

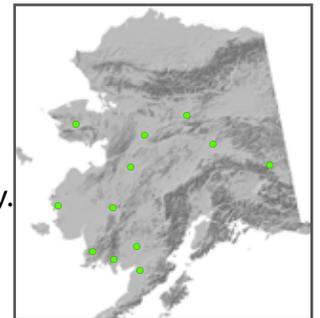


SCAN

The Natural Resources Conservation Service is leading a soil moisture and climate information data collection program in Alaska. It is designed to support natural resource assessments and conservation activities. The program adds new sites and integrates existing sites to develop the first nationwide soil-climate data network. The NRCS establishes new data collection points through partnerships with Federal, State, local, and Tribal entities.



SCAN focuses on rural and agricultural areas. In addition to the benefits gained from establishing a national SCAN network, it expands the NRCS snow surveying and water supply forecasting technology. Currently, SCAN has 12 stations located in Alaska and 200 nationwide.



Uses of SCAN Data

- SCAN sites provide a baseline of soil climate information in sensitive permafrost areas of Alaska. This information is essential to understand how climate change is affecting colder regions and potential accelerated carbon release of the US and globally.
- Information gained from this project could be extrapolated to other cold regions of the world to better understand carbon dynamics and global climate change influences.
- SCAN sites provide valuable soil survey information in an area of the state where there is no current monitoring.



National resource management is necessary for long-term soil and climate information to:

- monitor drought development and trigger plans and policies for mitigation
- investigate climate change scenarios
- predict the long-term sustainability of watershed health
- monitor and predict changes in crop, range, and woodland productivity in relation to soil moisture-temperature changes
- predict regional shifts in irrigation water requirements which may affect reservoir construction and ground-water levels
- predict shifts in wetlands
- develop new soil moisture accounting and risk assessments
- predict changes in runoff that affect flooding and flood control structures
- verify and ground-truth satellite and soil moisture model information
- predict and mitigate pest and disease outbreaks.
- provide input to global circulation models



Weary Lake SCAN site

Standard SCAN Site Configuration

Precipitation	Storage-type gauge or tipping bucket
Air Temperature	Collected by a shielded thermistor
Relative Humidity	Collected by a thin film capacitance-type sensor
Wind Speed and Direction	Collected by a propeller-type anemometer.
Solar Radiation	Collected by a pyranometer
Snow Water Content	Measured using a snow pillow device and a pressure transducer. (not on all stations)
Snow Depth	Measurement is by a sonic sensor.
Soil Moisture	Collected by a dielectric constant measuring device. Typical measurements are at 2", 4", 8", 20", and 40" where possible.
Soil Temperature	Collected by an encapsulated thermistor. Typical measurements are at 2", 4", 8", 20", and 40" where possible

All sensor measurements are reported hourly.

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Information is also available at:
www.ak.nrcs.usda.gov

Data Transmission

SCAN uses a variety of methods to transmit remote station data. The majority of stations use meteor burst telemetry; however other places use either iridium satelight technology, line-of-sight or GOES technology to obtain remote site information in near real-time.

Data Management

Data management is performed in two stages. When the remote station data are received at the NWCC computer center, the system automatically validates the incoming values against limits and flags any data that fall outside preset windows. A statistical assistant examines any flagged values to determine their accuracy and make corrections. All parameters are graphed and comparisons are made between sensors to verify that the data are within an acceptable range.

Data Access

Beginning in 1998, data were placed on the NWCC website at www.wcc.nrcs.usda.gov/scan/. The website contains the current and historic data for each site. In addition to the data, each website contains all of the soil pedon information, a site picture, and a link to the National Soil Survey Center Laboratory database, which describes all of the site characterization (chemical, physical, and mineralogical) information.

Example of data from Weary Lake, Alaska SCAN Site

