



Coos Bay, Oregon

### Who uses the USCRN data?

- Researchers need USCRN data to understand how the climate of the continental United States is changing.
- Scientists study extreme events such as hurricanes and severe thunderstorms using USCRN precipitation measurements made every five minutes. These measurements also provide insight into the types of events that can cause flash flooding.
- Experts involved in programs such as the U.S. Drought Monitor and the National Integrated Drought Information System rely on data from the USCRN for drought monitoring and research activities.
- USCRN measurements help scientists ensure that data received from satellites are correct and accurate.
- National Weather Service offices use USCRN observations to enhance their forecasting operations.
- Regional and state climatologists use USCRN data to conduct research and develop applied climate products, or specific information, that their customers require.
- Anyone can use the USCRN data for their own needs by accessing the website at:  
<http://www.ncdc.noaa.gov/oa/climate/uscrn/>

### What does the future hold for USCRN?

- Near-term, planned improvements to the stations include the installation of soil moisture, soil temperature, and relative humidity sensors. These sensors will further support national drought monitoring programs.
- The USCRN will continue to work with scientists in Canada to develop and test new and improved instrumentation.
- There are plans to expand the program into Alaska through the installation of 29 new stations throughout the state over the next several years.
- The challenge is to continue the high level of maintenance and equipment replacement, as well as improve steps that must be taken to ensure high quality information. This will guarantee that the USCRN can continue to monitor climate change and climate variations on a national level throughout the 21st century and beyond.

# The U.S. Climate Reference Network (USCRN)



**Celebrating  
A Climate Milestone**

# US Climate Reference Network



Developed by the National Oceanic and Atmospheric Administration (NOAA), the U.S. Climate Reference Network (USCRN) is a network made up of 114 climate stations located across the continental United States.

## Why do we need a Climate Reference Network?

- To measure the climate of the continental United States with unprecedented accuracy so that national climate trends are recognized as they happen.
- To monitor year-to-year variations in climate conditions that impact human society and natural resources.
- To provide a basis for researchers to better understand climate variation and change without interference from the false influences of traditional observations, such as development and growth in rural and urban areas, changes in the natural environment, and changes in both observing systems and methods.
- To support drought early warning systems with new climate observation products and services, including providing a basis for ensuring that satellites collecting data from space are working properly and providing accurate information.

## How are USCRN stations designed?

- Stations are sited in stable natural environments that are not likely to change or be encroached upon by human activity.
- USCRN stations can monitor the climate in any type of weather conditions. They are designed to withstand hurricane-force winds, ice and snow storms, and extreme temperatures that can be higher than 120°F or lower than -50°F.
- Battery backup and the use of solar panels at some sites help ensure that USCRN stations can continue to operate when severe weather results in the loss of electrical power.

## What do USCRN stations measure?

- The main purpose of the USCRN is to continuously measure air temperature and precipitation.
- Each station also measures the surface temperature of the ground, wind speed, and solar radiation, in addition to monitoring how well the USCRN sensors and equipment are working.
- The recorded information is transmitted to an orbiting satellite every hour. Almost immediately, that information is available for the public to access through the Internet.

## How are observations made?

- Very high-quality, reliable observations are made by several types of instruments that operate independently of each other.
- At each station, three thermometers are contained inside separate reflective shields that are fitted with fans so that the air temperature can be measured continuously and consistently in any type of weather. Using the shield and fan reduces temperature errors that can be caused by sunlight directly hitting the instrument, or by heating from surrounding surfaces.



- The measurements made by each thermometer are compared with one another. This helps to ensure that the measurements are accurate.
- Three separate precipitation measurements are also made to ensure accuracy. In addition, double precipitation shields and wind fences are used to prevent inaccurate measurements during windy conditions. Without this protection, precipitation totals might be underreported.



## CRN site hosts include:

- Universities and agricultural research facilities
- Wildlife foundations, refuges, and reserves
- Arboreta
- Indian reservations
- State parks and conservation areas
- National Park Service
- U.S. Forest Service
- U.S. Fish and Wildlife Service
- U.S. Department of Agriculture
- National Aeronautics and Space Administration
- U.S. Geological Survey
- U.S. Department of Energy
- National Oceanic and Atmospheric Administration

