of Ryan Hall's audience but 19.2% of Max Velocity's, reflecting the participation asymmetry between the two channels. Participation across all three creators was rare ( $n = 175$ ; 0.1%), and TWC overlap with either primary creator was negligible. These patterns indicate that despite covering the same meteorological events during the same broadcast windows, the two primary creators drew largely distinct communities rather than a shared audience cycling between streams.

Finally, most chat activity consisted of standalone comments rather than extended exchanges. Automated reconstruction of conversation threads identified 2,834 viewer-to-viewer conversations involving 8,205 messages, less than 1% of the total corpus, indicating that while interactive exchanges occur, the majority of chat messages function as individual contributions to a fast-moving collective information stream. Of the 2,834 reconstructed conversations, 1,263 (44.6%) were dyadic exchanges between two participants, 1,045 (36.9%) were multi-party exchanges involving three or more viewers, and 526 (18.6%) were unanswered self-addressed sequences, cases in which one viewer addressed a peer multiple times without receiving a reply. The prevalence of unanswered self-addressed sequences is consistent with the non-threaded structure of the environment: without reply nesting, messages can scroll past unseen and addressed users face no visible interactional obligation to respond. From this set of 2,834 reconstructed conversations, a stratified random sample of 200 reconstructed conversations was drawn for qualitative conversation-level coding. This conversation sample is used for the conversation-level analyses below and is separate from the individual-comment sample used for L1 and L2 coding.

These descriptive patterns illustrate the scale and structure of the livestream communication ecology: large but unevenly distributed participation, short high-velocity messages, recurring audiences across events, and relatively sparse conversational threading within the overall comment flow. The next subsection turns from the full corpus to the individual-comment sample.

The individual-comment analyses use an initial stratified random sample of 2,000 comments. Of these, 22 (1.1%) consisted of context-dependent fragments (e.g., “it did...”) that could not be reliably categorized into the L1 functional coding scheme and were excluded from analysis. The final dataset comprised 1,978 coded comments.

### 8.5.2 The Multi-Functional Communication Ecology

Livestream chat carried several kinds of work at once. Viewers shared updates, asked for interpretation, expressed fear or relief, maintained social ties, and handled stream logistics in the same fast-moving channel. The L1 coding treats each comment by its dominant communicative function: Social, Understanding, Informational, Emotional, or Operational. These categories describe the communicative setting in which L2 trust-signaling practices appear; they do not, by themselves, measure trust. The same categories also support comparison between the individual-comment sample and the conversation-level sample of reconstructed viewer-to-viewer exchanges.

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reflected a small number of high-volume bot accounts rather than a substantively different community structure.

Table 8.4: Distribution of communicative functions (L1 codes) across individual comments ( $n = 1,978$ )

| L1 Code       | Count        | Percent       |
|---------------|--------------|---------------|
| Social        | 845          | 42.7%         |
| Understanding | 510          | 25.8%         |
| Informational | 440          | 22.2%         |
| Emotional     | 133          | 6.7%          |
| Operational   | 50           | 2.5%          |
| <b>Total</b>  | <b>1,978</b> | <b>100.0%</b> |

### Communicative Function Distribution: Individual Comments

Social comments dominated the coded sample, accounting for 42.7% of all analytically eligible comments ( $n = 845$ ). These comments included greetings and farewells, expressions of community solidarity (e.g., “stay safe everyone!”), humor and lighthearted banter, gratitude toward the creator, and relational maintenance work. Comments coded as Understanding comprised 25.8% of the sample ( $n = 510$ ). These were primarily questions or uncertainty displays seeking interpretation, including radar clarification (e.g., “How’s it looking for Cadillac Michigan?”), localized threat assessment (e.g., “Campbell county Tennessee? Is it safe??”), and protective-action guidance.

Comments coded as Informational accounted for 22.2% of the sample ( $n = 440$ ), including on-the-ground observations (e.g., “gettin really stormy over here in Louisville ky!”), radar-feature interpretations (e.g., “Think there is a hook echo coming into sweet water”), relayed warning information, and supplementary meteorological context. Emotional comments represented 6.7% ( $n = 133$ ), including fear and anxiety (e.g., “I’m so scared”), awe at storm imagery, empathy and concern for affected areas, and relief when threats passed. Operational comments comprised the remaining 2.5% ( $n = 50$ ), primarily stream moderation, technical troubleshooting, and platform-related coordination.

This distribution shows that social cohesion work proceeds alongside sensemaking and information exchange. While social comments were most common, crisis-relevant activity was substantial: understanding-seeking and informational contributions together accounted for 48.0% of all comments. The prevalence of understanding-seeking shows that viewers regularly treated the livestream as an interpretive, and almost *personal*, venue for localized risk assessment. Because weather livestreamers routinely monitor rapidly evolving conditions across multi-state regions and must prioritize the most intense storm activity at any given moment, not all locations can be assessed proactively. The resulting gap between viewer demand for localized assessment and the creator’s interpretive bandwidth shaped the character of understanding-seeking behavior throughout the sample.

Word count analysis revealed modest but interpretable differences in verbosity across communicative functions (Table 8.5). Informational comments averaged 9.8 words ( $Mdn = 8.0$ ,  $SD = 6.0$ ), while operational comments averaged 9.1 words ( $Mdn = 7.0$ ,  $SD = 5.2$ ), and social comments averaged 8.7 words ( $Mdn = 7.0$ ,  $SD = 6.8$ ). Understanding-seeking averaged 7.3 words ( $Mdn = 6.0$ ,  $SD = 5.6$ ), and emotional expressions were the most concise at 6.5 words ( $Mdn = 5.0$ ,  $SD = 5.5$ ). The brevity of understanding-seeking comments reflects shared interactional norms rather than unusually efficient questioning: short locational references (e.g., “Knoxville, TN”) commonly functioned as requests for the creator to direct interpretive attention to a specific area, rather than as complete interrogative statements. Emotional expressions were the most concise overall, consistent with their role as immediate affective responses rather than elaborated explanations.

Table 8.5: Word count statistics by communicative function (L1 code)

| L1 Code       | Mean | Median | SD  | Min | Max |
|---------------|------|--------|-----|-----|-----|
| Informational | 9.8  | 8.0    | 6.0 | 2   | 43  |
| Operational   | 9.1  | 7.0    | 5.2 | 3   | 22  |
| Social        | 8.7  | 7.0    | 6.8 | 2   | 44  |
| Understanding | 7.3  | 6.0    | 5.6 | 2   | 38  |
| Emotional     | 6.5  | 5.0    | 5.5 | 2   | 35  |

Table 8.6: Comparison of communicative function distribution between individual comments and conversations

| L1 Code       | Comments (%) | Conversations (%) | Difference |
|---------------|--------------|-------------------|------------|
| Social        | 42.7         | 44.5              | +1.8       |
| Understanding | 25.8         | 35.0              | +9.2       |
| Informational | 22.2         | 9.0               | −13.2      |
| Emotional     | 6.7          | 0.0               | −6.7       |
| Operational   | 2.5          | 11.5              | +9.0       |

### Communicative Function Distribution: Reconstructed Viewer-to-Viewer Exchanges

The conversation-level sample showed a different L1 distribution than the individual-comment sample. Social exchanges remained the most prevalent type at 44.5% ( $n = 89$ ), followed by understanding-oriented exchanges at 35.0% ( $n = 70$ ), operational exchanges at 11.5% ( $n = 23$ ), and informational exchanges at 9.0% ( $n = 18$ ). No reconstructed viewer-to-viewer exchanges were coded as primarily emotional.

Understanding-seeking occupied a larger share of the conversation-level sample than of the individual-comment sample (+9.2 percentage points), and operational comments also occupied a larger share (+9.0 points). This comparison indicates that reconstructed viewer-to-viewer exchanges contained relatively more interpretation-seeking and operational coordination than the individual-comment stream. It does not show that these L1 categories initiated replies at higher rates, because conversation roots were not separately analyzed for that purpose. Informational comments occupied a smaller share of reconstructed exchanges (−13.2 points), and emotional comments did not appear as the primary function of any reconstructed exchange in the conversation-level sample. These patterns show a distributional difference between standalone contributions and reconstructed @-mention exchanges, not a causal account of which message types generated replies.

Conversation length did not vary meaningfully by communicative function. Social exchanges averaged 3.7 messages ( $Mdn = 3.0$ ,  $max = 16$ ), understanding-seeking exchanges 3.6 messages ( $Mdn = 3.0$ ,  $max = 10$ ), operational exchanges 3.5 messages ( $Mdn = 3.0$ ,  $max = 7$ ), and informational exchanges 3.4 messages ( $Mdn = 3.0$ ,  $max = 5$ ). Across all 200 reconstructed viewer-to-viewer exchanges, 72.0% consisted of exactly three messages, with a mean length of 3.6 ( $Mdn = 3$ ,  $SD = 1.5$ , range 2–16). The short length of these exchanges reflects the interactional constraints of high-velocity, weakly threaded chat. It does not establish whether a question was resolved, whether a contribution was noticed by others, or whether the creator incorporated the information into the livestream.

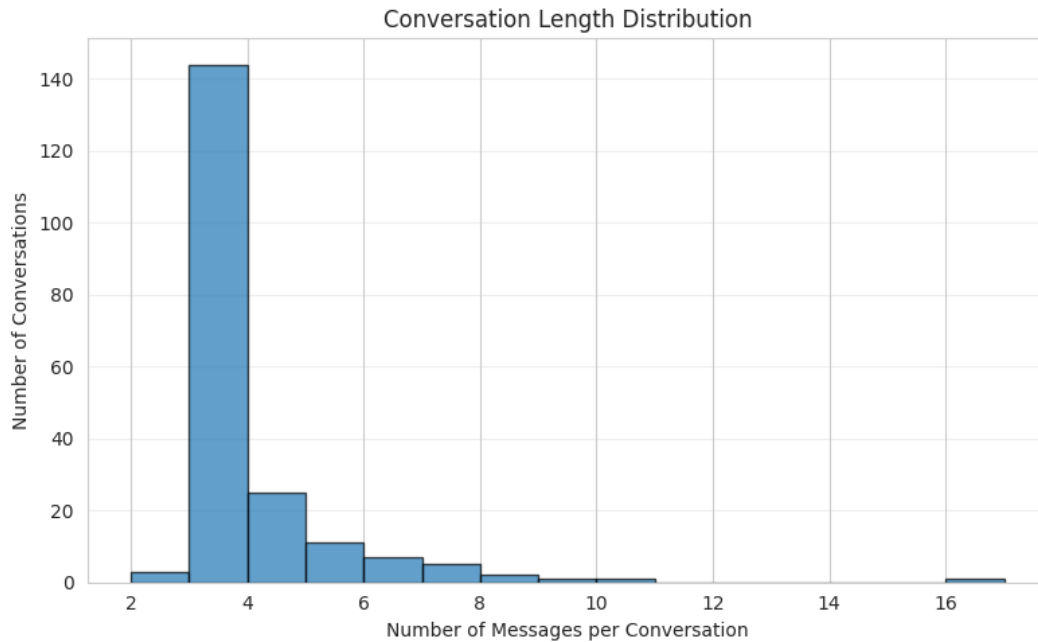


Figure 8.4: Distribution of conversation length across 200 coded reconstructed viewer-to-viewer exchanges. Most exchanges consisted of three messages.

L1 coding shows the communicative setting in which L2 trust-signaling practices appeared. In the individual-comment sample, L1 codes describe the dominant functions of standalone contributions. In the conversation-level sample, they describe the dominant functions of reconstructed viewer-to-viewer exchanges identified through @-mention chains. Understanding-seeking and operational work occupied larger shares of reconstructed exchanges than of individual comments, while informational and emotional work occupied smaller shares. This is a distributional contrast across two coded samples. It does not identify which message types initiated replies or estimate the probability that a comment would generate a reconstructed exchange. L2 coding then marks a narrower set of practices within those communicative functions: routing uncertainty to the creator, adding local evidence, recruiting attention to a cue, publicly evaluating a source, or repairing information when accuracy or interpretation is at stake.

The next subsection shifts from communicative function to trust-signaling practice. L1 codes identify what a contribution is primarily doing in chat. L2 codes identify whether that contribution also makes reliance, corroboration, credibility assessment, or reliability maintenance visible. This distinction keeps the L1 analysis from being asked to prove trust. The trust analysis begins where a comment or reconstructed exchange routes uncertainty to the creator, adds local evidence, recruits attention to a cue, publicly evaluates a source, or repairs information when accuracy or interpretation is at stake.

### 8.5.3 Trust-Signaling Behaviors in Chat and Conversation

L1 codes describe the dominant communicative function of a comment or reconstructed viewer-to-viewer exchange. L2 codes mark a narrower set of observable practices through which participants orient to reliability under uncertainty. Creator-directed questions route uncertainty toward the focal interpreter. Ground-truth

Table 8.7: Distribution of trust-signaling behaviors (L2 codes) in individual comments

| L2 Code          | Count      | % of All Comments | % of L2 Comments |
|------------------|------------|-------------------|------------------|
| Creator Question | 460        | 23.3              | 54.7             |
| Ground Truth     | 253        | 12.8              | 30.1             |
| Highlighting     | 67         | 3.4               | 8.0              |
| Vouching         | 31         | 1.6               | 3.7              |
| Repair           | 30         | 1.5               | 3.6              |
| <b>Total L2</b>  | <b>841</b> | <b>42.5</b>       | <b>100.0</b>     |
| No L2            | 1,137      | 57.5              | —                |

reports add local evidence to the shared evidentiary field. Highlighting recruits attention to cues that may require interpretation. Vouching publicly affirms or contests source credibility. Repair corrects or clarifies information when accuracy, location, procedure, or interpretation is at stake. These practices are treated as trust-signaling because they make reliance, corroboration, credibility assessment, or reliability maintenance visible in the chat record.

### Trust Work Prevalence

Trust-signaling behaviors appeared in 42.5% of coded individual comments ( $n = 841$ ), with the remaining 57.5% ( $n = 1,137$ ) containing no L2 code. In the conversation-level sample, 44.0% of reconstructed viewer-to-viewer exchanges ( $n = 88$ ) contained at least one trust-signaling behavior, while 56.0% ( $n = 112$ ) did not. These values describe the share of coded units in which an L2 practice was visible. They do not measure how much viewers trusted the creator, how stable that trust was, or what silent viewers believed. More than half of both coded samples contained no visible trust-signaling practice, which means the analysis identifies where trust work appeared in chat rather than treating all chat participation as trust work.

### Trust Behavior Distribution

Among comments containing trust-signaling behaviors, creator questions dominated at 54.7% ( $n = 460$  of 841 L2-coded comments), followed by ground-truth contributions at 30.1% ( $n = 253$ ). Comments that directed attention to a cue needing interpretation accounted for 8.0% ( $n = 67$ ) and were coded as highlighting. Repair accounted for 3.6% ( $n = 30$ ), and vouching accounted for 3.7% ( $n = 31$ ). Relative to the entire comment sample, 23.3% of all comments contained creator questions, 12.8% contributed ground-truth, 3.4% highlighted a cue for attention, 1.5% involved repair, and 1.6% involved vouching.

In conversations, creator questions comprised 67.0% ( $n = 59$  of 88 L2-coded conversations), followed by ground-truth at 15.9% ( $n = 14$ ), repair at 9.1% ( $n = 8$ ), and vouching at 8.0% ( $n = 7$ ). Within peer exchanges, creator questions took a different interactional form than in individual comments: rather than direct address to the creator, viewers relayed, referenced, or sought peer confirmation of the creator's interpretations, questions such as "*did max [sic] say whether Nashville is clear?*" or "*what did ryan say about that rotation?*" These still constitute L2\_creator\_question because they enact dependence on the creator's interpretation, but the epistemic work is distributed through the peer exchange rather than routed to the creator directly. Highlighting did not appear in conversation threads, consistent with its function as a standalone attention-directing act that does not invite sequential response.

### **Trust Work in Conversations: Brief, High-Velocity Coordination**

Conversations containing trust work showed slightly longer average length ( $M=3.77$  messages,  $SD=1.8$ ) compared to those without trust work ( $M=3.47$ ,  $SD=1.1$ ), though this difference was not statistically significant ( $t(198) = -1.41$ ,  $p = .161$ , Cohen's  $d = 0.20$ ). Trust signaling is accommodated within the chat's typical brief exchange structure rather than requiring extended negotiation.

### **Systemic Trust and Credibility References: Institutional Capacity as an Interpretive Resource**

A small subset of comments invoked institutional capacity and resourcing when discussing reliability, particularly in reference to the timing of tornado warnings. These instances were rare relative to the overall dataset and do not represent a dominant pattern; they are analytically notable because they make trust conditions explicit at a systems level rather than through source comparison alone. For example:

"Maybe don't vote to defund the NWS anymore Kentucky" (ID 1472)

"NWS should have Max on their screens." (ID 891)

Such comments connect perceived reliability to the infrastructures that produce warnings and expertise, indicating that some viewers orient not only to who is credible, but to the organizational and material conditions that enable timely, high-quality information.

### **Paid Visibility in Live Chat**

Monetized participation, comprising Super Chats and YouTube gift memberships, constitutes a distinct participation modality. Across the full human corpus, 18,531 monetized events were generated by 12,706 unique donors spanning all 17 events, representing 1.69% of human-generated comments. These contributions divided between Super Chats (81.7%,  $n = 15,137$ ) and gift memberships (18.3%,  $n = 3,394$ ). Dollar amounts were parseable for 14,508 Super Chats. The distribution was right-skewed: the median donation was \$5.00 and the mean \$10.85, with 44.5% of contributions falling in the \$0–\$5 range and 147 exceeding \$100. A single contribution reached \$5,000. Estimated Super Chat revenue totaled \$157,473.89 across the dataset.

