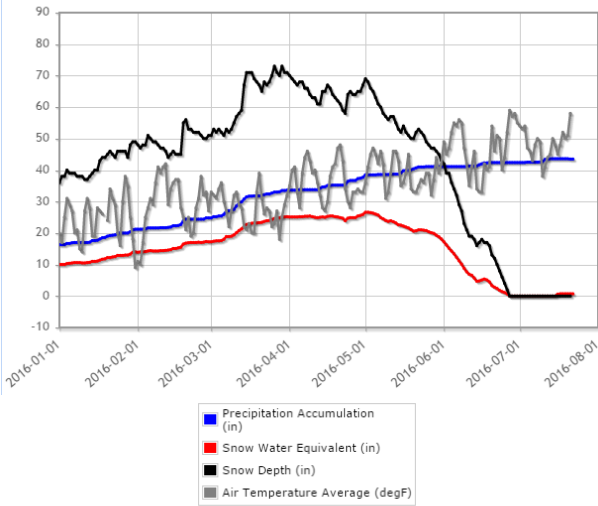


Aneroid Lake #2 (302) Oregon SNOTEL Site - 7400 ft



Accumulated precipitation, snow water equivalent, snow depth and average air temperature data for the Aneroid Lake SNOTEL site in Oregon. Elevation at this site is 7,400 ft.

## Uses and benefits

Data collected and transmitted by SNOTEL stations and manual collection sites are processed rigidly for quality and packaged in both raw and formatted versions on the NWCC website ([www.wcc.nrcs.usda.gov](http://www.wcc.nrcs.usda.gov)). The data and information are used by many governmental and private entities. Examples include:

- Program information influences production decisions on millions of acres of surface-water dependent, irrigated agricultural lands. Knowing how much water they will receive based on the available water supply and the relative seniority of their water rights helps producers make cropping decisions about what, when and how much to plant.
- In many communities, local water commissioners operate reservoir and diversion systems in response to emergency plans for flood and drought which rely heavily on SNOTEL data. Many millions of dollars worth of damage to homes, businesses and other property, infrastructure and crops are prevented by implementing these emergency plans.

- One city began flood diversion preparations early based on SNOTEL and SSWSF data. In spite of extremely high volume of spring runoff (75,300 acre-feet of water compared to an historic average 21,000 acre-feet), flood damages were minimal. City managers estimated losses would have been over \$15 million in housing, not including the value of businesses and other infrastructure.

The SNOTEL network and SSWSF Program are of critical value to water users and managers throughout the West. To learn more, visit our website at [www.wcc.nrcs.usda.gov](http://www.wcc.nrcs.usda.gov).

## Contact us

For information on local snow survey data and products, contact the NRCS State Office:

|            |                   |
|------------|-------------------|
| Alaska     | 907-761-7746      |
| Arizona    | 602-686-4349      |
| California | 530-792-5622      |
| Colorado   | 720-544-2852      |
| Idaho      | 208-685-6983      |
| Montana    | 406-587-6844      |
| Nevada     | 775-857-8500 x152 |
| New Mexico | 505-761-4431      |
| Oregon     | 503-414-3270      |
| Utah       | 801-524-5213 x112 |
| Washington | 360-428-7684 x141 |
| Wyoming    | 307-233-6744      |

For information on SNOTEL and the Snow Survey and Water Supply Forecasting Program, contact:

Michael Strobel, Director, NWCC  
 503-414-3055 [michael.strobel@por.usda.gov](mailto:michael.strobel@por.usda.gov)  
 1201 NE Lloyd Blvd, Suite 802  
 Portland, OR 97232

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 NWCC 8/3/2016



Typical SNOTEL site, northern Utah

## Snow Telemetry (SNOTEL) Data Collection Network



National Water and Climate Center  
 Natural Resources Conservation Service



Pole Canyon SNOTEL site, northeast Nevada.

