Stormwater/Floods Breakout Session

Projections for the next century suggest climate change will have important impacts on Washington State's economy and natural resources. In order to both control the costs and maximize the benefits of a changing climate, we must begin preparing now. To stimulate discussion in this session, we summarize projected climate impacts from the conference white paper, enumerate previously suggested adaptation strategies, and provide case studies to illustrate planning techniques, vulnerabilities, and/or opportunities.

Prepared by Jennifer Kay, Joe Casola, Amy Snover, and the Climate Impacts Group (CIG) at the University of Washington for King County's October 27, 2005 Climate Change Conference.

Summary of projected climate change impacts on stormwater/floods

In a warmer climate, precipitation falling as rain instead of snow could increase winter flooding in transient river basins.

We are still learning how climate change may affect the frequency and intensity of storms in Washington.

Projecting changes in winter and summer precipitation frequency and intensity requires high resolution modelling expertise which is still being developed.

Credit: National Weather Service Northwest River Forecast Center

October 2003 Flooding in Northwest Washington

Adaptation discussion starters

Guiding principles for planning:

1. Recognize that the past may no longer be a reliable guide to the future.
2. Integrate climate change projections into all planning processes.
3. Monitor regional climate and resources for ongoing change.
4. Expect surprises. Design policies and management practices to be flexible to changing conditions.

Could these strategies help Washington prepare for change?

Encourage communication between planners and scientists. Understand what is and is not known about climate change impacts on Washington floods and stormwater.

Incorporate climate change projections into design requirements for stormwater control systems. For example: modify the capacity of existing stormwater control structures as information about climate change impacts becomes available.

Discourage development in flood hazard areas. For example: privatize the risk of insuring and financing in sensitive areas where small changes in climate could have large impacts on property.

Preserve ecological buffers. For example: restore pervious surface area to help control stormwater runoff.

Move or abandon infrastructure. Move houses and development in floodplains or in areas prone to landsliding.

Sources: 1) Snover, A., Miles, E. and B. Henry, OSTP/USGCRP Regional Workshop of the Impacts of Global Climate Change on the Pacific Northwest Annex D, NOAA Climate and Global Change Program, Special Report Number 11, 1997. 2) H. John Heinz III Center, Evaluation of Erosion Hazards: Summary. Prepared for the Federal Management Agency, Washington D.C., 2000.

Planning Case Study – Vancouver Storm Water: The Greater Vancouver Regional District (GVRD) is incorporating variations in monthly total precipitation from climate change scenarios into their stormwater management planning. The GVRD has also outlined the sensitivity of their stormwater system to increases in storm frequency and intensity that could result from climate change. By considering future climate and population growth in their scenario planning, the GVRD can assess management strategies based on a range of projected future needs.

More information:
Hicks, R. W. B., and E. L. von Euw, Integrated stormwater management planning process to address climate and landuse changes in urban watersheds in the GVRD, *16th International Conference, Society for Ecological Restoration*, August 24-26, 2004.
http://wlapwww.gov.bc.ca/epd/epdpa/mpp/stormwater/stormwater.html

Planning Case Study – Projections of Future Flooding From High Spatial Resolution Weather Models: Researchers from the Department of Atmospheric Sciences at the University of Washington and the CIG are attempting to couple global climate models to high resolution weather models (minimum spatial resolution ~ 2 miles) to examine how the frequency and intensity of storms in the Pacific Northwest could change as a consequence of global warming. In the future, their results could be combined with existing models of the land surface and the local and regional hydrologic system to provide projections of future stormwater flooding statistics for cities and communities.