The architecture also stratifies access to interpretive attention by financial capacity. Super Chats are paid comments that allow viewers to financially support a creator during a livestream while also receiving platform-amplified visibility: the message is highlighted in color and pinned near the top of live chat for a duration tied to the amount paid. One reconstructed exchange from the same March 14 stream shows a viewer @-mentioning "everyone" five times across thirteen minutes, asking other chat participants to donate on their behalf so they could submit a question to Max, explicitly because they could not afford a Super Chat themselves. The sequence shows that paid message elevation is not equally available to all viewers. In this safety-relevant setting, financial support is trust-relevant because viewers are materially supporting a creator whose interpretation they are choosing to keep visible, ask for, or affiliate with during live severe weather coverage. This does not identify the donor's private motive, but it does make support, alignment, and reliance publicly visible in a way ordinary chat messages may not.

Creator-level variation in monetization tracked the participation asymmetry documented across the broader corpus. Ryan Hall's streams attracted 827.8 donation events per event against Max Velocity's 592.2, and Ryan's mean Super Chat amount was higher (13.26 *vs.* 8.14). Cross-creator giving was uncommon: 436 donors (3.4%) contributed to more than one creator, indicating that monetized participation is community-specific rather than a generalized expression of support for severe weather coverage as a genre. The temporal

Table 8.8: Monetized participation by creator

| Creator      | Total Events | Unique Donors | Per Event | Mean Amount | Est. Revenue |
|--------------|--------------|---------------|-----------|-------------|--------------|
| Ryan Hall    | 9,933        | 7,615         | 827.8     | \$13.26     | \$98,447.52  |
| Max Velocity | 8,291        | 5,253         | 592.2     | \$8.14      | \$56,605.07  |
| Tex. Weather | 307          | 277           | 51.2      | \$18.63     | \$2,421.30   |

distribution of donations is consistent with monetary contribution functioning as a response to observed performance rather than anticipatory endorsement. The median donation occurred 335 minutes into the stream (mean: 352 minutes; 10th–90th percentile: 49–634 minutes), placing the center of monetized activity well into sustained coverage phases rather than at stream initiation.

Monetized messages frequently carried substantive communicative content alongside the financial contribution:

“donated: \$1.99 Hey Max! How is it looking in Racine, WI?”

“donated: \$2.00 Is Florence Ky clear for the night?”

“donated: \$19.99 Everyone in Greensburg, please stay safe. This is a dangerous situation.”

These examples show that Super Chats are not only donations. They are paid messages that can carry the same communicative work as ordinary chat while receiving platform-amplified visibility. The first two examples ask the creator for location-specific interpretation, the same functional move coded as L2\_creator\_question in the discursive sample. The third directs safety concern toward other viewers. In each case, payment changes the visibility conditions of the message: the platform highlights and pins the contribution whether or not the creator responds. Super Chats make support, alignment, and requests for interpretation publicly visible through platform infrastructure rather than through a visible reply sequence. Donor participation was predominantly episodic. Of 12,706 donors, 77.3% ( $n = 9,824$ ) contributed once across the full dataset; 15.0% donated across multiple events. This concentration among one-time contributors distinguishes monetized participation from the recurring discursive patterns documented in the comment corpus: monetary alignment is more characteristically a singular act than a sustained practice, executed at a moment of peak engagement rather than maintained across events.

#### 8.5.4 Trust Practices Across Communicative Functions.

To examine how trust operates within the chat ecology, I analyzed how L2 trust behaviors co-occur with L1 communicative functions. Because L1 codes capture the communicative orientation of a message and L2 codes capture specific trust practices enacted within that message, their co-occurrence provides a way to examine how trust work becomes embedded within different forms of interaction.

Trust behaviors did not distribute uniformly across message types. A chi-square test of association between L1 and L2 codes revealed a significant relationship ( $\chi^2(16) = 1114.66, p < .001$ ), with Cramer’s  $V = 0.576$ , indicating a substantial association between communicative function and trust behavior. This analysis was conducted on the 841 L2-coded comments rather than the full 1,978-comment dataset, as the goal is to examine how trust practices are organized within messages where trust work occurs rather than predicting whether trust behavior appears at all.

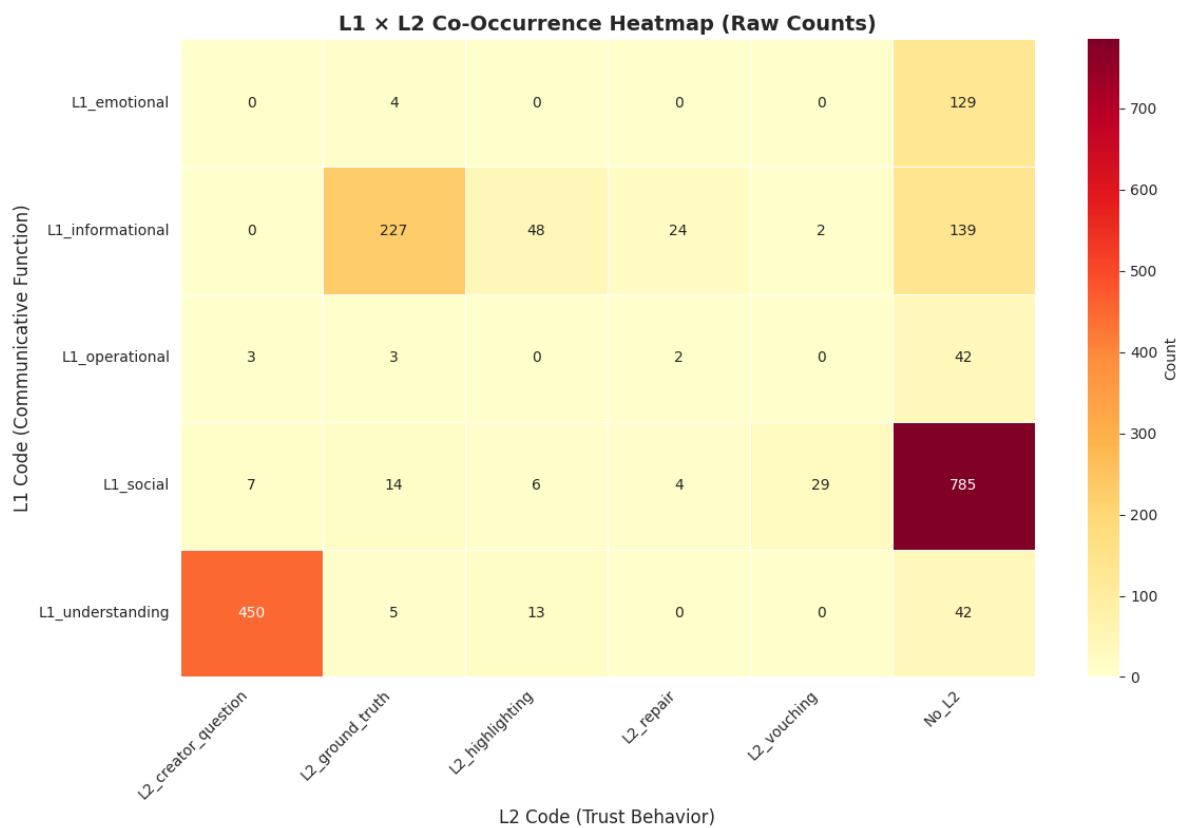


Figure 8.5: Heatmap showing co-occurrence of communicative functions (L1) and trust-signaling behaviors (L2) across individual comments. Cell intensity indicates raw counts.

These distinct L1×L2 pairing patterns, understanding channeling through creator questions, informational through ground-truth, social through vouching, confirm that the coding scheme discriminates between trust practices rather than collapsing them into a single evaluation dimension.

Examining deviations between observed and expected co-occurrences (standardized residuals) revealed three core pathways through which trust work becomes visible, depending on the communicative context.

### **Understanding-Seeking Routes Interpretive Uncertainty to the Creator**

Of 510 understanding-oriented comments, 450 (88.2%) involved directing questions to the creator. This represents the largest positive deviation in the matrix: only 256 such pairings would be expected under independence (residual: +194). By contrast, understanding-seeking comments rarely involved ground-truth, vouching, repair, or highlighting, indicating that interpretive requests were strongly routed toward the creator as the intended respondent. Examples include:

"How's it looking for Cadillac Michigan?" (ID 1398)

"is middle TN gonna get bad tonight?" (ID 30)

"Campbell county Tennessee? Is it safe??" (ID 599)

The accountability structure that creator-directed questions create does not guarantee uptake. One reconstructed conversation from Max Velocity's March 14 stream shows a viewer sending the same interpretive question to the creator three times across seven and a half minutes, each message substantively identical, without receiving a response. The question was addressed, visible to the assembled audience, and formally constituted a sequential slot, but stream velocity and the demands on the creator's attention as well as from the audience, meant the slot went unfilled. The interactional structure of creator-directed questioning produces accountability pressure without ensuring its resolution.

Understanding-oriented comments paired substantially with creator questions (residual: +194), while showing strong negative associations with other trust practices such as ground-truthing, vouching, repair, and highlighting. This selective routing indicates that when viewers sought interpretation, they consistently directed epistemic work toward the creator rather than peers, external sources, or explicit credibility evaluation. This pattern reflects a dominant interactional pathway rather than construct redundancy. The 11.8% of understanding-seeking comments that did not involve creator questions, and the small subset of creator questions serving non-interpretive functions (e.g., emotional support or operational coordination), demonstrate that the L1 and L2 codes capture distinct dimensions of interaction: communicative orientation versus enactment practice. These patterns indicate a centralized *routing pattern* in which interpretive requests are directed primarily to the creator, with alternative pathways remaining possible but rarely used.

### **Informational Comments Ground and Direct Empirical Attention**

Informational comments disproportionately co-occurred with ground-truth contributions. Of 440 informational comments, 227 (51.6%) involved ground-truth, far exceeding the 91 expected by chance (residual: +136). Informational comments also showed elevated highlighting (observed: 48, expected: 24, residual: +24) and repair (observed: 24, expected: 17, residual: +7). When viewers contributed information, they frequently did so by validating or contextualizing the unfolding situation with local observations, drawing attention to salient features, or correcting interpretive details. Examples include:

"I're [sic] okay for now here in East Texas" (ID 1145)

"gettin really stormy over here in Louisville ky!" (ID 892)

"The sirens are currently off in north Jackson tn but they have been on and off" (ID 654)

Table 8.9: Largest deviations from expected L1 × L2 co-occurrence frequencies

| L1 Code       | L2 Code          | Observed | Expected | Residual |
|---------------|------------------|----------|----------|----------|
| Understanding | Creator Question | 450      | 256.0    | +194.0   |
| Informational | Creator Question | 0        | 164.6    | -164.6   |
| Informational | Ground Truth     | 227      | 90.6     | +136.4   |
| Understanding | Ground Truth     | 5        | 140.8    | -135.8   |
| Social        | Vouching         | 29       | 2.2      | +26.8    |
| Social        | Creator Question | 7        | 32.8     | -25.8    |
| Understanding | Highlighting     | 13       | 37.3     | -24.3    |
| Informational | Highlighting     | 48       | 24.0     | +24.0    |
| Understanding | Vouching         | 0        | 17.3     | -17.3    |
| Understanding | Repair           | 0        | 16.7     | -16.7    |

Highlighting constitutes a functionally distinct contribution within this same pathway. Where ground-truth reports anchor interpretation in locally situated observation, highlighting directs collective attention toward specific features of the unfolding situation that require expert assessment, routing the work of interpretation back to the focal interpreter rather than completing it. One example illustrates the pattern clearly:

“@Ryan Hall, Y’all @Frank Let Ryan know that east ada storm has a CC drop now” (ID 1552)

The viewer identifies a correlation coefficient drop, a dual-polarization radar signature associated with large debris lofted by a tornado, and routes that observation through peer coordination to the creator for expert assessment. The interpretive work is initiated by the viewer but not completed by them. A second form of highlighting is more direct, pointing the creator toward a developing feature without supplying the technical framing:

“Check the one closer to the state line it looks crazy” (ID 734)

Both forms demonstrate active monitoring: the viewer has identified something worth examining and positioned the creator as the authoritative assessor of what it means.

### Social Comments as Sites of Vouching

Although social comments rarely contained trust behaviors overall, vouching was strongly concentrated in social communication. Of 845 social comments, 29 involved vouching where only 2.2 would be expected under independence (residual: +27). In these cases, explicit endorsements of creators’ reliability and value were embedded in relational talk and community membership work, for example:

“max velocity sent me over here, he’s hopping off. I are [sic] depending on you ryan!! thank you!!” (ID 1034)

“Thank you for covering this. Im right outside of Atlanta currently getting prepared for tonight” (ID 291)

These co-occurrence patterns show that trust signaling is not evenly distributed across chat activity; it is organized through distinct pathways that align with different forms of communicative work. Interpretive requests are routed primarily to the creator (creator questions within understanding-seeking), empirical validation and correction cluster within informational contribution, and explicit endorsements appear most often within social affiliation. In the Discussion, I build on these patterns to consider what they imply for theorizing trust as observable work in synchronous crisis communication.

Table 8.10: Distribution of communicative functions by creator (%)

| Creator      | Social | Understanding | Informational | Emotional | Operational |
|--------------|--------|---------------|---------------|-----------|-------------|
| Max Velocity | 40.0   | 26.4          | 22.5          | 9.1       | 1.9         |
| Ryan Hall    | 42.5   | 28.2          | 21.7          | 4.8       | 2.8         |

### 8.5.5 Creator-Level Variation in Communication and Trust Practices

Although the aggregate patterns described above were consistent across the coded sample, the distribution of communicative functions and trust practices varied modestly across the two primary creators in the dataset, Ryan Hall and Max Velocity. Texas Weather Center was excluded from creator-level comparison because its coded sample was too small for stable distributional analysis at this level.

#### Configuration of Trust Practices Within Sensemaking Orientations

The aggregate co-occurrence patterns described in RQ3 were broadly consistent across both creators, though with modest quantitative variation. For understanding-seeking comments, the alignment with questions directed at the creator was strong in both chats: 85.8% of Max Velocity’s understanding-oriented comments were paired with creator questions, compared to 90.9% in Ryan Hall’s chat (overall: 88.2%). This near-uniform routing of interpretive requests toward the creator indicates that the centralized epistemic structure documented in the aggregate is a feature of the livestream format rather than an artifact of any individual creator’s interactional style.

The informational to ground-truth pathway showed somewhat greater creator-level variation. Among informational comments, 58.6% of Ryan Hall’s were paired with ground-truth contributions, compared to 45.5% in Max Velocity’s chat (overall: 51.6%). This difference reflects modest variation in how each creator’s audience participates in empirical grounding, whether viewers more frequently contribute local observations and validation versus posting informational content without explicit epistemic anchoring. Vouching within social comments remained rare and comparably low for both creators (Max: 4.5%, Ryan: 3.0%), consistent with its status as a low-frequency but structurally distinctive trust practice.

These patterns indicate that the dominant trust practices, interpretive dependence on the creator, empirical grounding within informational exchange, operated similarly across both chats. Creator-specific variation was quantitative rather than structural: the same pathways were active in both communities, with modest differences in the rates at which they were engaged.

#### Communicative Function by Creator

The distribution of L1 communicative functions was broadly similar across the two creators, though a chi-square test indicated a statistically significant association between creator and communicative function ( $\chi^2(4) = 14.28$ ,  $p = .0065$ , Cramer’s  $V = 0.091$ ). Social interaction remained the dominant communicative mode in both chats, comprising 40.0% of comments in Max Velocity’s sample and 42.5% in Ryan Hall’s. Understanding-seeking comments were also similarly prevalent (26.4% vs. 28.2%), as were informational contributions (22.5% vs. 21.7%). The largest difference appeared in emotional expression, which was somewhat more common in Max Velocity’s chat (9.1%) than in Ryan Hall’s (4.8%).

These differences are statistically detectable but substantively small. At the level of baseline communicative activity, both creators’ chats exhibited the same general ecology: a mix of social interaction, interpretive questioning, and informational contribution, with only minor variation in emphasis. Word count data

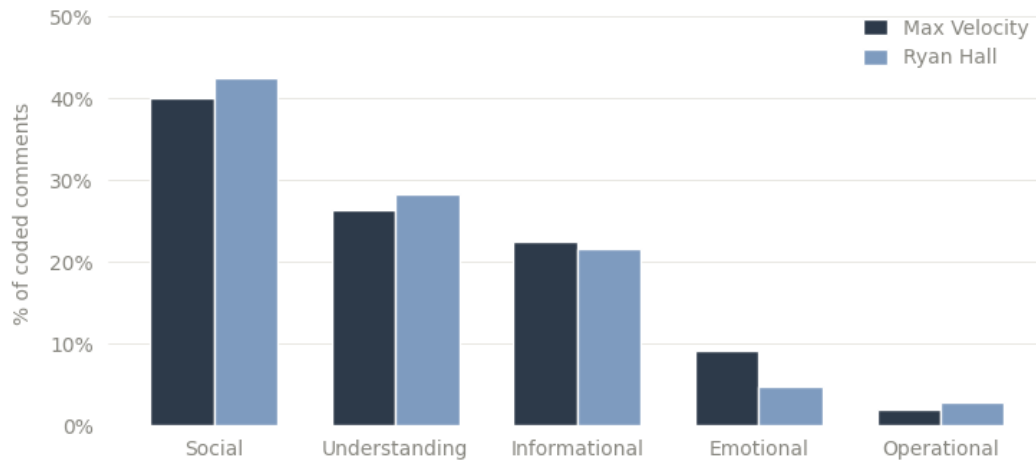


Figure 8.6: Distribution of communicative functions (L1 codes) by creator, expressed as a percentage of coded comments.

Table 8.11: Distribution of trust-signaling behaviors by creator (% of L2-coded comments)

| Creator      | Creator Question | Ground Truth | Highlighting | Repair | Vouching |
|--------------|------------------|--------------|--------------|--------|----------|
| Max Velocity | 55.4             | 27.3         | 10.5         | 2.2    | 4.6      |
| Ryan Hall    | 56.7             | 29.9         | 5.8          | 4.6    | 3.0      |

showed a similar pattern. Max Velocity’s comments averaged 7.09 words and Ryan Hall’s averaged 7.69, while Texas Weather Center’s averaged 9.00. The higher verbosity in the smaller channel is consistent with participation in a more technically engaged community where individual contributions carry proportionally greater interactional weight.

