



Applying knowledge to improve water quality

# Pacific Northwest

## Regional Water Program

A Partnership of USDA CSREES  
& Land Grant Colleges and Universities

Fall 2008  
PNWWATER 145

### Our 9<sup>th</sup> Regional Theme:

## Climate Change in the Pacific Northwest

Recent scientific studies continue to increasingly support the notion that climate change is occurring across the globe. Climate change is and has been a natural process; however, scientists believe that humans are accelerating this change by adding carbon dioxide (a greenhouse gas) into the atmosphere through the burning of fossil fuels. Dr. Mike O'Neill, National Program Leader for Water Resources at USDA-CSREES, indicates that water professionals have been dealing with the manifestations of climate change for a long time by addressing drought, flooding, seasonal changes in precipitation, and the coupling of water and temperature stress on natural and agricultural watersheds. He goes on to say that "today's challenge is that demand for water resources continues to expand despite natural and human-induced scarcity of water resources. So now, we must find ways to achieve greater efficiency and effectiveness in water resources management to meet the growing water demands for energy, agriculture, society, and environment."



*Our mountain snow pack is a major climate change issue.*

A recent report issued by the scientific community indicates that global warming will increase the severity of floods, droughts, and sea-level rise. Dr. Reagan Waskom, Director of the Colorado Water Institute at Colorado State University, indicates "more mundane vulnerabilities such as decreased or variable water supplies, reduced water quality, and loss of ecological services are also likely threats that accompany climate change. In particular, water resources in most of the western United States are already over-appropriated, leaving little, if any margin for further reductions caused by climate change." Climate change has the potential to impact many aspects of our lives here in the Pacific Northwest. It is likely that climate change will first manifest itself in the availability and use of water resources normally taken for granted here in the Pacific Northwest.

**Potential impacts of climate change on water resources in the Pacific Northwest over the next five to ten years:**

- ◆ Annual mountain snow pack and consequent timing of water runoff into rivers and reservoirs
- ◆ Availability of irrigation water for agriculture
- ◆ Storage and supply of water for municipalities
- ◆ Water levels and the health of coastal ecosystems
- ◆ Viability of fish, birds, and other wildlife
- ◆ Melting of permafrost in Alaska
- ◆ Hydropower production

Based on scientific data and modeling the Pacific Northwest Regional Water Resources Team plans to educate citizens in Alaska, Idaho, Oregon, and Washington about the effects of climate change on our water resources. Rather than concentrating on a net increase or decrease in annual precipitation patterns, we feel that the change in how fast the mountain snow pack melts in the spring will have a significant impact on many of our industries. We feel that climate change could have an important impact on many aspects of our water resources over the next five to ten years (see box).



## Pacific Northwest Regional Water Quality Coordination Project Partners

### Land Grant Universities

#### Alaska

Cooperative Extension Service  
Contact Fred Sorensen:  
907-786-6311

<http://www.uaf.edu/ces/water/>

University Publications:

<http://www.alaska.edu/uaf/ces/publications/>

#### Idaho

University of Idaho  
Cooperative Extension System  
Contact Bob Mahler: 208-885-7025

<http://www.uidaho.edu/wq/wqhome.html>

University Publications:

<http://info.ag.uidaho.edu/Catalog/catalog.html>

#### Oregon

Oregon State University  
Extension Service  
Contact Mike Gamroth: 541-737-3316

<http://extension.oregonstate.edu/>

University Publications:

<http://extension.oregonstate.edu/catalog/>

#### Washington

Washington State University  
WSU Extension  
Contact Bob Simmons:  
360-427-9670 ext. 690

<http://wawater.wsu.edu/>

University Publications:

<http://pubs.wsu.edu/>

Northwest Indian College  
Contact Dan Burns:  
360-392-4328

[dburns@nwic.edu](mailto:dburns@nwic.edu) or

<http://www.nwic.edu/>

### Water Resource Research Institutes

Water and Environmental Research  
Center (Alaska)

<http://www.uaf.edu/water/>

Idaho Water Resources  
Research Institute

<http://www.boise.uidaho.edu/>

Institute for Water and  
Watersheds (Oregon)

<http://water.oregonstate.edu/>

State of Washington  
Water Research Center

<http://www.swwrc.wsu.edu/>

### Environmental Protection Agency

EPA, Region 10

The Pacific Northwest

<http://www.epa.gov/r10earth/>

Office of Research and Development,  
Corvallis Laboratory

<http://www.epa.gov/wed/>

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### The Project

Land Grant Universities, Water Research Institutes, and EPA Region 10 have formed a partnership to provide research and education to communities about protecting or restoring the quality of water resources. This partnership is being supported in part by the USDA's Cooperative State Research, Education, and Extension System (CSREES).

### Our Goal and Approach

The goal of this Project is to provide leadership for water resources research, education, and outreach to help people, industry, and governments to prevent and solve current and emerging water quality and quantity problems. The approach to achieving this goal is for the Partners to develop a coordinated water quality effort based on, and strengthening, individual state programs.

### Our Strengths

The Project promotes regional collaboration by acknowledging existing programs and successful efforts; assisting program gaps; identifying potential issues for cross-agency and private sector collaboration; and developing a clearinghouse of expertise and programs. In addition, the Project establishes or enhances partnerships with federal, state, and local environmental and water resource management agencies, such as by placing a University Liaison within the offices of EPA Region 10.

The melting of snow pack in our mountains has an important impact on river flow, the filling of reservoirs, irrigated agriculture, water for municipalities, power production, and recreational opportunities. Twenty years ago we had a later and longer snow melt season. This longer season resulted in a plentiful and continuous supply of water for many important water dependent activities in our region. However, in recent years our snow pack has melted earlier in the spring and over a shorter period than normal. Climate change models indicate that this early melt should become much more common in the future. The early melt will have significant consequences that Pacific Northwest citizens will have to adapt to. An early melt can overwhelm reservoir capacities resulting in water spillage through dams at the expense of mid-season power production, water storage for irrigation and municipalities, and late season stream flows for fish and recreationists. We must be prepared to deal with these changes that will occur in the not too distant future!



### National Water Quality Program Areas

The four land grant universities in the Pacific Northwest have aligned our water resource extension and research efforts with eight themes of the USDA's Cooperative State Research, Education, and Extension System.

1. Animal Waste Management
2. Drinking Water and Human Health
3. Environmental Restoration
4. Nutrient and Pesticide Management
5. Pollution Assessment and Prevention
6. Watershed Management
7. Water Conservation and Management
8. Water Policy and Economics

*CSREES is the Cooperative States Research, Education, and Extension Service, a sub-agency of the United States Department of Agriculture, and is the federal partner in this water quality program.*