



NOAA Regional Climate Centers

Federal Agencies Supported by RCCs



The NOAA Regional Climate Centers (RCC) program has conducted applied research, surveyed sites for surface observation systems, and developed numerous climate information systems that support the climate service goals of NOAA and non-NOAA government agencies. Continued support of the RCC program is critical to the continued success of these operational programs that provide essential services to the U.S.

Department Of Commerce

National Oceanic and Atmospheric Administration

Efforts to develop a **National Climate Service** have been supported by RCC involvement in committee membership, planning documents, interviews with evaluation teams, and numerous meetings with NOAA administrators. The RCC program has served as a model for climate services provided at the regional level, successful interaction with agencies at the national level, and partnerships with service providers at State and local levels.

National Weather Service

NOAA's Online Weather Data (NOWData) is a data query system providing basic climate statistics to the public, using the NOAA Regional Climate Center Applied Climate Information System (ACIS). Through NOWData, climate statistics are available for over 3,800 surface observing stations from across the conterminous U.S., Alaska, Hawaii, Puerto Rico, the Virgin Islands, and Guam. Daily and monthly data for temperature, precipitation, snowfall, and heating / cooling / growing degree days are available for the current and previous years. Climate normals are available for the 1971-2000 period and extremes values are available for the full period of record for each station. Data from the 19th Century to yesterday are available.

Ref: <http://www.nws.noaa.gov/om/brochures/climate/NOWDATAactsheetD.pdf>

xmACIS is a close relative to NOWData that is restricted to NWS use. xmACIS accesses the same climate database maintained by the RCCs as NOWData. However, the xmACIS interface provides access to the complete historical data records of stations within a NWS Office's forecast area and to a broader suite of climate analyses tools. These capabilities provide NWS employees with powerful tools for answering climate requests, assessing the historical significance of weather events, anticipating the occurrence of record events, and facilitating local research projects. xmACIS provides data and product consistency among NWS forecast offices and reduces the need to manage archived data, locally. It has been estimated that xmACIS reduces NWS manpower needs by approximately ten FTEs across all NWS field offices.

ThreadEx is a new, high-tech project designed to rectify the discrepancies in daily weather records reported by the NWS and national media outlets, such as The WeatherChannel. ThreadEx, which stands for Threaded Extremes, takes the maximum

and minimum temperature and the daily total precipitation recorded at 268 National Weather Service Automated Surface Observing Stations (ASOS) across the United States, and pieces them together with other nearby historical station records to create a single, long-term set of daily weather information. Some of these climate records date as far back as 1857. Key users of *ThreadEx* include the NWS, the National Integrated Drought Information System, the atmospheric research community, and commercial weathercasters.

Ref: http://www.noaaworld.noaa.gov/scitech/oct2008_scitech_3.html

The Western Regional Climate Center has coordinated with the NWS to upgrade software designed to provide for daily direct web-based entry of observations from manual NOAA climate stations all around the US. **WeatherCoder III** allows observations from at least 3,000 NWS stations, distributed nationally, to be securely uploaded and disseminated to produce daily maps of recent temperature and precipitation departures from average. This information is very important for the weekly U.S. Drought Monitor and a variety of other climate monitoring procedures. It is the first step in effecting a national paperless electronic data entry system that will greatly increase the speed of distribution, provide rapid quality control, and reduce and finally eliminate the current need for paper. This approach reduces to a few hours an otherwise very long delay (weeks to months) in obtaining these valuable observations. The Applied Climate Information System (ACIS, <www.rcc-acis.org>) developed jointly by the RCC Program provides crucial data infrastructure that enable these processes to work.

Ref: <http://acis.dri.edu/wxcoderIII>

Regional Climatologists at the RCCs provide weekly input for the **National Drought Monitor** that describe impacts of developing and on-going drought conditions in their region. We also produce a series of maps that depict the amount of rainfall, and the departure from *normal* rainfall conditions, from nearly 4,000 surface observing stations that provide guidance for NWS and USDA meteorologists that provide weekly Drought Monitor products. Maps are produced on a daily basis for 7-day, 14-day, 30-day, 60-day, 90-day, and annual periods that help make national drought assessments possible.

