

Purpose and Organizational Structure
Climate Change and Western Water R&D Group (CCAWWG)

*A federal interagency R&D workgroup providing scientific collaborations in support of
Western water management as climate changes*

Issue:

Western water supply and use is at the nexus of many federal, state, and local agencies. Understanding climate variability and climate change trends, their current and potential future influence on water supply and water use, and identifying potential adaptation strategies is a common emerging priority across these entities. Collaboration between these entities is essential to ensure efficiency, full utilization of interdisciplinary expertise, and avoid duplication.

Workgroup Purpose:

This interagency R&D workgroup will ensure efficient R&D collaborations and information sharing across the federal agencies toward understanding and addressing climate change impacts on Western water supplies and water use.

A primary finding of the September 2007 prepublication of the National Research Council review of the U.S. climate change research is:

“Discovery science and understanding of the climate system are proceeding well, but the use of that knowledge to support decision making and to manage risks and opportunities of climate change is proceeding slowly”

This R&D workgroup, which includes both federal research and federal water management representation, will provide a mechanism to ensure climate change research is relevant to water managers and that the research results are integrated in the planning and decision making processes. Workgroup members and technical products will provide expert, objective scientific information to water managers, and federal policy makers.

The workgroup will provide an efficient, unified federal forum for R&D collaborations. It will also facilitate the exchange of technologies, information, and needs with state and local entities such as:

- Municipal and Agricultural Water Districts
- Western States Water Council
- Western States Water Resources Research Institutes
- Regional Integrated Sciences and Assessments (RISA) Centers
- American Water Works Research Foundation
- National Center for Atmospheric Research

Location:

Workgroup participation is centered along the Colorado Front Range to take advantage of the significant presence of the federal agencies located in this area that are involved in Western water R&D, water management, and related climate change sciences. Such a presence enables regular face-to-face coordination meetings. In addition, the Front Range federal agency offices involved in this workgroup will provide a conduit into their agency's national capabilities and efforts related to Western water R&D and climate change sciences. For the federal agencies that do not have a presence along the Colorado Front Range, representatives can eventually be sought that can participate remotely along with occasional travel.

Work Areas:

The workgroup will collaborate in the following areas:

1. Water Management Decisions Influenced by Climate Change

The objective is for workgroup participants to build a common understanding on which water management decision and planning processes are expected to be affected by climate change. Initial workgroup efforts will focus on the water management needs of the Bureau of Reclamation such as water supply forecasts, long-term general planning, endangered species consultations, dam safety issue and risk evaluations, etc. Recognizing that Reclamation's water management needs have commonality with other federal and non-federal western water management entities, the workgroup will collaborate with these other entities to find common ground and develop collaborative solutions.

The mission and capabilities of an array of other federal agencies intersect with the hydrologic cycle and the watershed management, water supply, and water demand issues that are central to Western water sustainability. A list of other agencies and a short description of their mission and role is included in the appendix. As workgroup efforts progress, these other agencies will be consulted and/or asked to participate in the workgroup. Other agencies will be added to the list as needs and opportunities are identified.

2. Science, Technology, and Capability (STC) Gaps for Water Solutions

The objectives in this area are to:

- define the STC's that already exist to support the decision needs of water managers and how to access these STC's.
- identify and recommend priority STC Gaps, the ability to close these gaps through either demonstrations or research by participating workgroup agencies, and the beneficial outcomes that could be derived.
- identify key data monitoring gaps that affect the ability to monitor and understand climate change trends and effects on regional and local scales.

3. Brokering Research to Close STC Gaps

The purpose in this area is to facilitate the accomplishment of the R&D that is needed to efficiently close the most relevant STC gaps through a variety of means, including:

- design and implementation of collaborative and/or coordinated research involving the skill sets and resources of workgroup member agencies.
- utilize university consortium and centers of excellence focused on water and water related resources such as Regional Integrated Science and Assessment centers administered by NOAA, the Water Resources Research Institutes administered by the USGS, and the Cooperative Ecosystem Study Units administered by the Department of the Interior.
- work with the National Science Foundation to help shape and sharpen their call for research proposals so that they align with critical STCs.
- seek and involve state and local technical expertise in the conduct of collaborative R&D.

4. Outreach and Transfer of Solutions and STCs

Design, conduct, and/or facilitate venues for exchanging climate change STC's and challenges with federal, state, and local water and water related resource managers and stakeholders.

As workgroup efforts progress, the workgroup will coalesce existing and future STCs into a menu of proposed solutions, for water managers to consider for further study and implementation. Climate change is only one driver that contributes to future water supply and demand scenarios. Other drivers include changing demographics, societal values, environmental needs, economics, energy, legal constraints, and political considerations. "No regrets" solutions will be sought, with objectives of building system resiliency and having the flexibility to respond not only to climate change, but also to an array of other drivers that collectively form future scenarios.