## Overview

The Natural Resources Conservation Service (NRCS) installs, operates, and maintains an extensive, automated data collection network called **SNOTEL** (short for Snow Telemetry).

The SNOTEL network is part of the **Snow Survey and Water Supply Forecasting (SSWSF) Program** and is designed to collect snowpack and related climatic data in the western U.S. and Alaska. The Program operates under technical guidance from the NRCS **National Water and Climate Center** (NWCC).

With the majority of the water supply in the West arriving in the form of snow, data on snowpack provide critical information to decision-makers and water managers. SNOTEL provides a reliable, cost effective way to collect snowpack and other meteorological data needed to produce water supply forecasts and support the resource management activities of NRCS and others.

The SSWSF Program has grown into a network of over 800 automated SNOTEL stations.

The network supports other Program activities, including streamflow forecasts at over 600 stream gages in the West. The data, as well as related reports, are made available — in near real-time for

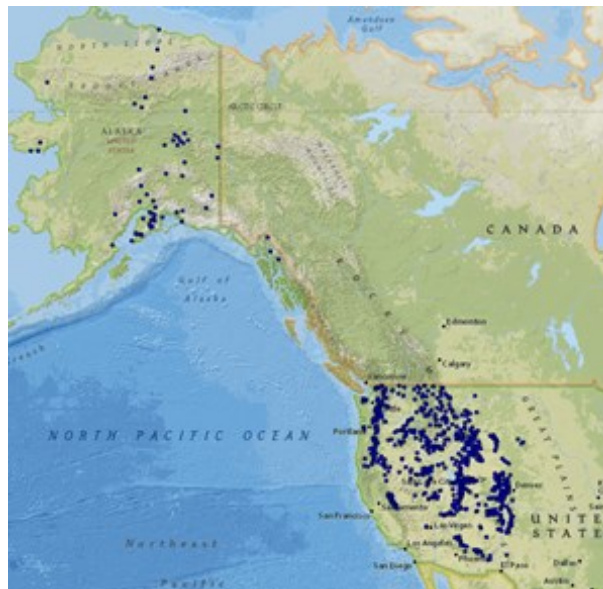
SNOTEL sites — to private industry; Federal, State, and local government entities; and to private citizens through an extensive internet delivery system.

The SNOTEL network provides data for climate studies, flood forecasting, air and water quality investigations, climate change, and endangered species habitat analysis. The high-elevation watershed locations, broad coverage, and real-time operation of the network provide important data to researchers, river and reservoir managers, emergency managers, recreationists, and power generation companies.

## Telemetry and data transmission

SNOTEL sites are generally located in remote, high-elevation mountain watersheds where access is difficult or restricted. They are designed to operate unattended and without maintenance for a year or longer with batteries charged by solar cells.

Data at SNOTEL sites are collected and stored by a data logger installed in the equipment shelter.



SNOTEL sites are located across the western U.S. and Alaska.

Depending on the location of the site, data are transmitted back to the National Water and Climate Center's **Water and Climate Information System** using one of several telemetry systems, including meteor burst radio wave communications, cellular modem, satellite, and line of sight.

## System capabilities

A basic SNOTEL site provides snowpack water content data via a pressure-sensing snow pillow. It also collects data on snow depth, all-season precipitation accumulation, and air temperature with daily maximums, minimums, and averages.

## Standard site configuration

| Parameter measured | Description                                |
|--------------------|--|
| Air temperature    | Shielded thermistor                        |
| Precipitation      | Storage type gage                          |
| Snow water content | Snow pillow device and pressure transducer |
| Snow depth         | Sonic sensor                               |

## Enhanced site configuration

| Parameter measured   | Description                          |
|----------------------|--------------------------------------|
| Relative humidity    | Thin film capacitive-type sensor     |
| Soil moisture        | Dielectric constant measuring device |
| Soil temperature     | Encapsulated thermistor              |
| Solar radiation      | Pyranometer                          |
| Wind speed/direction | Propeller-type anemometer            |