National Climatic Data Center (<http://www.ncdc.noaa.gov/oa/climate/regionalclimatecenters.html>)

The **Applied Climate Information System** (ACIS) developed and maintained by the NOAA Regional Climate Centers (RCCs) is designed to manage the complex flow of information from climate data collectors to the end users of climate information. Its purpose is to both alleviate the burden of climate information management for people that require climate information to make management decisions and the manipulate data for basic and applied research. ACIS brings historical climate information and near real-time data together under one umbrella system where they are fused into quality products to assess historical climate trends, enhance daily operational decisions, or assist with any number of climate dependent activities.

Ref: <http://www.rcc-acis.org/>

The **National Climate Extremes Committee** was established in 1997 to assess the scientific merit of extreme meteorological / climatological events and provide a recommendation to NOAA management regarding the validity of related meteorological measurements. The RCCs provide representation on this standing committee and are called upon to assess the validity of these extreme observations before they are entered into official records and reported to public media.

Ref: <http://www.ncdc.noaa.gov/oa/climate/monitoring/extremes/ncec.html>

The **Climate Database Modernization Program** (CDMP) is working to preserve and place on-line a wide range of observations about the climate from the last three centuries. The *CDMP 19th Century Forts and Voluntary Observers Database Build Project* aims to digitize U.S. daily weather observations from the 19th Century. A series of quality control tests and procedures developed by the MRCC are being applied to the digitized data to assure the digitized data accurately represents the observations recorded on the original documents. A comprehensive set of metadata is being developed to help document changes in instrumentation and observation practices.

The NRCC is working along a similar line, developing quality control and reformatting algorithms specific to several sets of pre-1948 hourly weather observations. Upon completion, the available record length of digital historical hourly observations will almost double, in part due to the efforts of the NRCC.

Datzilla is a web-based system used to report and track errors against NOAA datasets and data products. Datzilla provides the ability NOAA employees and State Climatologists to submit error reports for Source Systems and Data-Products defined within a Datzilla database. Source Systems correlate to climate data delivery systems and/or data archives while Data-Products are individual products derived from climate datasets. The system allows users to attach supporting documentation to illustrate the error or to suggest 'fixes' to the data problem. Data Managers at NCDC resolve these errors through on-line communication with the error reporters and incorporate corrected information into permanent data archives. As of January 2009, there are 477 registered users that have submitted 1,355 error reports to the Datzilla system. This system is also an integral part of the **NWS Data Stewardship Committee** activities.

Ref: <http://datzilla.srcc.lsu.edu/datzilla/>

Surveys for the **Historical Climate Network Modernization** effort are currently being performed by the RCCs in Arizona, Colorado, New Mexico, and Utah. This effort consists of pre-survey *desktop* investigations, field surveys of candidate sites, preparation of documentation for post-survey review, and development of geographic information system information to assist surveyors and reviewers. RCC survey support is planned to include more than 2,500 field surveys during the next few years.

The **American Association of State Climatologist** program within NCDC is supported by the RCCs in several ways. We are involved in the process to certify state climate offices to ARSCO standards, provide climate data and products for development of ARSCO websites, collaborate with ARCSO programs to assess and report climate

impacts to NCDC, and maintain websites for states that do not currently have designated state climatologists.