### Trust Behavior Composition by Creator

Trust behavior composition was likewise similar across creators, though again not identical. Restricting the comparison to comments that received an L2 code, creator-directed questions constituted the majority of trust-signaling behavior for both creators (55.4% of L2-coded comments for Max Velocity; 56.7% for Ryan Hall), followed by ground-truth contributions (27.3% and 29.9%, respectively). A chi-square test indicated a statistically significant association between creator and L2 distribution ( $\chi^2(4) = 10.19$ ,  $p = .0373$ , Cramer’s  $V = 0.115$ ), though effect size was small.

The overall structure of trust work was consistent across both creators: trust signaling centered first on creator-directed interpretive dependence and second on viewer-generated ground-truth. Smaller differences appeared in the distribution of secondary trust practices. Highlighting was somewhat more common in Max Velocity’s chat (10.5% vs. 5.8%), while repair appeared somewhat more frequently in Ryan Hall’s (4.6% vs. 2.2%). These differences indicate modest creator-specific variation in how trust work is expressed, but not in the dominant pathways through which it operates.

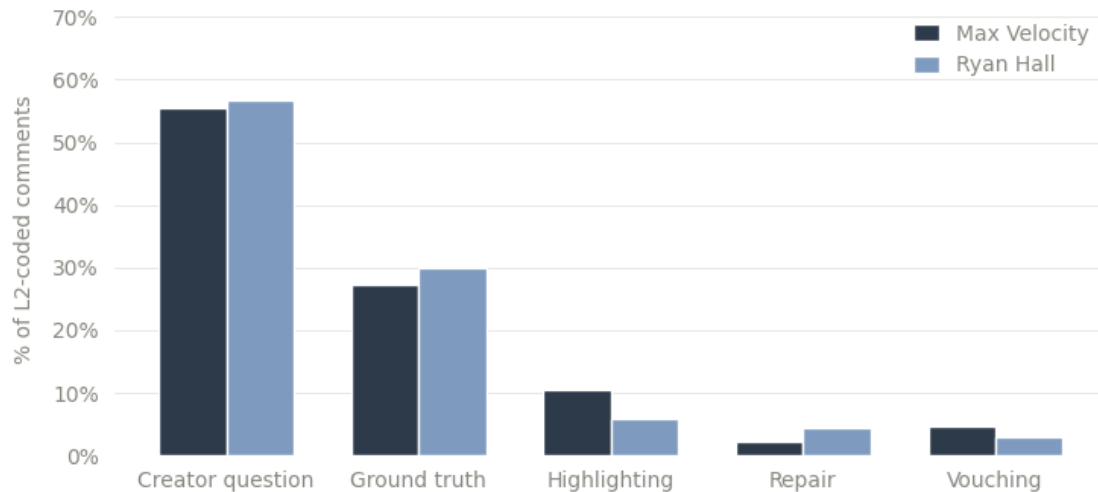


Figure 8.7: Distribution of trust-signaling behaviors (L2 codes) by creator, expressed as a percentage of L2-coded comments.

### Creator-Specific Repair Ecology

Repair comments were more frequent in Ryan Hall's chat (n=18) than in Max Velocity's (n=8), though the difference in type is analytically more notable than the difference in volume. In Ryan Hall's stream, the dominant repair pattern involved place-name pronunciation: viewers asserting local geographic knowledge when the creator mispronounced a town or county name while tracking storms across a multi-state region:

"Mountain HOME Arkansas, not Mountain View" (ID 1049) "@Trouble it's actually imperative a town is at least closely named. I've lost a friend's family because their town was mispronounced and didn't think they were going to get hit." (ID 1088)

The second example illustrates that repair in this context can carry explicit safety stakes; the accuracy of place names is treated as consequential for whether at-risk viewers recognize themselves as threatened.

In Max Velocity's chat, repair took more varied forms. One instance involved peer-to-peer meteorological correction, with a viewer clarifying terminology for another chat participant rather than directing repair at the creator: "*discreet cells are ones not in a line of thunderstorms. They're off by themselves*" (ID 531). Another involved institutional grounding: "*NWS made it very clear that their preliminary was probably low*" (ID 745), where a viewer invoked authoritative external evidence to correct a factual claim circulating in chat. While repair is a low-frequency practice in both chats, its character reflects the specific epistemic demands of each stream: geographic breadth in Ryan Hall's case, technical precision in Max Velocity's.

### 8.5.6 Findings in Summary

The three analyses are cumulative rather than parallel. RQ1 establishes that livestream chat during tornado outbreaks is a multi-functional communication environment in which social, interpretive, empirical, emotional, and operational contributions proceed simultaneously. RQ2 shows that trust-signaling practices appeared in 42.5% of individual comments and 44.0% of reconstructed viewer-to-viewer exchanges, while also showing that more than half of both coded samples contained no visible L2 practice. RQ3 explains where those practices appeared. The strong association between communicative function and trust behavior

(Cramer's  $V = 0.576$ ) shows that L2 practices were organized within specific communicative contexts rather than distributed evenly across chat activity. These L2 practices reflect trust in the interactional sense used in this chapter: creator-directed questions make reliance visible by routing unresolved interpretation to the creator; ground-truth reports and highlighting support corroboration by adding local evidence or directing attention to cues needing interpretation; repair maintains reliability when accuracy, location, or interpretation is at stake; and vouching makes credibility assessment visible through public endorsement or contestation. The same organization appeared across both primary creator communities, suggesting that the pattern is not reducible to one creator's interactional style. In aggregate, the findings describe a communication ecology in which collective sensemaking under uncertainty proceeds through repeated practices of routing, corroborating, flagging, correcting, and endorsing rather than through extended credibility deliberation.

## 8.6 Discussion

Trust work in severe weather livestream chat is common, organized, and largely accomplished through patterned coordination practices rather than through explicit credibility deliberation. Across 1,978 coded comments and 200 reconstructed exchanges, trust-signaling behaviors appeared in 42.5% of comments, while explicit credibility evaluation through vouching and repair together accounted for fewer than four percent. The chi-square association between communicative function and trust practice was substantial ( $\chi^2(16) = 1114.66, p < .001$ , Cramer's  $V = 0.576$ ), indicating that trust practices are channeled through specific communicative contexts rather than distributed evenly across chat activity. The discussion looks at three components of that organization: how viewers route interpretive responsibility to the creator, how chat sustains trust-relevant work through contributions that do not depend on a visible reply sequence, and how platform infrastructure renders alignment visible in ways the interactional system does not consistently support.

### 8.6.1 Routing Interpretive Responsibility to the Creator

Understanding-seeking comments paired with creator-directed questions at a rate far exceeding chance: 450 of 510 understanding-oriented comments (88.2%) took this form, against an expected count of 256 under independence (residual: +194). The same pattern held across both primary creators in the dataset (85.8% in Max Velocity's chat, 90.9% in Ryan Hall's), and creator-level variation in L1 and L2 distributions was small ( $V = 0.091$  for L1,  $V = 0.115$  for L2). When viewers confronted interpretive uncertainty in chat, they directed it to the focal creator rather than primarily to peers or to the chat as a whole.

Repeated creator-directed questioning makes the creator the default addressee for unresolved interpretation. Each question publicly positions the creator as the participant expected to synthesize radar, warnings, reports, and local risk into an actionable account. The chat reproduces the creator's central interpretive role through ordinary acts of questioning, without requiring extended debate over credentials or legitimacy. Lewis and Weigert describe trust as a social relation with cognitive, emotional, and behavioral dimensions [98]. The chat data show one observable practice through which that relation is organized in this setting: viewers repeatedly make unresolved interpretation addressable to the creator. A short place-name message such as "Louisville" can function as a request for the creator to assess a location, even when the viewer does not spell out the full question. Warning response models often treat source perceptions as part of the conditions that shape later comprehension, confirmation, personalization, and action [117, 200]. The chat data show a complementary interactional process. Viewers make reliance publicly visible while interpretation is still unfolding by routing uncertainty to the creator and, in other comments, contributing evidence to the

stream environment.

The qualitative material indicates that this routing operates even when viewers have enough familiarity to interpret features partially themselves. One viewer asked, *“If there is a PDS tornado in there, why wouldn’t CC be picking it up?”* (ID 86). The question presupposes knowledge of what a PDS watch implies and what correlation coefficient measures, routing the discrepancy to the creator rather than resolving it independently. A second viewer specified an instrumental vantage point: *“Can you look at the Little Rock storm but from the Memphis radar? Looks narly”* (ID 1067). The viewer is making a judgment about how the shared data environment should be examined and delegating the interpretive conclusion to the creator. Similar patterns appeared in narrated observations: *“Those discrete cells stretching across Arkansas, there were like 6 of them, that was insane to see on the radar. They all had hook echos”* (ID 306), and *“The cell near leoti is a cell to watch. Looks like there is some rotation”* (ID 644). The hedge in *“looks like”* marks the epistemic boundary within the message itself. Viewers can notice, flag, and describe; the creator remains positioned as the participant expected to synthesize what the feature means for storm development and for viewers in its path.

Peer exchange did resolve some questions, particularly definitional, procedural, or locally factual ones. When one viewer used the term “three body scatter spike,” another responded, *“Three body scatter spike. It’s a radar phenomenon associated with large hail”* (ID 618). Definitional knowledge circulated between peers. Situational synthesis did not move in the same way. What that feature meant for this storm, at this moment, for viewers in affected areas remained routed toward the creator. The distinction shows that the chat did not lack peer knowledge. Peer knowledge and creator interpretation occupied different positions in the ecology.

Routing does not guarantee a creator response. One reconstructed conversation from Max Velocity’s March 14 stream shows a viewer directing the same interpretive question to the creator three times across seven and a half minutes without receiving a response. The self-addressed sequence finding points to a related constraint in the peer interactional environment: 18.6% of reconstructed viewer-to-viewer exchanges involved one viewer addressing a peer multiple times without receiving a reply. These cases do not show that creator-directed questions usually fail. They show that addressed messages can remain unanswered in high-velocity, weakly threaded chat. The accountability created by creator-directed questioning is practical and public rather than guaranteed: the question assigns interpretive responsibility to the creator, but stream velocity and competing demands on attention can leave that assignment unfilled. Routing is trust-relevant because viewers use it to make unresolved interpretation addressable to the creator. Repeated routing makes reliance visible as a practice: viewers publicly treat the creator as the participant whose interpretation can settle what a radar feature, warning, or location-specific threat means in the moment.

## 8.6.2 Standalone Contributions and the Limits of Visible Reply Sequences

The comparison between the individual-comment sample and the conversation-level sample shows that communicative functions appeared differently across the two units of analysis. Understanding-seeking and operational work occupied larger shares of reconstructed viewer-to-viewer exchanges than of individual comments, while informational and emotional work occupied smaller shares. This comparison does not show which comments initiated replies. It does show that some trust-relevant contributions entered the chat without becoming part of reconstructed @-mention exchanges. The interactional consequence of a contribution cannot be inferred from frequency alone or from whether it appears in a reconstructed exchange. Some contributions depend on a visible response to accomplish their work; others enter the stream as standalone contributions.

Ground-truth reports are the clearest case of consequential standalone contribution. Informational com-

ments accounted for 22.2% of coded comments, and 51.6% of informational comments paired with ground-truth. Viewers reported sirens, hail, wind, local storm conditions, power outages, and other situated observations. These reports often appeared as standalone contributions rather than as reconstructed viewer-to-viewer exchanges. They functioned as contributions to the shared evidentiary field, available to the creator, moderators, other viewers, and silent observers regardless of whether anyone replied. A viewer reporting sirens in north Jackson, Tennessee, did not need a visible reply sequence for the report to enter the interpretive environment. Its value came from locally situated observational access the creator did not have.

Highlighting operated through similar logic while assigning interpretive work back to the creator. A viewer who writes, “@Ryan Hall, Y’all @Frank Let Ryan know that east ada storm has a CC drop now” (ID 1552), identifies a correlation coefficient drop and recruits attention to it. The viewer contributes a cue without supplying a full interpretation. Another viewer writes, “Check the one closer to the state line it looks crazy” (ID 734), directing attention without supplying technical classification. These comments do not need to become reconstructed exchanges in order to be consequential.

Repair shows the opposite structure. Conversation-analytic accounts of repair require sequential co-presence of trouble-source and correction: the error must remain interactionally available when the correction arrives [159]. In high-velocity livestream chat, that condition is frequently unavailable. By the time a correction reaches the stream, the relevant moment has scrolled past, the creator has moved on, and the trouble-source no longer occupies the sequential position repair depends on. Repair appeared in 1.5% of all coded comments and 3.6% of L2-coded comments. The rarity is structural rather than indicative of low error rates. What varied across creators was the surface composition of repair rather than its prevalence: place-name correction concentrated in Ryan Hall’s chat, peer-meteorological clarification in Max Velocity’s. The format-level constraint held in both.

Crisis informatics has often examined verification through visible episodes of claim circulation, contestation, correction, and repair [112, 175, 199]. Severe weather livestream chat reorganizes that problem. Reliability is maintained through continuous contribution rather than through extended deliberation over discrete claims: routing uncertainty to the creator, supplying local evidence, flagging cues, and issuing brief corrections when possible. The scarcity of repair does not indicate the absence of credibility work. It indicates that credibility work is formatted by a communication ecology where short, context-light contributions survive better than extended negotiation.

When repair does surface, it carries analytic weight because it shows reliability maintenance at moments of strain. The place-name corrections in Ryan Hall’s chat, including “*Mountain HOME Arkansas, not Mountain View*” (ID 1049), demonstrate that viewers monitor not only storm content but the accuracy of geographic reference. The accompanying comment, “@Trouble it’s actually imperative a town is at least closely named. I’ve lost a friend’s family because their town was mispronounced and didn’t think they were going to get hit” (ID 1088), makes the safety stakes of repair explicit. These corrections intervene in the reliability of the shared interpretive environment. When a creator acknowledges such correction, the acknowledgment makes responsiveness to audience input publicly visible. The data do not establish whether such responsiveness accumulates as a durable basis for trust across streams. They do show that, in a format where repair is difficult to sustain, visible correction and creator acknowledgment can make reliability maintenance publicly observable at moments of strain.

Emotional expressions illustrate a different limit of standalone participation. Fear, concern, and relief appeared in the individual-comment sample, but emotional expression did not appear as the primary function of any reconstructed viewer-to-viewer exchange in the conversation-level sample. The data cannot determine whether this reflects a community norm against responding to distress, the difficulty of sustaining emotional support in high-velocity chat, or both. The contrast with operational messages should be read dis-

tributionally: operational coordination occupied a larger share of reconstructed exchanges, while affective expression more often appeared as a standalone contribution to the atmosphere of the stream. Trust-relevant work in this ecology is shaped by the kind of contribution a message makes and by whether that contribution depends on a visible response.

### 8.6.3 Visibility and Monetized Alignment

The discursive trust practices examined above depend on different visibility conditions. Routing creates an addressee position the creator may or may not fill. Ground-truth and highlighting enter the evidentiary environment as inputs that may or may not be incorporated into the creator's synthesis. Repair depends most strongly on sequential conditions because the trouble-source must remain available long enough for correction to be recognizable. Monetized participation operates differently. Super Chats and gift memberships are made publicly prominent through platform infrastructure regardless of whether the creator responds. Elevated placement, color coding, persistent display, and the occasional shoutout directly from the creator distinguish them from the continuous scroll of ordinary chat. The visibility is platform-structured rather than interactionally produced.

Monetized participation is trust-relevant because it is costly, public, and discretionary. A viewer pays real money, the contribution is visible to the creator and to the assembled audience, and nothing in the platform requires the donation. In a severe weather livestream, that act supports a creator whose ongoing interpretation the viewer has chosen to affiliate with, elevate, or ask for during an unfolding hazard. The payment does not reveal the donor's private motive, but it is a public act of support in a context where support, attention, and reliance are difficult to separate. A viewer may post a question to chat for many reasons, and payment does not settle the donor's motive. What the paid message makes visible is narrower: the viewer chose to spend money to surface a message to this creator, in this stream, during ongoing severe weather interpretation. That is why monetized participation is analyzed here as a public trust-relevant signal rather than as evidence of an internal state of trust. Across the corpus, 18,531 monetized events were generated by 12,706 unique donors, totaling an estimated \$157,473.89 in Super Chat revenue. Median donation was \$5.00, mean was \$10.85, and 147 donations exceeded \$100. The temporal distribution constrains how this visibility should be read. The median Super Chat arrived 335 minutes into a stream, placing the center of monetized activity well into sustained coverage. This timing supports a narrower interpretation: monetized alignment often appeared after viewers had already had substantial opportunity to observe the creator's ongoing coverage. The data do not establish what prior observations or judgments led individual viewers to pay.

The content of monetized messages frequently carries the same communicative functions as unmonetized trust work. A viewer paid \$1.99 to ask *"Hey Max! How is it looking in Racine, WI?"* and another paid \$2.00 to ask *"Is Florence Ky clear for the night?"* A third paid \$19.99 for *"Everyone in Greensburg, please stay safe. This is a dangerous situation."* Two of these are creator-directed questions structurally identical to those coded as L2\_creator\_question in the discursive sample; the third performs community-directed safety work. The financial contribution elevates each architecturally, ensuring visibility the interactional system cannot guarantee. Monetization and discursive trust practices can use similar communicative acts, but the financial channel changes their visibility conditions: the platform elevates the message whether or not anyone replies. Prior livestreaming research treats financial support as one form of audience participation alongside emotional and instrumental engagement [211]. The temporal pattern, communicative content, and costliness of the act support reading monetized contribution as a public trust-relevant signal within the chat record. They do not establish the private judgment that motivated any individual contribution.

