



NOAA Research in Montana



MT-1 (Statewide)

Climate and Global Change Program

NOAA is responsible for providing climate information to the nation in order to prepare and protect climate sensitive sectors of society and the economy. To carry out this mission, NOAA's Climate and Global Change Program conducts focused scientific research to understand and predict variations of climate. The program is comprised of a number of research elements, each focusing on a specific aspect of climate variability. Taken together, this research contributes to improved predictions and assessments of the effects of climate variability and change on different environments over a continuum of time scales from season to season, year to year, and over the course of a decade and beyond. This research is accomplished through the strong support of the academic and private sectors, as well as NOAA and other federal laboratories. In FY 2001, NOAA's Climate and Global Change Program provided approximately \$70,000 in support of climate research in the State of Montana. For more information please visit <http://www.ogp.noaa.gov>

MT-1 (Billings and Polson)

Forecast Systems Laboratory GPS Meteorological Observing System

NOAA's Forecast Systems Laboratory (FSL) operates a rapidly expanding network of GPS Meteorological (GPS-Met) Observing Systems to monitor the total quantity of precipitable water vapor in the atmosphere. Currently, there are 93 systems over the contiguous 48 states and Alaska, and plans are being made to extend these observations to Hawaii, Puerto Rico, the Caribbean Islands, and Central America. Water vapor is an important but under-observed component of the atmosphere that plays a major role in severe weather events and the global climate system. GPS-Met systems provide accurate water vapor measurements under all weather conditions, including thick cloud cover and precipitation, and do so at very low cost. The major reason why this system is so economical is that the network is being developed by FSL in cooperation with federal, state and local government agencies, universities, and the private sector. The GPS stations provide high-accuracy surveying and navigation services for National defense, automated agriculture, safe land and marine transportation, government infrastructure management, and 911 emergency response services. Fortuitously, these systems can also be used for meteorology with the addition of surface weather sensors. GPS-Met systems located in Montana include two sites operated by the U.S. Department of Transportation near Billings and Polson. For more information please visit <http://www.gpsmet.noaa.gov/jsp/index.jsp>

MT-1 (Fort Peck Reservation)

Air Resources Laboratory Surface Radiation Measurement Network

The Air Resources Laboratory operates six stations as part of its surface radiation measurement network (SURFRAD). One of these stations is located on the Fort Peck Reservation and is operated with the assistance of the Fort Peck Tribal Council. The station measurements support regional and global weather and climate research with accurate, continuous, long-term measurements of the surface radiation budget over the United States. Solar radiation is the driving energy for geophysical and biological processes that control weather and affect planetary life; understanding the global surface energy budget is therefore key to understanding climate and the environmental consequences to agriculture and other statewide concerns. Because it is impractical to cover the whole earth with monitoring stations, the answer to global coverage lies in reliable satellite-based observations. Accurate and precise ground-based measurements across a range of climate regions are essential to refine and verify the satellite observations. These ground-based measurements also support special research projects on radiation and climate processes in the Montana region and serve as important verification for weather forecasts. For more information please visit <http://www.srrb.noaa.gov>

MT-1 (Fort Peck Reservation)

Air Resources Laboratory Environmental Monitoring Tower

The Air Resources Laboratory's Atmospheric Turbulence and Diffusion Division operates five research energy/carbon flux towers in the continental United States. The sites are located at a deciduous forest site in East Tennessee, an agricultural site in central Illinois, a ponderosa pine stand in western South Dakota, and two grassland sites: one in eastern Montana, and the other in central Mississippi. These sites are providing data that will be used to improve the representation of land/surface processes in both regional and global weather prediction models.. For more information please visit <http://www.atdd.noaa.gov>

MT-1 (Fort Peck Reservation)

Climate Observations and Services Initiative Climate Reference Network

The U.S. Climate Reference Network (CRN) is a network of new climate stations now being developed by the National Climatic Data Center (NCDC) as part of NOAA's Climate Observations and Services Initiative. The Air Resources Laboratory's Atmospheric Turbulence and Diffusion Division in Oak Ridge, Tennessee, is heavily involved with the development, deployment, and maintenance of the network. The primary goal of the CRN is to provide long-term high-quality climate observations and records of surface air temperature and precipitation with minimal time-dependent biases affecting the interpretation of decadal to centennial climate variability and change. The CRN will provide the Nation with a first-class long-term (50-100 years) observing network that will serve as the Nation's benchmark Climate Reference Network. The CRN will also provide the United States with a network that meets the requirements of the international Global Climate

Observing System (GCOS). Data from the CRN will be used in climate monitoring activities and for placing current anomalies into historical perspective. Data will also be used to provide the best possible information about long-term changes in surface air temperature and precipitation, including means and extremes. These data will be distributed hourly to National Weather Service sites via NOAAPort and posted online for no-cost access by anyone worldwide. CRN sites are currently deployed on the Fort Peck Reservation, as well as in North Carolina, Nebraska, Oklahoma, Rhode Island, New Hampshire, Illinois, and Tennessee. Within the next 5 years there will be a total of 250 stations spread throughout the United States. For more information please visit <http://lwf.ncdc.noaa.gov/oa/climate/research/crn/crnmain.html>

MT-1 (Yellowstone National Park)

Climate Diagnostics Center Climate Research

NOAA's Climate Diagnostics Center (CDC) has begun a collaboration with scientists from the Big Sky Institute and Montana State University to study the impact of climatic changes on the Greater Yellowstone ecosystem, and specifically on threats to the long-term survival of grizzly bears in the region. Habitat changes resulting from climate changes may reduce or eliminate key food sources for grizzlies. Applying existing knowledge and best practices principles to the problem of grizzly bear conservation in the context of recent and future environmental changes is a challenge. CDC scientists are helping scientists and resource managers in the northern Rocky Mountain region to assess likely climate change-induced habitat changes and are assisting in climate monitoring activities in the state by furnishing climate data and information products. For more information please visit <http://www.cdc.noaa.gov>

For further information about these and other NOAA programs, please contact NOAA's Office of Legislative Affairs at (202) 482-4981.

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