Office of Atmospheric Research / Climate Program Office

The **Regional Integrated Sciences and Assessments** (RISA) program supports research that addresses complex climate sensitive issues of concern to decision-makers and policy planners at a regional level. The RISA research team members are primarily based at universities though some of the team members are based at government research facilities, non-profit organizations or private sector entities. The WRCC works closely with four RISA's in the WEST including Climate Assessment for the Southwest (CLIMAS), California Applications Program (CAP), Western Water Assessment (WWA), and the Climate Impacts Group (CIG). Interactions have included regional assessments and climate impacts on hydrology; climate and climate change issues in California; climate-fire outlooks, assessments, and training; evaluating partnerships between scientists and decision-makers; and developing decision-support tools such as WestMap (<http://www.cefa.dri.edu/Westmap>). The SERCC provides direct support to the Carolinas Integrated Sciences and Assessments (CISA) by serving as the "user interface" test-bed for the drought management tools produced by the RISA. Recently, the SRCC partnered with climate and human resource researchers at the University of Oklahoma and Louisiana State University to form the newest RISA; the Southern Climate Impacts Planning Program (SCIPP). The SRCC is the lead group in planning and developing systems for extreme climate events supporting regional climate impact studies.

Ref: http://www.climate.noaa.gov/cpo_pa/risa/

Department Of Agriculture

U.S. Forest Service

The RCCs provide climate expertise during the **National Seasonal Assessment Workshop** in support of the multi-agency National Interagency Fire Center. The workshop goal is to provide an assessment of current climate conditions, the state of forest and grassland fuel loads, historical fire patterns, and climatic outlooks to assess the potential and expected location of natural and human-induced wildfires. These assessments are used by planners to strategically allocate budgets, equipment, and human resources to protect and preserve natural and man-made environments.

Ref: http://www.climas.arizona.edu/conferences/NSAW/publications/NSAWeastproceedings_07.pdf

National Resources Conservation Service

Through the **Agriculture Applied Climate Information System** (AgACIS) Authenticated users of the [electronic Field Office Technical Guide \(eFOTG\)](#) in all 50 States and the Caribbean and Pacific Basins can now access a variety of climate data by specific National Weather Service (NWS) network reporting locations. AgACIS is a cooperative effort between NRCS and the National Oceanic and Atmospheric Administration's Regional Climate Centers (RCC) to make climate data and applications available through the Internet. AgACIS mirrors the RCC's Applied Climate Information System (ACIS) with

some modifications to meet NRCS field needs.

Ref: <http://www.nrcs.usda.gov/NEWS/thisweek/2007/060607/techtip060607.html>

Joint Agricultural Weather Facility

JAWF performs **assessments of climate and crop conditions** in the U.S. and overseas. On a daily basis, the RCCs supply JAWF with surface U.S. observations that are used in GIS applications to satisfy their demand for climate information. Special information feeds were developed that are used by JAWF computer programs to automatically grab the station information they require. This seamless access to quality, on-demand, data and products allows JAWF climatologists to focus on assessments instead of spending time on data management.

Department Of Interior

Bureau of Land Management

As the official **RAWS** archive, the WRCC manages the metadata (data about data) as well as the data observations themselves. Management entails acquisition, storage and backup, in order to make dissemination and product generation possible. The work requires close collaboration between RAWS program managers at NIFC and WRCC to insure that fire agencies' data ingest and metadata activities (including ASCADS – the Automated Sorting, Conversion and Distribution System) are integrated with the climate center's archive and dissemination activities. The primary objective of this project is to make the RAWS climatological record accessible as data and products of value to the fire community.

National Parks Service

On behalf of the Regional Climate Center Program WRCC has developed detailed climate data inventories of all of the (approximately) 285 National Parks and Monuments that are considered "Resource Parks" by the NPS. All of the 32 reports (each about 100 pages long) can be found at www.wrcc.edu.edu/nps. A follow-on project is developing methods for NPS offices secure access to long term climate observations from stations either directly managed or hosted by NPS. This system (called NPCLime) is built around the ACIS, developed by the RCC Program. This allows both sets of organizations to utilize their respective expertise to best advantage in providing access to long-term climate data sets in and near national parks and allows full access to NPS data. Preliminary tests have shown that the system is fast and efficient.

Ref: www.greateryellowstonescience.org/topics/physical/climate/projects/NPCLime

Department Of Homeland Security

RCCs **installed portable weather stations** at the New Orleans Moissant Airport following Hurricane Katrina to support aircraft supply and rescue operations when the NWS weather station was destroyed by the storm. A weather station was supplied by the SRCC in the first day following the storm and replaced with a more robust installation of a portable RAWS station by the WRCC .