#### 8.6.4 What Chat-Based Analysis Can Establish

Three forms of public visibility carry trust-relevant work in this chat. Routing makes interpretive responsibility visible. Ground-truth and highlighting make evidence and attention bids visible. Monetized contributions make alignment, support, or reliance visible through platform infrastructure rather than through a visible reply sequence. Each is an interactional or platform-mediated practice rather than an internal trust state, and the chapter's analytic object has been the public organization of these practices rather than the trust judgments any individual viewer makes. Across both primary creator communities, the dominant pathways held with small effect sizes for creator-level variation ( $V = 0.091$  for L1,  $V = 0.115$  for L2). Creator-level differences appeared on the surface composition of trust work rather than on its underlying organization. Repair concentrated on place-name correction in Ryan Hall's chat, where the geographic breadth of coverage made misidentified towns consequential for whether viewers recognized themselves as at risk. Max Velocity's chat showed somewhat more highlighting and somewhat more emotional expression. The routing-and-corroboration structure operated in both. The same organization appeared across both primary creator communities, suggesting that the pattern is not reducible to one creator's interactional style. The data do not establish whether this organization holds across the broader genre of severe weather livestreaming. The cross-creator referral comment, "*max velocity sent me over here, he's hopping off. I are [sic] depending on you ryan!! thank you!!*" (ID 1034), shows one way reliance can move across bounded streams, but a single observation cannot establish systematic trust transfer across weatherfluencer communities.

The chat record captures active participation. It does not capture lurkers, who watch without writing, or the off-platform reasoning, comparison, and protective decision-making that may follow from what viewers see in the stream. The audience these public practices reach is heterogeneous: 43.2% of users in the corpus posted a single comment, while a small group of recurring participants appeared across eleven or more events. First-time viewers, recurring community members, and silent observers may be exposed to the same routing, corroboration, and alignment work, but the chat record cannot show how they interpret or use it. The chapter does not measure how those encounters shape individual reliance, protective action, or trust development across repeated streams. Chat data cannot capture private skepticism, off-platform verification, silent disengagement, or whether repeated exposure across seasons builds, weakens, or recalibrates trust in a creator over time. The findings specify the public interactional resources through which trust-relevant work becomes available in livestream chat, and they leave open how those resources are taken up by viewers at different points in their relationship with the creator.

The findings also do not show that interactional trust work displaces institutional legitimacy or professional standing. Study 1 showed that broadcast meteorologists retained advantages on dimensions tied to accountability and legitimacy. Study 3 addresses a different question: how viewers organize their working basis for their next judgment inside the creator-centered livestream environment once they are already present and participating. In that setting, trust work is distributed across the ordinary practices through which participants ask, report, flag, correct, endorse, donate, and remain oriented to a focal interpreter under conditions of uncertainty. The discussion in Chapter 9 takes up the relationship between this interactional layer, the production-level visibility examined in Study 2, and the audience evaluation findings from Study 1.

### 8.7 Limitations

This study has several limitations. First, the analysis draws from a stratified sample: while the sampling strategy supports systematic pattern identification across creators and events, the results should not be interpreted as population-level prevalence estimates for all weather livestreams. Second, because the analysis is

limited to observable interactional practices in chat, it cannot capture private skepticism, off-platform verification, or silent disengagement that may shape individual trust assessments without leaving any trace in the chat record.

Third, the analysis focuses on tornado events, which involve rapid onset and high uncertainty; other hazards such as hurricanes or winter storms may yield different trust practices and interactional tempos.

Fourth, the study examines a limited set of prominent creators; how these coordination mechanisms vary across creator styles, platforms, audience composition, and levels of domain expertise and credentialed authority remains an open question.

Lastly, this study captures trust-relevant practices as they appear during live coverage, within and across archived streams from a single severe weather season. The data show how viewers publicly ask questions, contribute local evidence, endorse creators, and correct claims as events unfold. They also identify interactional materials that future longitudinal work could examine: recurring interpretive routines, visible correction practices, community endorsements, and repeated opportunities to compare creator claims against subsequent weather outcomes. However, the study does not directly measure how trust in a creator is built, maintained, or weakened across many streams or multiple severe weather seasons. Answering that question would require longitudinal evidence that follows viewers, creators, and audience communities across repeated events over time.

## **8.8 Summary**

These findings specify the audience-side counterpart to the production-level visibility examined in Study 2. Weatherfluencers make severe weather reasoning available for observation, and chat participants organize around that visibility through questioning, corroboration, comparison, correction, endorsement, and material support. Chapter 9 brings this interactional layer together with the audience evaluation findings from Study 1 and the creator-side practices identified in Study 2.

## Chapter 9

# Cross-Study Discussion

### 9.1 Sensemaking at the Fringe of Authority

During an active tornado outbreak, a viewer watching a severe weather livestream faces a situation that organizational sensemaking theory helps describe but does not fully specify. A creator on screen is interpreting live radar, tracking rotation signatures, checking traffic cameras, taking in viewer reports, and issuing shelter guidance to tens of thousands of simultaneous viewers. That creator may or may not hold a meteorology degree. They carry no statutory authority to make weather interpretations or issue official warnings, yet display National Weather Service warning polygons while the nearest field office is simultaneously monitoring the situation. Their standing in the weather enterprise is ambiguous and contested. The viewer is relying on their coverage anyway, potentially comparing the creator against other sources, asking questions in the chat, and calibrating protective action against an interpretation that is being assembled in front of the audience as the event unfolds. The question of the creator's authority to do such a task has not been agreed upon by viewers or by the broader weather community. Sensemaking proceeds anyway.

Sensemaking theory explains several parts of this coordination problem, but not as a single settled arrangement. In Weick's Mann Gulch analysis, coordinated action deteriorates when the role system that had organized instruction, reciprocal obligation, communication, and credible action comes apart under changing fire conditions [203]. In Weick's Bhopal analysis, the problem is different: operators act while the situation is still poorly understood, and their commitments, capacities, expectations, and fragmentary cues shape whether weak or misleading accounts are updated or preserved [202, 205]. Maitlis's study of orchestras locates collective sensemaking in the interaction between leader sensegiving and stakeholder sensegiving: who frames the issue, who keeps alternative claims active, and whether accounts become guided, fragmented, restricted, or minimal [104]. Severe weather livestreams organize interpretation through another arrangement. The creator controls the screen, narration, and sequencing of evidence; viewers can question, report, compare, and correct through chat; moderators shape what remains visible; and NWS products provide an official reference point while the creator's professional standing remains unsettled. No formal role relation settles why this creator's account should organize audience attention. The problem is how those platformed relations keep severe weather interpretation usable while the event is still developing.

The three studies assembled here provide that specification. Statutory warning authority lies with the National Weather Service. Professional standing within meteorology is inconsistently held by creators. Interpretive authority emerges through the interaction between creators and their audiences rather than through institutional conferral. Under these conditions, the socially recognized authority structure of the weather enterprise does less interpretive work than it does in conventional weather communication. In broadcast con-

texts, degrees, affiliation, certification, and accountability structures make professional standing publicly legible before any particular act of reasoning is observed, reducing the evaluative and interactional work audiences must do in real time. In the weatherfluencer setting, those cues are weaker, contested, or absent. At the level of source evaluation, audiences still form judgments about trustworthiness, credibility, and legitimacy. At the level of collective sensemaking, audiences treat the creator's interpretation as the working basis for their next protective-action judgment while continuing to test it through questioning, comparison, and corroboration as the event unfolds. That work is distributed across participants and accomplished in real time.

Across the three studies, trust describes two distinct phenomena. Study 1 examines evaluative judgments about interpreters and coverage, including trustworthiness, credibility, legitimacy, and objectivity. Study 2 examines the production of publicly visible reasoning that makes some of those judgments possible. Study 3 examines trust as the ongoing management of reliance within interaction rather than as a property of an information source. The argument that follows distinguishes judgments about whether a communicator appears trustworthy, credible, or legitimate from the interactional practices through which participants sustain reliance when those judgments about the creator may be incomplete, heterogeneous, or questionable. *Trustworthiness*, *credibility*, and *legitimacy* refer here to evaluative judgments about sources or coverage. *Trust* refers to the ongoing management of reliance within collective interaction.

Three concepts organize the argument that follows, each describing a different part of the same arrangement. *Professional standing* is the credential cues audiences bring to the stream: what the credential system provides, or fails to provide, when audiences encounter weatherfluencers. Study 1 shows it remains consequential at the level of individual evaluation while leaving the objectivity dimension unexplained. *Inspectable interpretive work* is what creators make available in that gap: the ongoing public display of reasoning, documented in Study 2, that allows evaluative dimensions like objectivity to be assessed through visible performance alone. *Interactional trust* is what audiences do with that visibility: the collective management of reliance through chat practices that Study 3 examined. Together they specify how audiences bring credentials to the stream, how creators make reasoning visible during it, and how viewers monitor whether that reasoning remains usable.

## 9.2 From Individual Evaluation to Collective Process

The studies build on one another in a specific order. Study 1 examines audience evaluation under conditions designed to elicit judgments about sources: three-minute clips, controlled comparison, multidimensional rating instruments. The findings show that credential-based evaluation remains operative and consequential at the individual level, while one dimension breaks the credential pattern. That breaking dimension marks a residual the credential framework does not fully account for, and it raises a production-side question the audience-evaluation data alone could not answer: what are creators doing during streams that makes some features of their interpretation evaluable through what the audience can observe directly?

Study 2 supplies the production-side answer. The continuous public externalization of interpretive reasoning as it unfolds, what I call *inspectable interpretive work*, is what makes performance dimensions like objectivity directly evaluable through the visible communicative act. The Study 2 findings explain the Study 1 exception by specifying the production practices that audiences are reading when credential signals are weaker or absent. Study 2 also identifies a scope condition: visibility expands what audiences can judge directly from performance, and it leaves accountability-linked dimensions where credential-based evaluation has always located them. That residual moves the problem into a different analytic frame, where audiences continue working with a creator's interpretation under unsettled standing.

Study 3 examines that frame. Chat participants work with the creator's interpretation through a structured set of interactional practices, including directed questioning, ground-truth reporting, source comparison, repair, and vouching, each of which organizes a different form of reliance across the co-present audience. These practices organize reliance on the creator in real time while the question of the creator's standing remains open. The sections that follow examine why the arrangement is stable under ordinary conditions and where it is vulnerable.

### 9.3 The Weatherfluencer Paradox

The paradox is visible across three different empirical traces, not within a single audience sample. Study 1 shows that participants evaluating short clips rated broadcast meteorologists higher than weatherfluencers on dimensions tied to institutional accountability, including trustworthiness, legitimacy, and accuracy. Study 3 shows a different kind of evidence: during active livestreams, chat participants worked with weatherfluencer interpretations through questioning, ground-truth reporting, source comparison, repair, vouching, and monetized support. Subscriber trajectories add a third trace, showing that large audiences continued to assemble around these creators even while Study 1 documented a legitimacy disadvantage for the weatherfluencer sources it tested. These data do not show that the same viewers both perceive the legitimacy gap and rely on the streams. They show that legitimacy disadvantage, audience growth, and real-time interactional use coexist in the same communication ecology. That coexistence is the weatherfluencer paradox: professional standing still matters for evaluation, but it does not prevent platform-native creators from becoming usable interpreters during active severe weather coverage.

Resolving this paradox starts with recognizing what audiences are actually evaluating. Study 1's legitimacy items collapsed empirically: within-source correlations between coverage legitimacy and presenter legitimacy ranged from .66 to .80 with no significant within-source differences, and participants treated the appropriateness of the information and the appropriateness of the person presenting it as a single evaluative target. For broadcast meteorologists, the institution of the newsroom and the presenter were bundled tightly enough that participants encountered them as one object: the meteorologist, the station, the FCC obligations, the editorial oversight, and the local accountability relationship arrived together. For weatherfluencers, the bundle assembled differently. The channel and the creator merged into a single evaluative object organized around the platform, the visible production setup, the monetization architecture, and the visible interpretive performance. Audiences encountered broadcast meteorologists and weatherfluencers as different kinds of bundled interpretive offerings, and the institutional bundle and the creator-platform bundle reduce to neither a comparison between credentialed and uncredentialed presenters nor a contrast between trustworthy and untrustworthy formats.

Within those bundles, platform itself functioned as an evaluative cue for Study 1 participants. In the clip-comparison setting, several participants described YouTube as an open-entry, monetized environment, regulated through platform rules rather than professional or broadcast standards, and lacking the accountability cues they associated with institutional employment. Some extended that platform reading to creators about whom they had little other information, treating monetization, sponsorship overlays, heightened delivery, or the absence of broadcast affiliation as cues that attention-seeking incentives might be present. This is a finding about Study 1 participants' evaluations of clips, not evidence that the observed streams in Study 2 or chat participants in Study 3 were interpreting the platform in the same way. The inference also remains imperfect: one of the two YouTube sources in Study 1 held formal meteorological training, and broadcast meteorology itself includes presenters whose training varies considerably. Under the conditions of Study 1, platform cues and professional-standing cues were bundled in participant perception even when they were

not equivalent in the evidence.

The within-platform variation that Study 1 reports confirms that audiences are doing more than reading platform as a single verdict. Max Velocity outperformed Ryan Hall on presenter legitimacy by 0.53, a magnitude descriptively comparable to the cross-platform difference of 0.52 on the same dimension. On practical utility, Max Velocity reached statistical parity from both broadcast sources across all three ranking criteria. Audiences distinguished sharply between two creators operating under identical platform conditions, drawing on what each clip made directly observable: composure, pacing, explanatory clarity, and how the presenter handled radar interpretation in real time. The platform-level cue and the within-platform discrimination operate together. Both effects appear in the same data, and neither absorbs the other.

Study 2 supplies the condition under which both findings become coherent. The continuous public externalization of interpretive reasoning as it unfolds, what I call *inspectable interpretive work*, makes weatherfluencer interpretation publicly available for scrutiny in ways that institutional credentialing does not require and broadcast formats typically do not accommodate. Visible process gives audiences access to features of interpretive performance that can be evaluated directly through what the interpreter is observably doing. When the institutional bundle dissolves at the platform interface, what remains available to audiences is the visible interpretive performance itself, and the within-platform variation Study 1 documents is what audiences are doing with that visibility.

Collins and Evans's distinction between interactional and contributory expertise locates this evaluability split precisely [37]. Interactional expertise involves sufficient familiarity with a domain's practices, vocabulary, and evidentiary standards to engage meaningfully with its reasoning: the kind of competence visible in how a creator handles model uncertainty, integrates conflicting radar signatures, and revises interpretations as conditions evolve. Contributory expertise is the capacity to produce original knowledge within the domain, the kind of competence credentials are designed to proxy. Audiences observing a creator's live interpretation can assess interactional expertise directly through the performance Study 1 documents. Contributory expertise (whether the creator's underlying meteorological knowledge is sound at the level institutional training certifies) operates outside what visible performance can reveal. The evaluability split Study 1 identifies falls at this boundary. Performance dimensions corresponding to interactional expertise become assessable through inspectability, while accountability dimensions corresponding to contributory expertise remain credential-dependent because visible performance cannot substitute for the certification that validates the underlying knowledge base. Inspectability expands what audiences can judge directly from performance and leaves the remainder where credential-based evaluation has always located it.

A co-occurring layer extends what audiences register without changing this analytic structure. Study 2 showed affective transparency in Max Velocity's April 2 stream during the Lake City Tornado Emergency: the creator's audible registration of stakes ("*I hate to say this, but this is probably a deadly tornado*"; "*God please don't hit Lake City*") running alongside continuous technical narration and protective-action guidance. The affective layer made the creator's response to what the data revealed publicly visible at the same time the radar interpretation continued. Study 1 treats this as an observed variant that appeared under specific conditions rather than as a general feature of the genre, and the present chapter follows that scope. The variant intensifies what audiences are working with by making the creator's registration of consequence available alongside the reasoning, and it does so within the same inspectability mechanism that the rest of this section develops.

Inspectability also supports a particular trust mechanism. Weatherfluencer interpretation is corrigible in a way that broadcast formats permit only intermittently: creators revise interpretations as new data arrives, mark uncertainty explicitly, and update prior claims when warnings are issued or canceled, with audiences in chat sometimes contributing the information that prompts the revision. Even radar interpretation is openly

inspected by audiences. Study 2 documents these revision practices on the production side; Study 3 documents the repair sequences through which audience contributions enter the interpretive frame. Repair appears at low frequency in the chat corpus, and the corrigibility mechanism it supports is one among several. A visible interpretation can be corrected and chat participants can collectively observe its correction, and the creator's response to this can also be publicly observed.

## 9.4 Trustworthiness and Trust as Distinct Phenomena

Study 1 and Study 3 produce findings that, on a single-construct reading of trust, would appear inconsistent. Study 1 documents that audiences evaluating broadcast meteorologists and weatherfluencers organize their judgments along the dimensions Mayer and colleagues' framework specifies, with professional markers exerting substantial influence on attributions of trustworthiness, credibility, and legitimacy [111]. Study 3 documents something quite different: chat participants engaged with a creator's interpretation through ongoing epistemic routing, source comparison, and continuous checking, with explicit credibility evaluation rare and the dominant trust-coded activity being the management of reliance as the event unfolded. The findings diverge in form and in what they place at the analytic center.

The divergence resolves once trustworthiness and trust are recognized as distinct phenomena addressing different questions. Möllering's processual description of trust treats it as a continuously enacted suspension of doubt, renewed or disrupted through each successive interaction, rather than as an evaluative verdict rendered about a person [122]. Mayer's framework specifies how attributions of trustworthiness organize through ability, benevolence, and integrity dimensions when audiences encounter a source under conditions that allow attribution to settle as a judgment. The two accounts answer different questions. Mayer's framework addresses the conditions under which a source gets evaluated: ability, benevolence, and integrity shape whether a trustor becomes willing to accept vulnerability. Möllering addresses what happens when evaluation cannot settle before action is required: trust proceeds as a suspension of doubt, renewed or disrupted through each successive interaction rather than resolved in advance.

