

Climate Data & Monitoring

Climate information—historical, real-time, and predictive—is vital for the sustainable management of agriculture and natural resources.

Climate change poses major challenges to agriculture and natural resources in the western United States. Climate data are key to practices, tools, legislation, programs, and policies that protect and enhance water, soil, and air. With so many different entities collecting climate data and myriad ways of storing and distributing data, it can be difficult to access relevant, reliable climate information. Good communication and coordination are needed, especially to address regional issues.

A committee of researchers and Extension educators from land-grant universities helps coordinate climate data collection and use in the western U.S.

For more than 30 years, the committee has leveraged existing climate data collection, analysis, and distribution infrastructure and technologies to meet agriculture and natural resource management needs in the western U.S. The committee has played a critical role in coordinating these groups and networks. In times of increasingly tight budgets, this multistate committee is essential to ensuring the sustainability and economic viability of climate networks and partnerships. With members in 8 states, the committee can facilitate efficient climate monitoring and widely promote the use of climate data and products for agriculture, water management, industry, emergency preparedness, transportation, policymaking, education, and other purposes.



Multistate Research Fund
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What did the committee do?

To improve climate data and tools the committee:

- Evaluated how well existing climate data products and services are meeting user needs, identified gaps in climate monitoring networks, and explored remedial options.
- Developed and encouraged use of new tools, such as more accurate soil moisture sensors, that improve data quality.
- Increased state-level climate data collection to help ensure high-quality data.

To make climate data collection more collaborative and efficient the committee:

- Developed standards for siting and maintaining weather stations and archiving data and metadata.
- Developed technologies to cost-effectively gather and distribute data from various sources.
- Coordinated climate data collection among multiple agencies.
- Encouraged inter-agency support to help climate monitoring networks obtain enough funding and personnel to provide consistent, high-quality data and minimize operational and maintenance costs.
- Contributed to the [Community Collaborative Rain Hail and Snow Network](#), a low-cost, low-tech, volunteer-based precipitation monitoring network that is administered by Colorado State University.

To increase access to climate data and tools the committee:

- Developed best practices and technologies for manipulating, distributing, and presenting climate data so that they can be easily used for agriculture and natural resource management.
- Shared climate-related information via partner websites and other outlets.
- Facilitated the creation of climate models, impact assessments, drought advisories, and other products that incorporate climate data from multiple sources (including satellite, radar, and ground observations) for policymakers, water managers, and other users.
- Expanded the [AgriMet](#) program and fostered cooperative relationships with private, tribal, local, state, and federal agencies, making it the most commonly used source for climate data on farms in the northwestern U.S.
- Created the [PRISM Climate Group](#) at Oregon State University, providing state-of-the-art weather and climate maps and products, which are downloaded over 30,000 times a day for use in agriculture, natural resource management, engineering, energy, economics, and more.

How are climate data and tools used?

Drought and flood mitigation

Climate data, tools, and products helped the Arizona Governor's Drought Task Force, Arizona Game and Fish, and local livestock producers plan for and respond to droughts. Arizona scientists also helped the Navajo, Hopi, and White Mountain Apache tribes develop drought mitigation plans. California scientists worked with the National Weather Service, NASA, local water agencies, and others to monitor snowpack and snowmelt and predict potential flood hazards and water supply issues. Three reservoir operators in California are using climate data to better control their water supply and reduce flood hazards. Proactive actions and early response can minimize the harmful impacts of droughts and floods on the environment, economy, and communities.

Farm and ranch management

After using [AgriMet](#) data to schedule irrigation, a potato grower in Idaho reported annual power savings between \$14,000-17,000. Another grower in Idaho reported a 15% increase in potato yield after using AgriMet data for irrigation scheduling, resulting in increased revenue of \$60,000. In Arizona, scientists helped wine grape growers access and use temperature data to protect grape yield and quality from frosts and high temperatures. Arizona scientists also worked with the USDA Southwest Climate Hub to develop best practices and [tools](#) for monitoring rangeland precipitation.

Crop insurance

[PRISM's](#) weather and climate maps are delivered to approximately 6,000 crop insurance adjusters and underwriters nationwide. PRISM data have improved the quality and integrity of the USDA Risk Management Agency crop insurance program, saving taxpayer dollars by reducing inappropriate payments and improving insurance ratings.

Wildfire management

Nevada's Desert Research Institute and Western Regional Climate Center collaborated with fire managers in Nevada and California to use the Evaporative Demand Drought Index for seasonal fire danger outlooks and real-time operations.

Storm prediction

California scientists worked with federal, local, and academic collaborators to combine advanced observations, forecasts, modeling, and other tools for storm hazard reduction.

Dust control

New Mexico State University weather stations and cameras provided the New Mexico Department of Transportation and the National Weather Service with valuable information on the sources of dust on I-10.

Lawn and garden irrigation

[AgriMet](#) is used as the main source of data for residential lawn "Smart Controllers" in the Northwest. These controllers apply water only when it is needed, helping homeowners save water and money.

Public health

Montana State University scientists helped develop a comprehensive [report](#) that details how climate change impacts the health of Montanans, both now and in the future.