GIS mapping of storm surge inundation was coordinated by SRCC with personnel from LSU following Hurricanes Katrina, Rita, Gustav, and Ike. These maps were used by state and federal responders as they conducted rescue operations. Advice was also provided by the SRCC to re-position and stage National Guard resources in Lake Charles, LA as attention shifted to Hurricane Rita, directly following Hurricane Katrina. Assessment of initial conditions, expected surge levels, local topography, and building infrastructure was used in the decision process discussions.

Links To Additional Information About RCC Programs

Regional Climate Centers

HPRCC: <http://www.hprcc.unl.edu/>
MRCC: <http://mrcc.isws.illinois.edu/>
NRCC: <http://met-www.cit.cornell.edu/>
SERCC: <http://www.sercc.com/>
SRCC: <http://www.srcc.lsu.edu/>
WRCC: <http://www.wrcc.dri.edu/>
ACIS: <http://www.rcc-acis.org/>

National Climatic Data Center

RCC Program: <http://www.ncdc.noaa.gov/oa/climate/regionalclimatecenters.html>
Overview: http://www.ncdc.noaa.gov/oa/climate/NOAA-NESDIS-RCC_Overview.ppt
Quick Description: http://www.ncdc.noaa.gov/oa/climate/RCC_Quick_description.pdf
Sample Services: <http://www.ncdc.noaa.gov/oa/climate/SampleClimateServices.pdf>

NOAA: Economic and Social Benefits of NOAA RCC Program

<http://www.economics.noaa.gov/?goal=weather&file=users/government/rcc>

Regional Climate Center Service To Society

The weather reports on the nations' television stations are able to report record high or low temperatures based on information provided by **THREADex**. Behind every TV meteorologist who says - "... we've set a record rainfall this month ...", is the support of NOAA's Regional Climate Centers. **Datzilla** assures that extreme values of climate observations are examined and, if needed, corrected by NWS, NCDC, RCC, and AASC meteorologists and climatologists.

NOAA Regional Climate Centers provide thousands of **press releases and interviews** for radio stations, newspapers, and magazines utilizing climate information collected

from NOAA observation and forecast systems, as well as information obtained from other federal and state agencies.

Nearly *sixty million requests* from U.S. citizens... farmers, businessmen, builders, city planners, lawyers, water resource managers, researchers are satisfied by climate data and products provided by NOAA's Regional Climate Centers each year. Information delivered by **ACIS** provides authoritative, unbiased information traceable to official historic climate records and enhances these data using consistent, peer reviewed decision support tools.

Two hundred million people, who obtain weather and climate information from National Weather Service webpages, get the information they need from **NowData**. This RCC developed system is based on **ACIS** information and is fully authoritative.

RCCs advise dam operators, forest fire prevention officials, water managers, agricultural enterprises, on the **Regional State of the Climate**, and provide expert advice regarding water use restrictions, irrigation scheduling, planned burns, agricultural pest management, reservoir levels... all based on the climate data and products managed and produced by NOAA Regional Climate Centers.

NOAA maintains its standing with respect to other federal agencies in climate service, speaking with an authentic voice through Regional Climate Center partnership, working with the Departments of Interior, Energy, Transportation, and Agriculture. USGS, NPS, and USDA partnerships with RCCs and AASC ARSCOs are formalized by MOUs for climate data and services.

The Nation maintains **expertise and knowledge** within the professional staffs of the Regional Climate Centers, and furthers the understanding of the impact climate variability and climate change bear on the nation's economy.

The collection of observations from the Cooperative Observation System, and stored in the **National Archive**, are collected and processed by WeatherCoder III... a system developed and maintained by the Regional Climate Centers.

The media is provided with a key source of knowledge and authentic information (RCCs cite NOAA in press/media interviews with local/state/regional media outlets) reporting accurate information from experts.