The structural conditions of severe weather livestreams activate both. Study 1's controlled evaluative setting, with three-minute clips presented for rating, is designed to elicit Mayer-frame outputs and does so. Study 3's live interactional setting, with the event still unfolding and the creator's interpretation still being assembled, is designed to capture Möllering-frame outputs and does so. The two settings make different trust orientations observable. In the clip-comparison setting, participants produced "final answer" evaluations of sources and coverage. In the live chat setting, chat participants managed reliance while the event was still unfolding. That coexistence is itself a finding about how interpretive authority operates in platform-mediated settings, and it gives the chapter's distinction between trustworthiness as an attributed evaluative property and trust as the management of reliance within interaction the empirical anchor that the conceptual clarification in Section 9.1 introduced.

## 9.5 Configuration and Failure Mode

The pattern described in the preceding sections depends on what the stream makes visible and what chat participants can do with it. In the observed livestreams, creators did more than state conclusions about a storm. They kept radar products, NWS warnings, chaser feeds, place names, uncertainty, and revisions on screen or in narration as the account changed. Chat participants then had material to work with. They asked whether particular towns were in the path, reported sirens, hail, damage, or local conditions, compared the stream with official products or other sources, and corrected locations, warning status, or timing. Those

comments did not need to be taken up one by one to become part of the setting. Their visibility made the ongoing use of the creator's account observable to other participants while the event was still unfolding. Study 1 shows that professional standing still shaped individual evaluations of weather communicators. Study 2 shows the production practices that made the creator's reasoning inspectable. Study 3 shows the chat practices through which some viewers worked with that reasoning in real time. This section turns from those pieces to the conditions that hold them in place, the accountability gap that remains beside them, and the point at which a stable shared frame can become a problem when the interpretation is wrong.

Stability under ordinary operating conditions follows from how the components interlock. Inspectable interpretive work is continuously available so long as creators sustain the production practices Study 2 documents and the platform infrastructure remains functional. Individual chat contributions are short, often standalone, and low-cost; partial reciprocity, the structural condition through which they become collectively available, is sustained by the synchronous chat infrastructure rather than by deliberate coordination among participants [98]. This arrangement produces coordinated interpretation as a property of the setting rather than as a result that requires explicit collective effort to maintain. That is part of why it sustains across the hours of a typical severe weather event without participants needing to converge on shared judgments before each next move.

That the arrangement works so smoothly is also what renders the accountability gap practically invisible. Weatherfluencer interpretation arrives with the surface features of legible interpretive work: a creator narrating evidence, handling uncertainty, revising claims, and coordinating with other sources in real time. Those features do the work that institutional accountability does in conventional weather communication, but they do it without the institutional backstops the field has historically relied on for error correction, editorial oversight, and post-event review. The same conditions produced both the role and its detachment from the field's accountability mechanisms: federal open data policy placed professional-grade meteorological products in public reach; platform distribution infrastructure made real-time audience-facing broadcasting feasible without institutional membership; and the fragmentation of legacy media loosened broadcast television's hold on crisis information seeking. Because no organization participated in constituting the role, no organization acquired standing to govern how its authority is exercised. The visible reasoning that makes the role function for audiences is part of what makes the accountability gap difficult to register as a problem during ordinary operation.

The same conditions that produce stability also support a distinct failure mode. Cornelissen's idea of how collective commitment to a single interpretive frame can progressively foreclose alternative readings specifies the dynamic at issue [39]. Weatherfluencer communities have several of the conditions under which this foreclosure can operate. Participants who share vocabulary, community norms, and accumulated collective memory across many events develop a common interpretive baseline that supports rapid coordination under uncertainty, and that can also resist revision when the shared frame proves wrong. Creator-directed questions route uncertainty to the focal interpreter, sustaining the interpreter's framing rather than independently testing it. Ground-truth reports confirming existing expectations enter the evidentiary base and reinforce it; reports that contradict the shared frame can be treated as outliers or attribution errors rather than as grounds for revision. The interactional practices Study 3 documents are robust against the external failure conditions identified in the infrastructure analysis above. They are more vulnerable to the internal dynamics Cornelissen describes, where the mechanism's own success at stabilizing a shared interpretive frame is the condition that makes collective error durable when that frame is wrong. The intervention point for the external conditions is policy and platform design. The intervention point for the internal condition is the practices creators and communities develop for sustaining genuine revisability under social pressure to maintain interpretive continuity.

A separate scope condition applies to what visible reasoning and interactional monitoring can accomplish at all. Möllering's leap of faith, the irreducibly forward-looking suspension that no accumulation of evidence can close, remains operative in this setting [122]. Inspectable interpretive work and the interactional practices that organize reliance specify how audiences assess and continue working with a creator's interpretation as events unfold. They do not eliminate the gap between a demonstrated history of adequate performance and the irreducibly uncertain forward-looking demand of the present event. A creator who has narrated a hundred tornado events accurately has not thereby narrated this storm under these atmospheric conditions, and the reasoning audiences observe is always reasoning about something that is still developing. Visible reasoning and interactional practices help audiences work with uncertainty in real time within the limits that uncertainty itself imposes.

## 9.6 Implications for the Weather Enterprise

For the weather enterprise, the findings point to three specific pressure points: broadcast severe-weather coverage, credential visibility on platforms, and the public data and warning products that creators and chat participants use during live events. Study 1 measured how participants judged short clips. Study 2 documented how creators made reasoning visible during active coverage. Study 3 documented how chat participants worked with that reasoning in real time. The studies do not measure forecast accuracy, warning performance, or downstream protective action. They show how platform-native severe-weather interpretation can become usable while the creator's professional standing remains unsettled. The scope of that showing is bounded by a small, high-salience creator corpus; Section 9.7 returns to which of these implications hold across that boundary and which depend on the conditions the studied creators make possible. The three studies produce findings with direct implications for the institutions, professionals, and policy frameworks that constitute the U.S. weather communication system. The studies explain how collective interpretation remains coordinated under unresolved authority, while leaving open whether such coordination yields uniformly accurate forecasts or optimal downstream safety outcomes.

The broadcast implication starts with what Study 2 made visible. During active coverage, creators explained what they were looking at, named data sources, moved between radar products and warning products, marked uncertainty aloud, and revised earlier assessments as conditions changed. Those practices are not exclusive to weatherfluencers. Broadcast meteorologists already explain radar, warnings, uncertainty, and local impacts during severe weather coverage. The difference is partly format. A short television segment gives viewers less access to the running process of interpretation than a long-form digital stream, social media thread, or live severe-weather cut-in that keeps the reasoning visible while the account changes. Study 1 suggests that participants could evaluate some reasoning-quality dimensions from short clips, especially objectivity. Study 2 shows what a more continuous version of that reasoning looks like in a livestream. Broadcast meteorologists can bring institutional legitimacy and local embeddedness into formats that make more of that reasoning visible.

The CDM finding points to a narrower problem: a credential can exist without becoming visible as a credential in the setting where viewers encounter the creator. In Study 1, participants did not reliably separate the YouTube creator's formal meteorological training from the platform context in which the clip appeared. They read YouTube through cues such as monetization, sponsorship overlays, delivery style, production setup, and the absence of broadcast affiliation. The CDM program addresses professional standing, but its value for viewers depends on whether the credential is surfaced in a form they can recognize during platform use. A seal, profile marker, channel description, video overlay, or platform-level credential field would each do different work. The practical issue is legibility: whether a viewer encountering a creator through

search, recommendation, a live thumbnail, or a shared link can tell that the creator has been credentialed by a professional body and what that credential means. Credentialing alone does not govern creator practice, replace NWS warning authority, or resolve platform incentives. It can make one part of professional standing easier to read.

The NWS point begins at the level of the screen. Creators can show radar, SPC outlooks, mesoscale discussions, warning polygons, model guidance, and warning text because those products are publicly available. In Study 2, that public data substrate allowed creators to compare sources aloud, move between radar and warning products, and revise the account as new scans or official updates arrived. Study 3 shows the same infrastructure appearing in chat. Chat participants asked whether a warning applied to a place, compared the creator's reading with official products, and used warning issuance, expiration, or polygon placement to correct or clarify what others were saying. Public data supported the creator's visible reasoning. Official warning products gave chat participants a common reference they could point to while the account was changing. If those products become less accessible, less timely, or less reliable, the stream can still continue, but the shared reference linking creator narration, chat comparison, and official weather information becomes weaker.

Since early 2025, the National Weather Service has lost approximately 600 staff through terminations and buyouts, with some positions subsequently rehired [90, 165]. Approximately 40 percent of forecast offices have faced significant staff vacancies [31], more than 90 NEXRAD radar technician positions have gone unfilled, and some offices have reduced or eliminated 24/7 operations [61]. The proposed 2026 federal budget would cut NOAA's overall budget by 27 percent and eliminate the Office of Oceanic and Atmospheric Research entirely, including its research laboratories [195, 55, 165, 150]. Into the gaps created by this contraction, private infrastructure has moved. Climavision, a commercial weather technology company, operates a proprietary low-level radar network now spanning 15 states, explicitly designed to fill coverage voids it estimates affect approximately 40 percent of Americans [36]. The company reported detecting one Texas tornado 21 minutes before the federal NEXRAD system identified it [215]. Unlike NEXRAD data, which is publicly accessible under federal open data policy and freely available to weatherfluencers and audiences alike [130], Climavision's data is sold commercially and shared with NWS under a research agreement rather than released publicly [36].

Staffing losses, reduced office coverage, and commercially gated radar data press on the livestream ecology at the point where coordination depends on shared public references. The stream can still continue, and chat participants can still ask questions, offer local reports, compare sources, and correct one another. What changes is the reliability of the objects those practices point to. Source comparison becomes less reliable, ground-truth reports have a weaker official anchor, and repair has fewer common objects to point back to. Under those conditions, the process can move toward the failure mode identified in Section 9.5: parallel individual interpretation, where participants share the stream while losing the common reference needed to assemble a shared frame. The Berger report observed that federal cuts were simultaneously increasing reliance on platform-native interpreters and weakening the research and operational infrastructure on which accurate forecasting depends [22]. The configuration analysis specifies the risk: the same conditions that make platform-native interpretation more necessary can make the coordination process that supports it more fragile.

The four-part configuration developed in Section 9.9 identifies a practical engagement target for the meteorological community: the alignment practices that keep platform-native interpretation connected to the official warning chain while viewers work with contested interpreters. Abbott's jurisdictional framework in Chapter 3 explains why weatherfluencers can appear as boundary threats to professional authority. The studies add the conditions under which that jurisdictional problem becomes a coordination problem for

public weather communication. In the observed streams, creators and chat participants could work around unsettled professional standing when creators triangulated explicitly against official products, corrected interpretations as warnings were issued or canceled, distinguished creator interpretation from official warning authority, and kept NWS products visible as the reference for safety-relevant guidance. Those practices can help official warning information move through YouTube distribution spaces that broadcasters, forecast offices, and other established professionals occupy differently. The policy question becomes which conditions allow viewers to coordinate around contested interpreters reliably, and which conditions cause that coordination to fail.

### 9.6.1 Community Weather Infrastructure

The infrastructure pressure that is beginning to occur with decreased federal funding also has a less fatalistic counterpart. Regional weather networks, state mesonets<sup>1</sup>, trained NWS spotters, and volunteer observation systems show how public weather capacity can be strengthened from below when local knowledge remains connected to professional practice and open data. Tennessee Valley Weather provides all-local digital coverage for southern Tennessee, north Alabama, and northeast Mississippi; the Alabama Weather Network extends statewide streaming weather coverage in Alabama; and regional or statewide mesonets such as Wisconet, the Oklahoma Mesonet, the New York State Mesonet, and the West Texas Mesonet provide dense local observations at temporal and spatial scales that help communities read conditions near them [186, 3, 210, 143, 137, 113]. Volunteer infrastructures extend the same principle through different means. SKYWARN spotters provide severe-weather reports to NWS, CoCoRaHS volunteers measure and map precipitation, and owners of personal weather stations can share observations through CWOP and MADIS [194, 38, 193, 193]. These systems show another side of the weather information ecology: agencies, professionals, universities, regional networks, trained volunteers, hobbyists, and instrumented households can each contribute observations, interpretation, and local verification.

The promise of this community layer depends on connection to shared infrastructure. Dense surface observations can make local rainfall, wind, temperature, pressure, soil moisture, and impacts visible at scales that matter to communities, emergency managers, forecasters, and public interpreters. Their reach is bounded by the kind of data they collect. Surface stations do different work than radiosondes, which provide upper-air observations used in weather prediction models, and they do different work than NOAA satellites, which provide broad remote-sensing observations for detecting and monitoring severe weather [194, 38, 193, 193]. Community data becomes more useful when instruments are documented, observations are quality-controlled, metadata are preserved, and pathways exist for observations to enter shared systems such as MADIS or other public data infrastructures [193, 129]. The hopeful version of the future is a connected ecology: public institutions retain warning authority, open data infrastructure, forecast expertise, and post-event verification capacity, while communities contribute local observation, rapid reporting, distributed verification, and place-based weather awareness.

This community layer warrants future study on its own terms. Regional mesonets, volunteer observation systems, and personal weather station networks raise questions about maintenance, data quality, metadata, access, and governance: who keeps the instruments working, how observations become trusted, and what open-data pathways allow local observations to enter shared forecasting, warning, and public-communication systems.

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<sup>1</sup>“Mesonet” is a combination of the words “mesoscale” and “network”. In meteorology, “mesoscale” refers to weather events that range in size from about one mile to about 150 miles. Mesoscale events last from several minutes to several hours. Therefore, mesoscale weather events are phenomena that might go undetected without densely spaced weather observations. Thunderstorms, wind gusts, heatbursts, and drylines are examples of mesoscale events” [143]

## 9.7 Sample Size and the Weatherfluencer Practice

The three studies examine a small, established sample at a specific moment in the weatherfluencer ecosystem's development. The sample converges on three creators partly because the population itself is small. Few platform-native creators currently meet all five operational criteria: professional-grade radar software, streaming infrastructure, and sufficient meteorological knowledge to interpret operational data at speed are not trivial to acquire, and audience-constituted authority requires multiple storm seasons of consistent public performance to accumulate. The sample is also shaped by the three-study design itself. All three studies draw from a shared creator corpus, and each study's method imposed requirements that narrowed the selection: Study 1 needed archival clips from the same severe weather event as broadcast meteorologists; Study 2 required creators with visible, documented tool use and sufficient public archives for trace analysis; Study 3 required chat archives of sufficient volume and community depth to sustain systematic coding. Those requirements jointly converged on the high-salience, well-established end of the creator population. Ryan Hall, Texas Weather Center, and Max Velocity had each already built large cross-event audiences and associated Discord communities before the Spring 2025 outbreak periods; their interpretive practices and community norms reflect multiple storm seasons of prior audience interaction.

The findings reflect what that configuration makes possible under favorable conditions. New creators are entering the space, and severe weather interpretation now appears on platforms where the format differs materially. TikTok weatherfluencers reach audiences through a vertical, phone-first format: radar and multi-source evidence appear on a smaller screen, live chat scrolls quickly through a narrower interface column, and sustaining the kind of extended conversational exchange Study 3 documents is harder in that setting. The implications about open data dependency and NWS operational capacity are structural and apply across the creator population and across platforms, because they concern the data substrate any platform-native interpretation requires. The implications about configuration stability, community alignment, and design reflect what established YouTube creators and long-form livestreaming make possible. How they extend to newer creators, shorter formats, and different platform architectures is a question the present evidence raises but cannot answer.

## 9.8 What Platform Infrastructure Makes Possible

The platform is not only where the livestream appears. It shapes what can be seen, who can respond, and which responses remain part of the public record. Chat changes what happens to a viewer's question, report, or comparison. A person can ask whether a town is in the path, report sirens or hail, or say that an NWS product shows something different from the creator's account. Once posted, that message is available to other people watching the chat, even if the creator never responds to it directly. Multi-window streaming setups assembled through software such as OBS also matter because they let creators keep several sources visible at once: radar, warning polygons, chaser feeds, cameras, chat, and other weather products. Viewers can see some of the source switching and cross-checking that would otherwise stay behind the scenes. Monetization tools make some forms of support and attention-seeking visible through highlighted paid messages. Moderation shapes the record by determining which messages remain visible and which forms of participation are removed or discouraged. These features were not designed for safety-critical weather interpretation, but in the observed streams they helped determine how reasoning, questioning, correction, and support became public.

This conditioning has design consequences. Inspectable interpretive work emerged in the weatherfluencer case as a property of a specific structural situation rather than as the result of deliberate design. Sys-

tems can be built to surface reasoning alongside conclusions in ways that let audiences evaluate, compare, and contribute to interpretation while events are still unfolding. The design challenge is making reasoning visible in forms that people with relevant background knowledge can actually use, while supporting the interactional practices through which audiences work with that reasoning collectively. Section 9.5's analysis of the internal failure mode sets a boundary on what design can accomplish. Systems that surface reasoning alongside conclusions also support coordinated wrongness when community practices reinforce a shared interpretive frame against contradicting evidence. The design problem is two-sided: building the conditions under which audiences can work with visible reasoning collectively, while building the conditions under which that collective work remains revisable.

## 9.9 Closing the Gap: Audience-Constituted Authority

Chapter 1 introduced three forms of authority in the weather enterprise: *statutory authority* (the NWS's legal power to issue binding warnings), *professional standing* (the recognition meteorology confers through training, certification, and organizational affiliation), and *interpretive authority* (whose account audiences orient to and act on during events). That vocabulary does not name what weatherfluencer audiences do, and Chapter 3's ecological map (Table 3.1) placed weatherfluencers in a fourth row accordingly. The studies now permit a return to that placement on stronger analytic ground.

