Western Water Assessment's Climate Affairs Program

Jessica Lowrey and Brad Udall, University of Colorado and NOAA Earth System Research Lab, Boulder CO.

Our mission is to identify and characterize regional vulnerabilities to climate variability and change, and to develop information, products, and processes to assist water-resource decision-makers throughout the Intermountain West Region (Upper Colorado and Platte River Basins in Colorado, Wyoming and Utah).

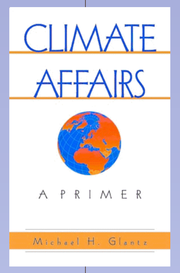
What is Climate Affairs?

"It seems that the twenty-first century has a good chance of becoming *the climate century*, a century in which climate related concerns will occupy significant attention of the next generation of policy makers." – Michael (Mickey) Glantz, National Center for Atmospheric Research, 2003.

"Climate information is any information that has a direct or indirect connection to atmospheric processes and to the structure, function and impacts of the climate system." – Mickey Glantz, *Climate Affairs*.

Program goals

- To provide natural resource decision makers with a better understanding of how climate variability, change and extremes affect ecosystems, water resources and the affairs of people and governments.
- To provide these decision makers with climate knowledge and tools to create more sustainable operational and long-term policies.



Why does WWA have a Climate Affairs Program?

Natural resource managers in the Intermountain West are concerned about how future climate variability and change will affect the resources they manage. In particular, these decision makers are concerned with how climate might decrease system reliability by reducing supplies and/or increasing demands. For the most part, these decision makers do not have a detailed understanding of the climate systems that affect their water supplies or knowledge of the climate forecasts and tools available because much of our climate knowledge is less than 15 years old (e.g. ENSO, ice cores, tree rings).

The Climate Affairs Program of the Western Water Assessment (WWA), modeled after Glantz's book, provides natural resource managers with climate knowledge so that they can understand how climate affects water resources and apply this knowledge to their systems. The insights WWA gains from our interactions with stakeholders as part of the Climate Affairs program support the NOAA Strategic Goals to promote environmental literacy and improve use of climate information by decision makers. Only when decision makers understand the climate system and the impacts of climate in their resources will they be able to effectively use and guide NOAA's evolving climate service tools.

What climate elements does WWA convey with the Climate Affairs Program?

- Definition of climate and the difference between climate and weather.
- Major weather patterns.
- Major climate drivers and the extent to which we can separately predict their occurrences and their effects on North American weather.
- Lessons from paleoclimate.
- Current research on the most likely effects of climate change on water supplies in the Intermountain West.
- Possible interactions between future climate change scenarios and water law and policy.
- Economic evaluation of preparing for less water in the future, either from climate change or population increases.
- Current conditions and forecasts: where to locate, how to interpret, how to .
- Interpretation of forecast skill.

How does WWA convey these climate elements through Climate Affairs activities?

Intermountain West Climate Summary

This monthly publication provides the latest climate information, including recent conditions and forecasts, in a simple compact document aimed at managers, planners, and policy makers with water-related interests in Colorado, Wyoming, and Utah.


INTERMOUNTAIN WEST CLIMATE SUMMARY

Issued January 31, 2006 by The Western Water Assessment

January 2006 Climate Summary

In This Issue

1 January 2006 Climate Summary
2 Feature: How to use the climate Forecast Evaluation Tool

Recent Conversations

3 Temperature
4 Precipitation
5 U.S. Drought Monitor
6 Intermountain West Snowpack
8 Regional Standardized Precipitation Index
10 Wyoming Water Availability
11 Wyoming Water Availability
12 Utah Water Availability

Forecasts

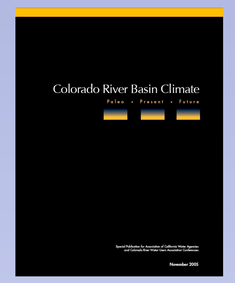
13 Temperature Outlook
14 Precipitation Outlook
15 Seasonal Drought Outlook
16 Streamflow Forecasts
17 Water Supply Outlook

Fifteen Pieces
18 NOAA Earth System Research Laboratory

Snow Accumulation Season Is Upon Us!

Colorado River Basin Climate: Paleo, Present, Future.

A special publication for the Association of California *Water Agencies and Colorado River Water Users Association Conferences, November 2005. This publication provides an overview of hydroclimate-related information for the Colorado River Basin. It describes the basin's climate, variability, and factors influencing it over varied timescales.*



Climate workshop in Cheyenne, Wyoming, December 2005.

Climate Workshops

Current workshops: WWA held several workshops in the past year to educate decision makers in Colorado and Wyoming about seasonal climate forecasts, experimental "Week-2" weather forecasts, the state of climate knowledge, and current regional climate trends. The goals of the workshops are: to give workshop attendees a better understanding of the strengths and limitations of these climate products to support more informed use in planning and decision-making; and to collect feedback on the products to improve usability.

Past workshops:

- Hydroclimatic streamflow reconstructions in management and planning.
- Sponsorship of annual Univ. of Colorado Natural Resources Law Center conferences.

Future workshops:

- Seasonal climate forecast verification and skill.
- Climate change in the western U.S.
- Paleo streamflow reconstruction techniques for use in long-term water supply models.

Workshop in Tucson, AZ on hydroclimatic streamflow reconstructions in May 2005.

Speaking engagements

By speaking at conferences attended by water resource decision makers, Western Water Assessment scientists help develop an ongoing dialogue between researchers and stakeholders. Attending these conferences also helps WWA researchers learn more about the water managers' annual operations and long-term planning issues, which will help WWA assist NOAA with improving climate services.

Examples of previous speaking engagements:

- Presentation on water quality to the Western Coalition of Arid States (2006)
- Introduction to climate change information to Denver Water planning department (2005)
- Evaluation of the potential impacts of climate change on the green industry to the ProGreen Expo. (2005)
- Introduction to climate information and WWA to Colorado River Water Conservation District seminar (2004, 2005)
- Brown-bag presentation about WWA to the Northern Colorado Water Conservancy District (2004)
- Participation in USBR Aspinall Unit coordination meetings (1999-2004)

Who is involved in Climate Affairs?

Western Water Assessment researchers:

- Brad Udall (WWA director),
- Robert S. Webb and Andrea Ray (NOAA Earth System Research Lab),
- Doug Kenney, Klaus Wolter, and Jessica Lowrey (University of Colorado), and
- Connie Woodhouse (NOAA National Climatic Data Center).
- Nolan Doeskin (Colorado Climate Center/Office of the State Climatologist)

Several stakeholders regularly participate in Climate Affairs programs:

- California Department of Water Resources
- Colorado municipal water providers
  (e.g. Denver Water, Aurora Water, Northern Colorado Water Conservancy District)
- Colorado River Water Conservation District
- Colorado Water Availability Task Force
- U.S. Bureau of Reclamation
- Wyoming irrigation districts (Goshen and Torrington)

Colorado Water Availability Task Force

The Colorado Water Availability Task Force (WATF), a group of state and federal agencies overseen by the Colorado Water Conservation Board, monitors current water supply conditions in the state to prepare for drought. During a drought the WATF conveys critical information to the media and the public, tracks impacts, and provides gubernatorial responses.

WWA provides seasonal forecast information and climate guidance both at quarterly WATF meetings and through the monthly Climate Summary. WATF participants provide feedback to WWA about the utility of the information in the Climate Summary. a