

THE U.S. REGIONAL CLIMATE REFERENCE NETWORK PROGRAM

The USRCRN Program is installing a network of 538 automated climate observing stations across the nine NOAA Climate Regions. The USRCRN applies accepted Climate Monitoring Principles and meets Global Climate Observing System requirements. The stations provide measurements critical to the scientific understanding of U.S. regional temperature and precipitation trends. In addition, timely and accurate observations support economic and business decisions through informed preparation for and response to heat waves, poor air quality, drought, forest fires, coastal inundation, changes to ecosystems, and other phenomena.



USRCRN Station AZ Amado 23 W

Stations are being installed in the contiguous U.S. on a geographical grid that ensures spatial representation in each Climate Region. Stations have a triple configuration of calibrated sensors and transmit twelve 5-minute observations every hour.

USRCRN's federal, state, regional, and municipal partners include National Park Service, Bureau of Land Management, U.S. Forest Service, U.S. Fish and Wildlife Service, Bureau of Reclamation, state parks, and regional and municipal airports.



STATION SPOTLIGHT

AZ Page 9 WSW is located at 36.86 N, 111.60 W at an elevation of about 3270 feet, in the Glen Canyon National Recreation Area (NRA) on land protected and administered by the National Park Service. Glen Canyon NRA includes 1.2 million acres of water-based and backcountry recreation. The USRCRN site is in the Lees Ferry area of Glen Canyon NRA at the start of the Grand Canyon. The area includes some gentle mountains peaking at about 3680 feet.

John D. Lee established a ferry near here in 1872 when Mormon settlers needed a way to cross the Colorado River from Utah into Arizona. Distant peaks vary in height from tens of feet to 5500 feet. The climate is arid desert with the Colorado River the only ready water source.

TEAM SPOTLIGHT

Dave Simeral is a USRCRN site surveyor working at the Western Regional Climate Center (WRCC) and the Desert Research Institute in Reno, Nevada. He works on projects with the National Science Foundation, National Park Service, National Center for Atmospheric Research, and the University of California System. His inter-agency experience and contacts provide him with valuable information during surveys. He is an Associate

Research Meteorologist and PhD candidate at University of Nevada-Reno.

Dave conducted the first USRCRN site survey on July 23, 2008 at the Whiteriver Apache Reservation, Arizona. The site was selected and now hosts the USRCRN station, *AZ Whiteriver A 1 SW*. He has completed over 150 surveys in the southwestern U.S., California, and the Pacific Northwest.



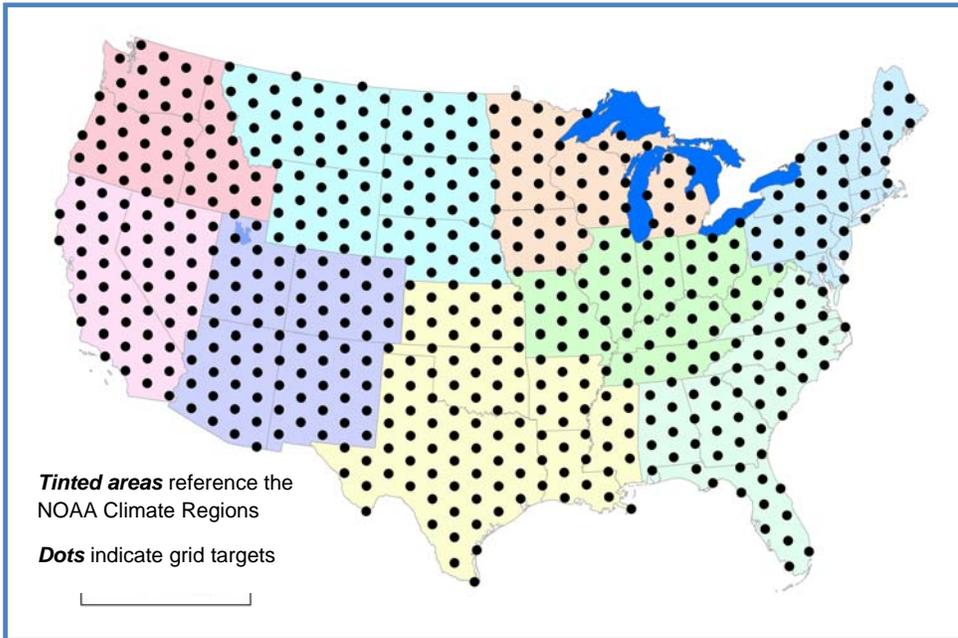
Dave sifts through each grid point's list of potential sites, performing desk surveys to determine qualifying sites as well as to identify additional candidates. He contacts site hosts and executes field surveys to provide a USRCRN site selection panel with information necessary for selecting the best sites. With Dave's assistance the panel uses the material to evaluate each site for spatial representativeness for the climate of the grid point area.

The USRCN Program is grateful to Dave for his many contributions from the office and from the field.

Current USRCRN status

Field surveys completed: **305**
Sites selected: **79**
Sites installed: **50**





was also determined that non-regular grid solutions did not increase efficiency over a uniform grid.

USRCRN is designed to detect these trends in the nine U.S. climate regions to accuracy within 10% per century for precipitation and 0.2°C per century for temperature. This needs-based approach for regional precipitation is based on findings showing that a change rate of as little as 10% per century causes major impacts to water resources for large populations in the West Region (California and Nevada). Measurements must be at least this accurate. The needs for temperature trend detection are similarly based on national and international requirements.

EFFICIENT REGIONAL CLIMATE OBSERVING: THE GRID

The U.S. has thousands of weather observing stations, but many are not in the best locations for producing the quality of data needed to describe climate change. Observations made in pristine locations with highly accurate, well-maintained instruments, mean fewer

stations are needed to accurately detect climate trends.

But how many stations and where? Analysis based on a newly developed dataset of monthly temperature and precipitation values at approximately 470,000 gridded data points determined that a network of 538 uniformly distributed stations is sufficient for identifying trends in all U.S. regions. It

Federal, state, and local government land is preferred, so a station may not be at the grid center. However, the grid analysis accounts for this, and produces a network that is representative of each region.

By finding the minimum number of stations needed to meet all performance measures, the cost of the USRCRN is minimized.

The NOAA Partnership

National Environmental Satellite, Data, and Information Service (NESDIS), National Climatic Data Center (NCDC): Administration, Site Selection, Science

Office of Oceanic and Atmospheric Research (OAR), Atmospheric Turbulence and Diffusion Division (ATDD): Engineering, Installation, Maintenance

National Weather Service (NWS), Office of Climate, Water and Weather Services (OCWWS): Administration

Executive Steering Committee, co-chaired by the Directors of the NCDC and OCWWS: NOAA corporate oversight

Site Selection Panel: NCDC, ATDD, and NWS members

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