Weatherfluencers hold a partial relation to each of the first three forms, and I use that partial-fit pattern as the evidence for the fourth. The relationship to statutory authority is downstream and dependent. Weatherfluencers consume NWS radar feeds, amplify warning issuance, and organize their interpretation around the official warning chain as a shared reference (Studies 2 and 3), while the issuing power itself remains entirely with NWS. The infrastructure analysis developed in Section 9.6 shows that this dependence is structural: the public data substrate on which weatherfluencer practice rests, and the functioning warning chain around which their audiences coordinate, are conditions on the configuration rather than features of the configuration itself.

The relation to professional standing is uneven across the broader category and narrower in the empirical studies. Chapter 3 describes credential profile as one axis of variation within a small but growing population of platform-native severe-weather interpreters. Some creators hold meteorological degrees, AMS or NWA credentials, or prior professional experience; others have developed interpretive capacity through self-directed study, repeated public interpretation, storm-chasing networks, and sustained participation in weather communities. The three empirical studies do not measure the prevalence of those pathways. They focus on three high-salience YouTube creators whose archives, audiences, and production practices made the analyses possible. Within that scope, professional standing remained unsettled. Study 1 showed that participants in the clip-comparison setting still gave broadcast meteorologists advantages on dimensions tied to institutional accountability, while also distinguishing between the two YouTube presenters. One of those YouTube sources had formal meteorological training, yet participants still encountered him through the platform bundle: channel presentation, monetization cues, delivery style, visible production setup, and the absence of broadcast affiliation. Professional standing remained tangible, but its public legibility changed in the platform setting. Credentials could matter, but they reached viewers through whatever cues the channel, profile, video, and live interface made available.

The relationship to interpretive authority is where the partial fit becomes a structural mismatch. Weatherfluencers can exercise interpretive authority without holding statutory warning authority or stable professional standing. Studies 2 and 3 document both sides in detail: the production practices in Study 2, the audience practices that constitute authority in Study 3: visible reasoning in Study 2, distributed interactional

organization in Study 3. The basis on which weatherfluencers exercise interpretive authority is viewers returning to the same creator across repeated events and working publicly with that creator's interpretation: the visible reasoning makes the evaluation possible; the interactional practices sustain the reliance. The interpretive-authority category, as the weather enterprise has historically used it, presupposes that the actors who exercise it have already been positioned within one of the first two forms. Weatherfluencers exercise it from outside that positioning, and accommodating their case within the existing category would empty it of analytic content.

I use *audience-constituted interpretive authority* to name the basis on which weatherfluencers become usable interpreters in this setting. The authority at issue is interpretive: it concerns whose account viewers and chat participants work with while the weather is still unfolding. Study 2 shows the production side: creators kept radar, warning products, sources, and uncertainty publicly visible as the account changed. Study 3 shows the interactional side: chat participants directed questions, contributed local reports, compared sources, made corrections, and used paid messages to surface requests for attention. Those practices did not grant warning authority or professional certification. They showed how a creator's developing account could become worth working with while professional standing remained unsettled. The mechanism itself has precedents in sensemaking theory. Weick's crisis cases show interpretive authority emerging informally from whose account a group organizes around when formal role structures collapse; Maitlis's sense-giving framework asks whose framing wins without assuming the answer follows from formal position. In both, authority is partly constituted through the uptake of an account by others. What the weatherfluencer configuration adds is scale and visibility: the same process operates publicly, across tens of thousands of co-present viewers, through documented practices that can be observed and coded rather than inferred from group outcomes. What the studies specify is best described as *audience-constituted* authority. In the observed livestreams, viewers and chat participants helped make creators usable interpreters through a specific set of public, observable practices: questioning that routes interpretive uncertainty to the focal interpreter, ground-truth reporting that supplies distributed empirical grounding, source comparison that introduces competing accounts, repair that corrects misinterpretations, vouching that marks endorsement, and monetized support that marks costly material alignment. These practices operate independently of credentialing judgments, and they proceed while the question of professional standing remains open. They are how the creator becomes someone whose interpretation is worth working with, and worth sustaining across hours of a single event and across many events over time.

The contribution is more specific than adding a fourth authority type to the weather enterprise in the same sense as NWS warning authority or professional credentialing. Statutory authority remains with NWS. Professional standing remains the field's own measure of training, certification, and affiliation. Interpretive authority names whose account people orient to during unfolding events. Audience-constituted interpretive authority names the platformed route through which that orientation is produced around weatherfluencers: visible reasoning from the creator, public interaction from chat participants, and repeated opportunities for viewers to encounter the same creator across events. The fourth-row placement in Table 3.1 captures that route. It identifies how a non-official, variably credentialed creator can become a usable interpreter in the livestream setting without being absorbed into the existing categories of warning authority or professional standing.

This specification has consequences for how the weather enterprise engages with platform-native interpreters. If interpretive authority in this setting is constituted through audience practices rather than conferred through institutional mechanisms, then jurisdictional responses that treat weatherfluencers primarily as credentialing or accountability problems address only part of what is operating. The other part, the continuous and observable interactional work through which audiences make a creator into a usable interpreter, operates

whether or not the field grants standing. It can be supported, made more publicly legible, and connected more reliably to the official warning chain. A credentialing intervention alone cannot replace it, particularly under the platform conditions Section 9.3 describes, where the legibility infrastructure that makes professional standing publicly readable in broadcast environments operates differently on platform.

A further consequence sits beyond what these studies can settle. Subscriber and viewership trajectories suggest that viewers are increasingly turning to weatherfluencers during major events, and the configuration this chapter specifies is part of why that movement has been sustainable in the observed period.

## **9.10 Making Sense of the Weather Together**

I have shown how collective sensemaking remains coordinated when professional standing does not alone answer whose interpretation should be treated as actionable. Inspectability supplies what audiences can work with; interactional practices in chat supply how they work with it. Professional standing remains real at the level of individual evaluation while reaching audiences on platform through the bundle of cues that the platform makes available rather than through the credential signals that the weather enterprise has historically relied on. The studies show that what these conditions produce is empirically present, structurally stable under ordinary operating conditions, vulnerable along specifiable failure modes, and dependent on infrastructural conditions that are currently under pressure.

I use these findings to shift the analytic question from who should be trusted, and on what grounds, to how a shared interpretation gets worked out in public while an event is still unfolding. In severe weather livestreams, those conditions and practices are visible and structured, shaping how audiences calibrate protective action against a moving storm. Professional standing, inspectable reasoning, and interactional trust are not three separate findings but three parts of one arrangement, stable under ordinary conditions, vulnerable to the failure modes the configuration itself enables, and dependent on an open data infrastructure that is currently under pressure. The weather enterprise's three-part authority vocabulary covers what the field has historically organized and sanctioned. What it does not adequately cover is audiences making sense of the weather together: working publicly with a creator's interpretation, questioning it, supplementing it, and returning to it across events, because the arrangement makes that work possible even when the creator's standing remains unsettled.



## Chapter 10

# Study Summaries, Future Work, and Contributions

### 10.1 Summary of Studies

The three studies examine weatherfluencer livestreams as a site where collective sensemaking operates under unsettled authority, tracing how people evaluate weather interpreters, how creators make reasoning visible and inspectable, and how chat participants sustain coordinated reliance during active events.

- **Audience Evaluation of Weatherfluencers and Broadcast Meteorologists (Chapter 6):** I recruited participants to watch short clips of broadcast meteorologists and YouTube weatherfluencers covering the same severe weather event and rate them across six credibility dimensions and three safety-relevant ranking criteria. The findings showed that the socially recognized authority structure of the weather enterprise remains real and consequential at the level of individual evaluation. Broadcast meteorologists retained consistent advantages on dimensions tied to institutional accountability, including trustworthiness, credibility, and legitimacy. One dimension, perceived objectivity, broke the credential pattern, with platform-native creators reaching parity with broadcast sources. Within-platform variation between creators of different credential profiles was descriptively comparable to cross-platform variation, indicating that participants distinguished among creators on what each clip made directly observable. Overall, the institutional advantage of the weather enterprise is strong, but weatherfluencers are able to compete on perceived objectivity in their coverage.
- **Production-Level Analysis of Weatherfluencer Interpretive Practices (Chapter 7):** I examined creator-centered interpretive practices during Particularly Dangerous Situation (PDS)-designated escalation windows across three YouTube severe weather livestreams. Through focused content analysis of 13 escalation windows totaling 453 minutes, I identified a structured set of practices through which creators made the interpretive process publicly observable: visible triangulation across information sources, source hierarchy narration, knowledge translation, transparency and uncertainty narration, distributed warning networks, and temporal sensemaking strategies. I organized these practices under the concept of *inspectable interpretive work*: the production-level configuration through which creators made reasoning publicly observable during severe weather coverage. The analysis also surfaced affective transparency as a co-occurring layer in which creator registration of the stakes ran alongside continuous technical narration during peak threat conditions.

- **Trust as Interactional Work in Livestream Chat (Chapter 8):** I examined how trust operates as observable interactional work in severe weather livestream chat during tornado outbreaks. Drawing on a corpus of over 1.1 million comments across 34 streams and a stratified qualitative sample of 1,978 coded comments and 200 reconstructed micro-conversations, I documented that trust work appeared in just under half of individual comments, concentrated through three pathways: interpretive uncertainty routed to the creator through directed questioning, distributed empirical grounding through ground-truth reports and highlighting, and explicit endorsement through vouching. Vouching and repair remained relatively rare. These patterns showed trust work in this setting to be structurally organized and embedded within ongoing communicative activity, not a discrete evaluative layer that appears separately from it.

## 10.2 Contributions

### 10.2.1 Defining the Weatherfluencer as an Analytical Category

I introduce the *weatherfluencer* as an analytical category within the U.S. weather communication field and the broader crisis informatics literature. The role sits within a longer lineage of public-facing crisis information work, including digital volunteers, Humanity Road, VOSTs, CNRs, and liveblogs, that shows how disaster information has been organized through hybrid arrangements of formal responders, journalists, volunteers, and platform accounts. What the weatherfluencer adds to that lineage is a specific extension: a recurring creator-hosted channel, live prospective interpretation of operational meteorological data, and authority constituted through audience uptake across repeated events rather than through institutional mandate or volunteer coordination. The definition is specific enough to track how the role evolves as credentialing, platform governance, and NWS infrastructure continue to develop, and it does not require treating the role as wholly new to be analytically useful.

### 10.2.2 Identifying Inspectable Interpretive Work as a Structural Condition

*Inspectable interpretive work* is the production-level condition through which creators make the interpretive process publicly observable as a developing hazard unfolds: evidence use, source weighting, uncertainty narration, and claim revision become visible to audiences as the account is being built rather than after it is complete. Prior work on transparency in platform studies and crisis informatics treats disclosure as the relevant unit, covering the attribution of sources, the accessibility of warning content, and the legibility of algorithmic decisions. Its unit is the reasoning process itself, while disclosure-based accounts work at the level of the information product. When reasoning is made public as it unfolds, audiences can watch how an interpreter handles uncertainty, works across sources, revises claims, and makes that reasoning available for scrutiny. Objectivity reached statistical parity across platforms while other evaluative dimensions did not because reasoning surfaced continuously as an evaluable resource: audiences could read how an interpretation was being built, not only what it concluded. That visibility is a design property with consequences beyond severe weather communication.

The inspectability contribution follows from the legibility problem introduced in Chapter 1. When severe weather information moves through YouTube, the weather enterprise's usual shorthand travels unevenly. Credentials, newsroom affiliation, and institutional accountability may be absent from the live interface or displaced by channel branding, platform verification, subscriber counts, production style, and monetization cues. Weatherfluencers draw official materials into that interface by displaying NWS warnings, interpreting

SPC products, citing radar data, and aligning guidance with the official warning chain. Inspectable interpretive work adds a second layer of recognizability: evidence use becomes readable as the event unfolds. Viewers can see which products the creator attends to, how sources are weighted, where uncertainty enters, when a claim changes, and how viewer reports or corrections are handled. NWS retains warning authority, professional bodies retain certification, and newsroom and agency structures retain institutional accountability. The livestream makes a narrower object legible under time pressure: the creator's reasoning-in-action, visible as it unfolds rather than bundled in advance through credential and institutional standing. That narrower legibility connects the findings across the studies. Study 1 participants could evaluate objectivity from short clips because some reasoning-quality cues were visible in the performance; Study 2 documents the practices that made those cues available; Study 3 shows chat participants using visible reasoning as material for questions, local reports, source comparisons, repair, and vouching while professional standing remained unsettled.

### 10.2.3 Specifying Audience-Constituted Authority

The weather enterprise has historically organized public-safety communication around three forms of authority: statutory authority held by the National Weather Service, professional standing recognized by the meteorological field, and interpretive authority exercised by those who orient audiences during unfolding events. I specify a fourth: *audience-constituted authority*, the configuration through which audiences in severe weather livestreams make creators into usable interpreters through public, observable practices. The basis for this authority is viewers returning to the same creator across repeated events and publicly working with that creator's interpretation, sustained through visible reasoning that makes evaluation possible and through interactional practices that organize reliance in real time. My claim is narrower than treating audience-constituted authority as equivalent to NWS warning authority or professional certification. I show that interpretive authority can be exercised when constituted through audience uptake rather than conferred institutionally, and that this exercise has structural conditions, observable mechanisms, and specifiable failure modes. The fourth-row placement in the ecological map developed in Chapter 3 is what the partial-fit pattern across the existing three forms requires.

## 10.3 Limitations

The three studies examine an established, high-salience tier of weatherfluencer practice at a specific moment in the ecosystem's development. However, several limitations of this work bear on how the findings should be interpreted.

The first concerns temporal scope. The three studies are organized within single events, capturing how creators and audiences interact during particular streams rather than across longer histories of repeated exposure. Many weatherfluencer audiences enter a stream from different starting points: some watching a creator for the first time, others returning after months or years of prior streams. Accumulated familiarity likely shapes how quickly viewers defer, how intensely they scrutinize, and how they interpret visible reasoning during the event. Those longer-term audience histories sit outside the present design.

A second concerns audience knowledge. The studies do not differentiate viewers by meteorological literacy, and background knowledge likely shapes what audiences can do with the reasoning made visible in the stream. A viewer who can independently assess radar interpretation, uncertainty calibration, or model disagreement is in a different position from one for whom the same signals are visible without being readily interpretable. Visible reasoning is useful as an evaluative resource to the extent that audiences can make

sense of it, and differences in background knowledge remain an important scope condition on the findings.

A third concerns hazard specificity. The three studies focus on tornado outbreak contexts, which involve rapid onset, high uncertainty, and compressed decision windows. Other hazard types such as hurricanes, winter storms, and slow-onset flooding may produce different participation patterns, different temporal orientations in creator narration, and different ways of working with a creator's interpretation as conditions unfold. Whether the same general process appears across hazard types remains an open empirical question.

A fourth concerns platform specificity. The three studies are situated on YouTube, and the interactional patterns documented here are partly shaped by YouTube's specific architecture: a high-velocity non-threaded chat stream, the public visibility of audience responses to all co-present viewers, the synchronous co-presence of large audiences around a single unfolding stream, and a Super Chat economy that places financially enacted engagement alongside ordinary chat. Platforms with different architectural properties may organize participation differently. Twitch channel points, Facebook Live's reply structures, and newer platforms with different moderation tools each create different conditions for visibility, responsiveness, and collective participation. Whether similar forms of public working-through appear across other synchronous creator-centered information streams remains an open empirical question.

A fifth concerns creator selection. The studies examine prominent, established creators who have already accumulated large and repeated audiences. These creators have survived a period of prior audience evaluation; their interpretive practices are calibrated to viewers who return across events, and their relational positioning in the livestream environment differs from that of a newcomer. The mechanisms I identify may face more pressure for smaller or newer creators whose interpretive track records are still being built in real time. The framework does not directly address the case of a creator whose visible reasoning is incompetent, where inspectability would function as a liability rather than a resource.

Coverage decisions and operational availability introduce a closely related constraint. The studies examine archived streams from events that creators chose to cover; they do not address when or whether creators decide to stream in the first place. Coverage can be individual and discretionary: a creator determines whether a given outbreak warrants a livestream based on their own reading of the SPC outlook and their own availability. When a creator decides not to stream, or is otherwise unavailable, there is no institutional backup. Broadcast stations maintain multiple meteorologists and institutional obligations to provide coverage during active severe weather events regardless of individual availability; platform-native creators operate under neither constraint. The studies also do not address whether weatherfluencers have any formal or informal connections to local emergency management, or how official response organizations account for platform-native coverage during active events.

Discovery and platform visibility sit outside all three studies. Study 1 participants evaluated selected clips, Study 2 analyzed creators already visible enough to produce large archived streams, and Study 3 examined chat participants who had already arrived in the livestream environment. I did not study how viewers first found these creators, whether through YouTube search and recommendation, subscriptions, notifications, thumbnails, cross-platform sharing, weather communities, interpersonal recommendation, or prior exposure during earlier events. Those discovery pathways likely shape which creators become available as possible weather sources and how viewers interpret them once they arrive. The findings describe how visible creators and participating viewers organize interpretation within the stream; they do not explain how platform visibility, community circulation, or repeated severe-weather events make some creators recognizable weather information sources in the first place.

Finally, the three studies examine observable exteriors. The production-level analysis examines what creators produce and make visible; the audience evaluation study captures what participants report in a survey and interview setting; the chat study examines what appears in the comment record. None have access to

the private cognitive processes through which individual viewers assess reasoning quality, integrate creator interpretations with prior beliefs, or decide on protective action. The account I develop is interactional and structural. It specifies the conditions and practices that allow collective sensemaking to remain coordinated, while leaving open the individual psychological mechanics through which any particular viewer navigates the experience.