Potential STC and solution customers include federal, state, and local water and water related resource managers and stakeholders. To facilitate efficient, effective, and relevant handoff of STCs and solutions, the workgroup process will feature an open forum where potential clients can provide input to the R&D process.

Workgroup Members:

Workgroup member agencies, agency niche, interest in Western water and climate change, and their agency representatives are summarized in the appendix.

Appendix
Interagency R&D Workgroup
Climate Change Impacts on Western Water

National Oceanic and Atmospheric Association (NOAA)

- Identifies the nature and causes of climate variations on time scales ranging from a month to centuries.
- Develops requirements for climate prediction products and other services related to the period of a week out to one year, including seasonal forecasts and threats assessments.
- Assesses and forecasts the impacts of short-term climate variability, emphasizing enhanced risks of weather-related extreme events, for use in mitigating losses and maximizing economic gains.
- Sponsors the Regional Integrated Sciences and Assessments (RISA) centers that support research addressing complex climate sensitive issues of concern to decision-makers and policy planners at a regional level. The RISA research team members are based at a variety of entities, including universities, government research facilities, non-profit organizations and private sector entities. Traditionally RISA research has focused on the fisheries, water, wildfire, and agriculture sectors.

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Bureau of Reclamation:

- Western water manager responsible for delivering water to 31 million people, 10 million acres of farmland, and generating hydropower for 6 million homes.
- Integration and use of climate change information in water supply and water use operations and planning
- Develops/sponsors applications and demonstrations of new technologies and information in operational settings
- Develops, tests, and vetts water and related strategies for adapting to climate change.

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U.S. Geological Survey

- Groundwater: Expertise in the area of groundwater modeling and a physical understanding of the controls of groundwater availability and quality. Ability to understand the impact of climate variability and climate change on the groundwater resources of the western U.S. including groundwater recharge and groundwater/surface water conjunctive use.
- Hydrologic cycle –Ability to understand the impact on climate variability and climate change on the hydrologic cycle for western water resources.
- Analysis of streamflow data – the USGS provides streamflow information and analysis of this information. These analyses help define some of the changing hydrologic patterns in the western U.S. including the documentation of earlier snowpack runoff. A solid understating of these factors is central to developing water management options.
- Access to the USGS Water Science Director in each Western state and the established coordination and communication with the Department of Water Resources for each state government.
- Aquatic and Terrestrial Habitats and Wildlife Populations: conduct research to assess and understand the consequences of climate variability and change, and to forecast impacts in Western ecosystems in order to provide recommendations to DOI resource management agencies on mitigative and adaptive response strategies.
- Threatened and Endangered Species/Invasive Species: Evaluating and understanding the migration of species and habitat impacts caused by climate change that could alter the status of invasives and threatened and endangered species.

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Reclamation, NOAA, and USGS will take the initial steps to develop and frame workgroup efforts. Other federal agencies that will be consulted and/or participate in the workgroup as work progresses include:

Other Potential Participating Agencies

USDA Forest Service

- Responsible for land and forest hydrology of the watersheds providing Western water supplies

Bureau of Land Management

- Responsible for land and range hydrology of the watersheds providing Western water supplies

USDA Agricultural Research Service

- Develops agricultural water efficiency solutions that respond to changing climatic conditions and other factors
- Advises on crop types to accommodate changing climatic conditions

- Genetically modified crops to accommodate changing conditions and demands
- Solutions for agricultural sustainability

USDA National Resource Conservation Service

- Provides leadership in a partnership effort to help America's private land owners and managers conserve their soil, water, and other natural resources.
- Provides snowpack surveys and water supply forecasts.

U.S. Army Corps of Engineers

- Responsible for flood control and integrating extreme flood event hydrology into flood control planning and operations
- Responsible for defining and integrating climate change effects on reservoir flood operations.

U.S. Fish and Wildlife Service

- Responsible for the protection and recovery of threatened and endangered aquatic species and the integration of climate change impacts related to changes in water supplies.

U.S. Dept of Energy National Renewable Energy Laboratory

- Water implications of future energy management pathways (e.g., role of hydropower in future supply portfolios and energy markets, water use needs to support biofuel development in the Western U.S.).

1/ Role of Workgroup Members

R&D Workgroup Management Sponsors will:

- Provide steering and guidance to workgroup to ensure that workgroup efforts are consistent with agency authorities, priorities, and policies.
- Provide a conduit to agency management to ensure activities are appropriately communicated and supported across agency management
- Facilitate making staff and funding resources available to accomplish the workgroup activities.

R&D Workgroup Technical Team Members will:

- Provide the expertise and capability to define, pursue and accomplish work efforts facilitated by this workgroup process.