## 10.4 Future Directions

The most direct extension concerns longitudinal dynamics. The studies examine how audiences work with a creator's interpretation within single events and repeated exposure across many streams may change that process. Viewers who return to the same creator over multiple storm seasons may begin later events with accumulated expectations about the creator's judgment, uncertainty calibration, and repair practices. Scrutiny may diminish for well-established creators, intensify for newcomers, or shift when a creator's performance departs from an established pattern. Longitudinal comparison across the early and mature phases of weatherfluencer practice would make it possible to examine how repeated exposure reshapes evaluation, the willingness to rely on a creator's interpretation, and the interactional norms that develop through co-presence across outbreak seasons. How credibility is built, sustained, and eroded across events, and how accumulated familiarity changes collective sensemaking in later streams, remains outside the current design.

The framework also points toward a design-relevant future direction. Inspectable interpretive work arises in the weatherfluencer context as an emergent property of a specific structural situation: the absence of credential infrastructure, combined with the accountability pressure of live audiences and the real-time visibility of synchronous streaming. Systems that surface interpretive reasoning alongside conclusions, as an ongoing evaluable resource rather than as a transparency gesture, could make similar forms of public, real-time interpretation possible in other domains where authority is unsettled. Health communication platforms where lay audiences navigate competing interpretive accounts, crisis information systems where official and unofficial sources operate simultaneously, and financial or legal analysis environments where professional standing does not reliably answer whose interpretation should be treated as actionable all face related coordination problems.

## 10.5 Conclusion

Severe weather livestreams operate without the role structure that organizational sensemaking theory typically locates as the resolution to questions of whose interpretation to coordinate around. There is no weather-enterprise-sanctioned position, no credential infrastructure that reaches audiences reliably on platform, no professional standing made publicly legible the way broadcast contexts make it. Sensemaking proceeds anyway, coordinated through the ongoing public management of reliance on a visible interpretive process.

The three studies show how that sensemaking proceeds regardless of the authoritative status of the weatherfluencer at the helm. Inspectable interpretive work is the structural condition: when interpretive reasoning becomes continuously observable, audiences can watch how the interpretation is being built, see how uncertainty is narrated, and observe whether revisions track changing conditions. Live chat makes visible how participants work with that reasoning collectively. Through directed questioning, ground-truth reporting, source comparison, repair, and vouching, chat participants sustain coordinated reliance on the creator's developing account while the storm is still unfolding. The practices are not decorative features of the chat interface. They are how collective sensemaking happens in this setting at all.

The question that organizes the dissertation is not who is trusted but how a shared interpretation gets assembled in public while the storm is still unfolding and the creator's standing remains in dispute. The structural condition that prompts this shift, where credential markers reach audiences primarily through whatever bundle of cues a platform makes available rather than through the legibility infrastructure the weather enterprise built around broadcast, may extend to other domains where consequential public interpretation is moving onto platforms. Whether the conditions that make visible reasoning useful in severe weather livestreams operate similarly elsewhere is a question these studies motivate rather than answer

For HCI and CSCW specifically, inspectable interpretive work names a design property. Systems that surface reasoning alongside conclusions create conditions under which audiences can evaluate interpretation as it unfolds rather than only before or after the fact. The weatherfluencer case is a naturally occurring instance of that condition, generated through the structural pressures of a role performed live and outside the professional supports of the weather enterprise. Viewers given access to visible reasoning sustained coordinated collective sensemaking under conditions that prior accounts would suggest should make coordination difficult. In this setting, visible reasoning becomes a shared working surface. Viewers use it to ask questions, add local evidence, compare sources, and correct parts of the interpretation while the event is still unfolding. Severe weather livestreams make this process visible in chat streams where participants are watching tornadoes on radar and deciding what to do.

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## Appendix A

# Grok Queries and Selected #WxTwitter Tweets (Ch. 3)

### A.0.1 Queries

The following table documents the complete query log from the Grok-assisted #WxTwitter discourse search conducted in support of Chapter 3. Grok is Twitter/X’s native AI agent and can perform basic natural language searches within its interface, retrieving semantically relevant posts from across the platform’s public corpus.

Queries were issued iteratively across several sessions, beginning with broad orientation to the #WxTwitter community and narrowing progressively toward the specific discourse topics that inform Chapter3’s definitional arguments, including credentialing disputes, hype criticism, boundary work, parasocial dynamics, and monetization practices. The search was purposive rather than exhaustive: queries were formulated to surface illustrative instances of discourse patterns identified through prior engagement with the #WxTwitter community and through the field-level analysis developed in Chapter 3.

| Query                                                                                                                 | Topical Cluster       |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------|
| State of #WxTwitter: culture, key figures (Ryan Hall, Max Velocity, Y’albot), live-streaming accounts, controversies  | Community Overview    |
| Controversies over the term “digital meteorologist”; credentialing debates; AMS CDM vs. self-applied title            | Digital Meteorologist |
| Implications of the “digital meteorologist” label: democratization, misinformation risks, diluted expertise standards | Digital Meteorologist |
| Additional #WxTwitter discourse relevant to digital meteorologists and AI use                                         | Community Overview    |
| When did the term “weatherfluencer” first appear on Twitter/X? Earliest uses and conceptual evolution                 | Term Origins          |
| Ryan Hall’s livestreaming trajectory 2018–2026; YouTube livestreaming adoption history; early adopters                | Platform History      |
| Why Mayfield (December 2021) was an inflection point for weatherfluencer growth                                       | Platform History      |

*Continued on next page*

Table A.1 continued from previous page

| Query                                                                                                                                                                   | Topical Cluster                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| Active severe weather livestreamers: subscriber counts and event viewership; “wx” handle account breakdown by type; peak concurrent viewership during Winter Storm Fern | Scale / Population              |
| Why YouTube vs. other platforms; platform algorithm effects on content; livestreaming vs. pre-recorded content; managing multiple platforms simultaneously              | Platform Affordances            |
| Radar app usage on stream (RadarScope, RadarOmega, WeatherWise); chaser feed integration and coordination practices                                                     | Technical<br>Infrastructure     |
| Winter Storm Fern coverage timeline; audience geographic requests; weatherfluencer framing of forecast uncertainty                                                      | Event Coverage /<br>Forecasting |
| Explaining radar velocity, correlation coefficient, and other technical products on stream; reasoning narration; real-time corrections                                  | Technical<br>Communication      |
| Retrospective, nowcasting, and prospective mode-switching; “how we got here” vs. “what’s happening now”                                                                 | Forecasting Practices           |
| SuperChat criticism and defense during tornado warnings; ad reads during severe weather; tension between monetization and public service                                | Monetization                    |
| Heated exchanges about credentialing; credential display in bios and on-screen; criticism for lack of credentials and creator responses                                 | CDM / Credentialing             |
| Thumbnails and stream titles criticized as clickbait or hype; long-range (7–10 day) forecast controversies; Ryan Hall’s public defense of his practices                 | Thumbnail /<br>#DisasterPorn    |
| Weatherfluencers differentiating themselves from journalists; being quoted by traditional news outlets; community distinction between commentary and forecasting        | Journalism Boundary             |
| Life-safety disclaimers; accounts of being credited with saving lives; community accountability discourse when forecasts bust                                           | Safety-Critical<br>Language     |
| Scale variation across creator tiers; technical vs. accessible presentation styles; regional vs. national coverage framing                                              | Scale / Variation               |
| Fan defense of creators against criticism; fan-community drama; parasocial language in audience descriptions of creator relationships                                   | Parasocial / Fandom             |
| Collaboration during events (chaser feeds, cross-promotion); poaching controversy; community discourse on financial support                                             | Collaboration /<br>Competition  |
| Creator self-descriptions and “about” statements; explicit boundary-setting (what weatherfluencers say they are <i>not</i> ); AMS CDM as credential signal              | Creator Boundaries              |
| Other radar-interpretation livestreamers outside the top tier; uncovered community dynamics; AI impact on forecasting and weatherfluencer content                       | Community Overview<br>/ AI      |

Table A.1: Grok Query Log: AI-Assisted Search of #WxTwitter Discourse

*Note.* Queries were formulated as natural-language semantic searches via Grok, Twitter/X’s AI-assisted search interface, rather than as keyword or hashtag filters. The search was purposive and iterative; the query log reflects the full sequence of prompts issued during a single extended session. Full query export is preserved in the dissertation archive. All posts selected for citation were independently verified as publicly accessible as of April 16, 2026.

## A.0.2 Selected Tweets and Community Discourse Posts

Tweets and related community discourse posts referenced in Chapter 3 are listed in Table A.2 below. Posts were initially surfaced through Grok-assisted searches of public X/Twitter discourse and were then manually verified for existence and verbatim accuracy prior to inclusion. The “Query Context” column indicates the search context through which a post was retrieved and is provided only to orient the reader to the surrounding discourse; it does not constitute a formal coding scheme. Entries marked *pattern* indicate recurring discourse documented across multiple posts within the date range indicated rather than a single discrete post. Engagement figures, where reported, were recorded at time of access and are subject to change. It should be noted that LLM’s can hallucinate data. The tweets in this table have been verified as real and verbatim from their authors.

Table A.2: Extracted tweets from Grok-assisted retrieval.

| ID | Account          | Date         | Context                   | Verbatim Excerpt / Link                                                                                                                                                                                                                                                                           |
|----|------------------|--------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T1 | @ryanhallyall    | Jan 21, 2026 | Fern: uncertainty framing | “Many of the models shifted north last night but the overall story remains the same, a particularly dangerous winter storm is on the way.”<br>Post                                                                                                                                                |
| T2 | @MaxVelocityWX   | Jan 21, 2026 | Fern: threat framing      | “MAJOR WINTER STORM is set to slam the United States, beginning Friday, with very dangerous ice and heavy snow expected. NOW is the time to prepare. . . You should prepare now for the potential of power outages, major travel problems, and pipe bursts with extreme cold on the way.”<br>Post |
| T3 | @snoweeniepatrol | Jan 20, 2026 | Fern: discourse conflict  | “Everyone on this platform flip flops with every stinkin run. The hobbyists & degreed mets try to outsmart their X weather guess competition.”<br>Post                                                                                                                                            |

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| ID  | Account         | Date         | Context                           | Verbatim Excerpt / Link                                                                                                                                                                                                                           |
|-----|-----------------|--------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T4  | @mjoneill171    | Jan 21, 2026 | Fern: expertise norms             | “Responsible wx experts don’t call out people on X for suggesting ‘hey, this seems like it’s ticking north some’ 5+ days out. They let things happen.”<br>Post                                                                                    |
| T5  | @ryanhallyall   | Jan 22, 2026 | Fern: spectacle framing           | “This winter storm has been marketed like a Marvel movie...”<br>Post                                                                                                                                                                              |
| T6  | @ryanhallyall   | Jan 21, 2026 | Fern: PR framing                  | “This storm has its own PR team and honestly they’re killing it.”<br>Post                                                                                                                                                                         |
| T7  | @ryanhallyall   | Jan 23, 2026 | Fern: livestream coverage         | “We’re LIVE with Major Winter Storm PRE-Coverage. Walking through forecast models, timing, and expected impacts before this system moves in.”<br>Post                                                                                             |
| T8  | @seminoleraider | Jan 21, 2026 | Fern: click-bait critique         | “I have yet to go to bed confident about where this storm is going because it’s nearly impossible to sift through all the click bait farmers begging for clicks.”<br>Post                                                                         |
| T9  | @MaxVelocityWX  | Jan 21, 2026 | Fern: exploding trees             | “EXPLODING TREES are possible in the Midwest and Northern Plains on Friday and Saturday, as temperatures are forecasted to fall 20 degrees BELOW zero!”<br>Post                                                                                   |
| T10 | @MaxVelocityWX  | Jan 23, 2026 | Fern: exploding trees explanation | “EXPLODING TREES are possible in the Midwest TONIGHT... trees cannot adjust to the cold, leading to sap and water inside the tree freezing... the tree trunk or branches split, leading to a loud noise... heard from up to a mile away.”<br>Post |
| T11 | @ChasingWConnor | Jan 22, 2026 | Fern: meme critique               | “Facebook weather pages after convincing millions of people that their trees are going to explode like bombs this weekend”<br>Post                                                                                                                |
| T12 | @MaxVelocityWX  | Jan 21, 2026 | Fern: cross-platform mention      | “Pat McAfee has never heard of exploding trees before... if you need a winter storm breakdown on the show tomorrow, I gotchu”<br>Post                                                                                                             |

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Table continued from previous page

| ID  | Account          | Date         | Context                   | Verbatim Excerpt / Link                                                                                                                                                                                                                                                                 |
|-----|------------------|--------------|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T13 | @Thelegends2718  | Jan 23, 2026 | Influencer legitimacy     | “What a historic moment for @ryanhallyall. Gov Wes Moore just joined a YouTube Stream. #Wxtwitter”<br>Post                                                                                                                                                                              |
| T14 | @Jonathan_A_Hand | Jan 22, 2026 | Comparative credibility   | “You think he’s bad check out Max Velocity, Ryan has actually been really effective particularly in early severe storm and tornado warnings Max Velocity is the king of clickbait ‘this could be really bad’ with an exaggerated map of red over 3/4 of the country”<br>Post            |
| T15 | @tractor_owner   | Jan 23, 2026 | Audience switching        | “I am officially leaving Ryan Hall as my Youtube weather guy over his annoying usage of AI bots etc and moving to Max Velocity who is also annoying but I have to stand for something.”<br>Post                                                                                         |
| T16 | @alison_aldred   | Jan 21, 2026 | Professional expectations | “I dig Max and follow him. Just hope he leans into more professional or critical approach b/c storm prediction messaging as proactive can be literally life saving. As weather events continue to present as legitimate threats having reliable voices amid the static matters”<br>Post |
| T17 | @RyanMaue        | Nov 24, 2025 | Credentials debate        | “A lot of weather content makers here on X and YouTube do not have meteorology related (or any) college degrees. . . Credentials != expertise / experience.”<br>Post                                                                                                                    |
| T18 | @ChrisMartzWX    | Dec 1, 2025  | Credential defense        | “You stated that I have no credentials. I posted them. You were proven wrong. . . A meteorologist. . . is someone who possesses at least a BSc in meteorology. . .”<br>Post                                                                                                             |
| T19 | @ChrisMartzWX    | Feb 15, 2026 | Credential defense        | “This apparently needs to be addressed again. . . I am in fact a meteorologist. I hold a BSc in meteorology. . .”<br>Post                                                                                                                                                               |

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| ID  | Account         | Date         | Context                    | Verbatim Excerpt / Link                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----|-----------------|--------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T20 | @spann          | Feb 6, 2026  | AI slop pattern            | <p>“AI SLOP: This problem will never go away, but the amount of AI ‘slop’ from social media engagement farms continues to grow exponentially. Why do I care? When dramatic, fake forecasts like these don’t verify (and they almost never do), people start lumping legitimate meteorologists in with the nonsense. Eventually you hear: ‘They’re always wrong.’ That loss of trust is dangerous, especially when a real warning finally does come.”</p> <p>Post</p> |
| T21 | @ChrisMartzWX   | Jan 27, 2026 | Forecasting norms critique | <p>“I am becoming sick and tired of both weather hobbyists and degreed meteorologists alike posting model run after model run days in advance of a winter storm. They will take to social media and note every tiny shift in the location of the vortmax, surface low, or rain/snow line.”</p> <p>Post</p>                                                                                                                                                           |
| T22 | @BitterReloaded | Feb 23, 2026 | AI slop critique           | <p>“More fake AI slop and attempts by @ryan-hallyall to make money on false panic. He’s been doing this all night with this storm. Fake claims of buildings falling &amp; snow where there was none. I’m insanely disappointed in how unethical it is they take this crap to air.”</p> <p>Post</p>                                                                                                                                                                   |
| T23 | @snowdle_wx     | Apr 8, 2026  | Hype critique              | <p>“Dude EXACTLY. That’s the thing. The idiots at the weather channel and wannabe TikTok meteorologists spammed the public with those crazy amounts 6 days before which had people throw away money and panic buy for a storm that ended up completely trending away for most in the south.”</p> <p>Post</p>                                                                                                                                                         |
| T24 | @jdean1         | Apr 9, 2026  | AI / bot sarcasm           | <p>“Thanks Y’allBot. Keep us posted as the models develop. No hype just reliable information as always.”</p> <p>Post</p>                                                                                                                                                                                                                                                                                                                                             |

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| ID  | Account          | Date         | Context                   | Verbatim Excerpt / Link                                                                                                                                                                                                                                                                     |
|-----|------------------|--------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T25 | @razorbackjfk    | Apr 10, 2026 | Panic critique            | “have u watched his live streams, the will use 1,347,376 Times in a 6 Hr live Stream,, well people like me who live in those areas were Severe Storms happen all the time, and who have lived thru and survived a F-4 as a young kid, don’t appreciate some dweeb causing panic!!!”<br>Post |
| T26 | @Danilogrkovich2 | Apr 7, 2026  | Clickbait critique        | “zzzzzzzzzz... bull sh*t. cheap engagement farming. Long-range models show no such strong, consistent signal. Rather, maybe a fleeting trough passage or maybe brief moisture return. Nothing epic. this is clickbait.”<br>Post                                                             |
| T27 | @J_alan23        | Apr 7, 2026  | Clickbait critique        | “The weekly tornado outbreak forecast. Clickbait!!!!”<br>Post                                                                                                                                                                                                                               |
| T28 | @psuNate2000     | Apr 10, 2026 | Anti-influencer critique  | “Hype nonsense from pretend weatherman.”<br>Post                                                                                                                                                                                                                                            |
| T29 | @jayyol___       | Apr 8, 2026  | Uncertainty norm critique | “Quit trying to hype and scare people yes there is a threat for svr wx but severity is still blurry to call ‘dangerous’ everyone just keep checking back and stay updated as the days get closer the details will be more clear”<br>Post                                                    |
| T30 | @70redstar       | Apr 7, 2026  | Fake-content critique     | “Comeon Ryan ... it’s fake & Ghey !”<br>Post                                                                                                                                                                                                                                                |



## Appendix B

# Semi-Structured Interview Protocol (Ch. 6)

### B.1 Study 1 Interview Materials

This appendix provides the semi-structured interview protocol used in Study 1. The interview was designed to elicit participants' weather-checking habits, prior experiences with severe weather, perceptions of severe weather coverage across broadcast and livestream formats, and reasoning about trust, credibility, legitimacy, objectivity, and safety decision-making.

#### Interview Preamble

*Estimated time: 5 minutes*

Hello, how are you? Nice to meet you. Where are you calling in from?

Thank you for taking the time to speak with me. I am part of a team at the University of Washington studying perceptions of TV meteorologists compared with weather communicators who operate primarily online. Our goal is to understand what signals people take into account when assessing who to trust with severe weather information.

The plan today is to begin with a few brief questions about your weather-checking habits in general. Then, I will ask you to complete a short survey about your perceptions of several video clips. After the survey, we will discuss your reactions to those clips in more depth.

There are no right or wrong answers. We are interested in your perspective on the information in front of you.

Does that sound like a plan?

We asked you to sign a consent form before participating, and I see that we have that on record. Do you have any questions about the consent form?

Lastly, do I have your consent to record this interview? The recording will only be used to generate a transcript for later reference.

*[Start recording.]*

## **B.2 Phase 1: Background and Weather-Checking Habits**

*Estimated time: 10 minutes*

### **Background on Severe Weather Experiences**

1. In what area of the country do you currently live?
2. Can you briefly describe your experience with severe or extreme weather?
3. What are some severe or extreme weather events you have experienced in the recent past?
4. Do you have any formal training or knowledge in meteorology?
5. Would you describe yourself as a weather hobbyist or enthusiast?
6. Why do you follow Matt Lanza?

### **Current Weather Information Habits**

1. How often would you say you check the weather in your day-to-day life?
2. Where do you usually get information about the weather?
3. Generally speaking, what are some reasons why you check the weather?

## **B.3 Phase 2: Video Viewing and Survey**

*Estimated time: 20 minutes*

Awesome, thank you for that background information.

In this next part of the study, I will give you a link to a survey that will show you four weather reporting clips from a few different sources. The survey will ask you to answer questions about trust, legitimacy, and credibility for each video clip.

The survey should take about 15–20 minutes. While you are completing it, you can turn off your camera and audio, and there is no need to share your screen. When you are done, please let me know by raising your hand in Zoom or typing in the chat.

Does that sound like a plan?

Okay, we will come back at \_\_\_\_\_.

*[Deploy survey link in chat.]*

Survey link: [exact link omitted from copy]

## **B.4 Phase 3: Post-Survey Interview**

*Estimated time: 30 minutes*

Thanks for completing the survey. To provide some context, the four clips you watched included two from traditional TV broadcasts and two from online livestreams.

I am also sharing a page where we can review the clips together:

[exactlinkomittedfromcopy]

I would love to hear your thoughts on what you just watched. Before we discuss the clips in more detail, were you familiar with Ryan Hall or Max Velocity before watching these clips?

### **Trustworthiness and Credibility Signals**

1. What specific aspects of the presenters' style or content influenced how much you trusted them?
2. What specific aspects influenced whether you found them credible?
3. Were there particular things they did or said that enhanced your trust?
4. Were there particular things they did or said that reduced your trust?

### **Format Comparison**

1. Thinking about the TV broadcasts versus the online livestreams you watched, which format seemed to provide advantages for severe weather coverage?
2. What specific elements created those advantages?
3. Were there certain aspects where one format consistently outperformed the other?
4. Did the real-time nature of the coverage matter? If so, how?

### **Visual Effectiveness and Information Clarity**

1. Which visual approaches were most helpful for understanding the weather situation across the videos you watched?
2. Which explanation styles were most helpful?
3. Did storm chaser footage or references to storm chasers affect how you understood or evaluated the coverage?

### **Objectivity and Accuracy Assessment**

1. In the survey, you rated each video on objectivity and accuracy. Looking specifically at the factual information presented, such as radar data, storm locations, and predicted paths, what elements made you believe some presentations were providing more correct information than others?
2. How would you determine whether someone knows what they are talking about when they present severe weather information?

## **Legitimacy Perception**

1. What differences did you notice between TV and livestream formats that affected how legitimate the coverage seemed?
2. What differences affected how officially authorized the presenters seemed?
3. Did the platform, source, or presentation format change how you evaluated the presenter's authority?

## **Decision-Making Utility**

1. If you were in the path of this severe weather, what specific information would most influence your decision to take protective action?
2. What presentation elements would most influence your decision to take protective action?
3. Which format do you think would give you better information for making safety decisions?
4. Does location matter when deciding which source to rely on?

## **Integration for Real-World Application**

1. If you were experiencing this severe weather event in real time, which source would you use to understand what to do if you were in the path of the line of storms?
2. Would you use one source, or would you combine multiple sources?
3. What would make you switch from one source to another during a severe weather event?

## **Wrap-Up Questions**

1. In the context of federal cuts to the National Weather Service, how might you see the landscape of media weather coverage changing?
2. Do you think changes to the National Weather Service could open up the field for other kinds of weather communicators?
3. Beyond what we have discussed, is there anything else you were thinking about that we did not touch upon?

## **Outro**

Thank you so much for sharing your insights today. I really appreciate your time and perspective.

## **B.5 Supplementary Repository Materials**

Supplementary Study 1 analysis materials are available in the project repository: <https://github.com/julievera/weatherstudy>. These materials include the analysis notebook and documentation used to inspect the survey-analysis workflow, aggregate statistical summaries, and robustness checks. The repository does not include interview recordings, interview transcripts, participant identifiers, or raw individual-level response files.

## Appendix C

# Note-Taking Templates and Codebook (Ch.7)

### C.1 PDS Warning Analysis Template

This appendix provides the analysis templates used in Chapter 7 to code weatherfluencer livestreams and live chats during Particularly Dangerous Situation (PDS) warnings.

#### PDS Warning Capture

| Warning        | Preview | Start   | End     | Postview | Dur.   | Location   | Notes |
|----------------|---------|---------|---------|----------|--------|------------|-------|
| PDS Warning #1 | 4:12 PM | 4:17 PM | 4:52 PM | 4:57 PM  | 40 min | Norman, OK | –     |
| PDS Warning #2 | 5:03 PM | 5:08 PM | 5:41 PM | 5:46 PM  | 38 min | Moore, OK  | –     |
| PDS Warning #3 | 7:07 PM | 8:55 PM | 8:59 PM | 10:46 PM | 38 min | Enid, OK   | –     |

#### Individual PDS Warning Analysis

| Domain                 | Code                      | Time Example/Quote | Notes |
|------------------------|---------------------------|--------------------|-------|
| Collective Sensemaking | Information Triangulation |                    |       |
|                        | Query-driven              |                    |       |
| Sensemaking Process    | Knowledge Scaffolding     |                    |       |
|                        | Transparency              |                    |       |
| Temporal Orientation   | Real-time Interpretation  |                    |       |
|                        | Speculation               |                    |       |
| Platform Affordances   | Visual Affordances        |                    |       |
|                        | Platform Limitations      |                    |       |

## C.2 Codebook: Themes, Codes, Descriptions, and Examples

Table C.1: A lightweight, focused coding schema for weather communication analysis

| Theme                                |                      | Code                            | Description                                                                                                             | Example                                                                                                                                                                                                              |
|--------------------------------------|----------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Collective making                    | Sense-               | Information Triangulation       | Audience providing ground observations that confirm or challenge radar data                                             | “Thanks for that report from Tulsa about the hail size. That matches what the radar signature suggests.”                                                                                                             |
| Collective making                    | Sense-               | Query-driven                    | Creator redirecting attention based on audience questions or concerns                                                   | “Several people are asking about the storm near Oklahoma City. Let me switch to that cell and explain what I’m seeing.”                                                                                              |
| Sensemaking                          |                      | Knowledge Scaffolding           | Creator building understanding by connecting technical data to familiar concepts, often through educational explanation | “See this hook echo and red-green velocity couplet? It’s like looking at two gears turning against each other. When they’re this tight and intense, it shows strong rotation that often precedes tornado formation.” |
| Sensemaking                          |                      | Transparency                    | Creator verbally working through their analysis process so audience members can follow the basis for an interpretation  | “I’m looking at the velocity data here. The red next to green tells me it’s rotating, and combined with this debris signature, that suggests a tornado is likely forming right now.”                                 |
| Temporality                          |                      | Retrospective framing           | Recalling earlier events to interpret current storm behavior                                                            | “This is similar to what we saw in Moore earlier today.”                                                                                                                                                             |
| Temporality                          |                      | Real-time interpretation        | Describing or inferring live radar activity as it unfolds                                                               | “We’re seeing a debris ball form right now.”                                                                                                                                                                         |
| Temporality                          |                      | Speculation                     | Predicting future movement, timing, or risk                                                                             | “This storm is likely headed toward Tuscaloosa in 30 minutes.”                                                                                                                                                       |
| Temporality                          |                      | Temporal uncertainty            | Expressing limits of temporal knowledge or forecast confidence                                                          | “It’s hard to say how fast this is moving; it keeps shifting.”                                                                                                                                                       |
| Platform affordances and constraints | affordances and con- | Attention to visual affordances | Use of radar, maps, traffic cameras, or graphics to support interpretation                                              | “Here on the left, you can see the hook echo developing.” “Let’s pull up a traffic cam to get a better look at this storm.”                                                                                          |
| Platform affordances and constraints | affordances and con- | Platform limitations            | Commenting on interface constraints, chat flow, lag, stream interruption, or missing sources                            | “Looks like we lost our storm chaser.”                                                                                                                                                                               |

## Appendix D

# Event Sampling Allocations and Codebooks (Ch. 8)

### D.1 Sampling Allocation by Creator and Event

Table D.1: Per-event sampling allocation for the Study 3 coded comment sample. Available = substantive comments after filtering and 15-minute exclusion. Floor = minimum guaranteed allocation (30 per event). Proportional = additional comments allocated based on corpus share. Target = total sampled. % of event = target as a percentage of available comments for that event.

| Creator                                             | Event Date | Available | Floor | Proportional | Target | % of Event |
|-----------------------------------------------------|------------|-----------|-------|--------------|--------|------------|
| <i>Ryan Hall (12 events, total target = 868)</i>    |            |           |       |              |        |            |
| Ryan Hall                                           | 2025-03-14 | 45,198    | 30    | 47           | 77     | 0.17       |
| Ryan Hall                                           | 2025-03-15 | 35,565    | 30    | 37           | 67     | 0.19       |
| Ryan Hall                                           | 2025-04-02 | 68,833    | 30    | 72           | 102    | 0.15       |
| Ryan Hall                                           | 2025-04-03 | 39,331    | 30    | 41           | 71     | 0.18       |
| Ryan Hall                                           | 2025-04-04 | 32,190    | 30    | 34           | 64     | 0.20       |
| Ryan Hall                                           | 2025-04-05 | 40,054    | 30    | 42           | 72     | 0.18       |
| Ryan Hall                                           | 2025-05-15 | 36,085    | 30    | 38           | 68     | 0.19       |
| Ryan Hall                                           | 2025-05-16 | 50,251    | 30    | 53           | 83     | 0.17       |
| Ryan Hall                                           | 2025-05-18 | 36,948    | 30    | 39           | 69     | 0.19       |
| Ryan Hall                                           | 2025-05-19 | 44,463    | 30    | 47           | 77     | 0.17       |
| Ryan Hall                                           | 2025-05-20 | 44,782    | 30    | 47           | 77     | 0.17       |
| Ryan Hall                                           | 2025-06-21 | 11,036    | 30    | 11           | 41     | 0.37       |
| <i>Max Velocity (14 events, total target = 877)</i> |            |           |       |              |        |            |
| Max Velocity                                        | 2025-03-14 | 49,458    | 30    | 52           | 82     | 0.17       |
| Max Velocity                                        | 2025-03-15 | 35,196    | 30    | 37           | 67     | 0.19       |
| Max Velocity                                        | 2025-03-16 | 19,901    | 30    | 21           | 51     | 0.26       |
| Max Velocity                                        | 2025-04-02 | 70,759    | 30    | 74           | 104    | 0.15       |
| Max Velocity                                        | 2025-04-03 | 14,570    | 30    | 15           | 45     | 0.31       |
| Max Velocity                                        | 2025-04-04 | 28,031    | 30    | 29           | 59     | 0.21       |
| Max Velocity                                        | 2025-04-05 | 28,488    | 30    | 30           | 60     | 0.21       |

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Table D.1 (continued)

| Creator                                                    | Event Date | Available      | Floor        | Proportional | Target       | % of Event  |
|------------------------------------------------------------|------------|----------------|--------------|--------------|--------------|-------------|
| Max Velocity                                               | 2025-05-15 | 26,830         | 30           | 28           | 58           | 0.22        |
| Max Velocity                                               | 2025-05-16 | 34,069         | 30           | 36           | 66           | 0.19        |
| Max Velocity                                               | 2025-05-17 | 6,670          | 30           | 7            | 37           | 0.55        |
| Max Velocity                                               | 2025-05-18 | 36,667         | 30           | 38           | 68           | 0.19        |
| Max Velocity                                               | 2025-05-19 | 37,776         | 30           | 40           | 70           | 0.19        |
| Max Velocity                                               | 2025-05-20 | 30,095         | 30           | 32           | 62           | 0.21        |
| Max Velocity                                               | 2025-06-20 | 16,996         | 30           | 18           | 48           | 0.28        |
| <i>Texas Weather Center (8 events, total target = 255)</i> |            |                |              |              |              |             |
| TWC                                                        | 2025-04-02 | 72             | 30           | 0            | 30           | 41.67       |
| TWC                                                        | 2025-04-03 | 58             | 30           | 0            | 30           | 51.72       |
| TWC                                                        | 2025-04-05 | 448            | 30           | 0            | 30           | 6.70        |
| TWC                                                        | 2025-05-16 | 732            | 30           | 1            | 31           | 4.23        |
| TWC                                                        | 2025-05-18 | 3,448          | 30           | 4            | 34           | 0.99        |
| TWC                                                        | 2025-05-19 | 1,010          | 30           | 1            | 31           | 3.07        |
| TWC                                                        | 2025-05-26 | 3,652          | 30           | 4            | 34           | 0.93        |
| TWC                                                        | 2025-06-08 | 4,729          | 30           | 5            | 35           | 0.74        |
| <b>Total</b>                                               |            | <b>934,391</b> | <b>1,020</b> | <b>980</b>   | <b>2,000</b> | <b>0.21</b> |

## D.2 Study 3 Codebook

### D.2.1 L1 Communicative Functions

| Code                 | Definition                                                                   | Inclusion Criteria                                                               | Example                        |
|----------------------|------------------------------------------------------------------------------|----------------------------------------------------------------------------------|--------------------------------|
| <b>Informational</b> |                                                                              |                                                                                  |                                |
| L1                   | Provides factual information, situational updates, or observational reports. | Reports of weather, radar interpretation, relayed warnings, or local conditions. | “Rotation near Tulsa now.”     |
| <b>Understanding</b> |                                                                              |                                                                                  |                                |
| L1                   | Requests interpretation or expresses uncertainty about unfolding conditions. | Questions about safety, location impact, or radar meaning.                       | “Is Nashville in danger?”      |
| <b>Social</b>        |                                                                              |                                                                                  |                                |
| L1                   | Relational or community-oriented interaction.                                | Greetings, gratitude, humor, creator appreciation, or community talk.            | “Thanks for being here Ryan!”  |
| <b>Emotional</b>     |                                                                              |                                                                                  |                                |
| L1                   | Expresses affective response to events.                                      | Fear, anxiety, relief, or awe.                                                   | “I’m really scared right now.” |
| <b>Operational</b>   |                                                                              |                                                                                  |                                |
| L1                   | Coordinates around stream logistics or platform mechanics.                   | Comments about stream quality, requests for views, or moderation.                | “Audio is cutting out.”        |

### D.2.2 L2 Trust Practices

| Code                    | Definition                                                                                                                                        | Inclusion Criteria                                                                                              | Example                                  |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|------------------------------------------|
| <b>Creator question</b> |                                                                                                                                                   |                                                                                                                 |                                          |
| L2                      | Questions directed at the creator that route interpretive responsibility to them and enact reliance on their interpretation.                      | Requests for guidance, confirmation, or localized assessment directed to the creator, explicitly or implicitly. | “Max, should I take shelter?”            |
| <b>Ground truth</b>     |                                                                                                                                                   |                                                                                                                 |                                          |
| L2                      | Viewer-contributed observational reports that provide locally grounded evidence for collective threat assessment.                                 | First-hand reports of weather conditions, damage, or environmental cues.                                        | “Hail starting here in Norman.”          |
| <b>Highlighting</b>     |                                                                                                                                                   |                                                                                                                 |                                          |
| L2                      | Directs attention to a feature or cue requiring interpretation without supplying new empirical evidence, deferring interpretation to the creator. | Pointing out radar features, storm cells, or visual cues for assessment.                                        | “That storm near Ada has a CC drop.”     |
| <b>Vouching</b>         |                                                                                                                                                   |                                                                                                                 |                                          |
| L2                      | Explicit credibility affirmation or contestation.                                                                                                 | Statements endorsing or challenging creator reliability.                                                        | “Ryan is always accurate.”               |
| <b>Repair</b>           |                                                                                                                                                   |                                                                                                                 |                                          |
| L2                      | Corrects or clarifies factual, geographic, procedural, or interpretive error to maintain informational reliability.                               | Corrections of claims, terminology, locations, or interpretations.                                              | “It’s Mountain Home, not Mountain View.” |

## D.3 Supplementary Repository Materials

Supplementary Study 3 analysis materials are available in the project repository: <https://github.com/julievera/weatherstudy>. These materials include shareable notebooks and documentation used to inspect the chat-filtering workflow, sampling allocation, descriptive summaries, co-occurrence tables, and association checks reported in Chapter 8. The repository does not include raw YouTube chat exports, account-level identifiers, or other non-redistributable platform records.