

SMAP Cal/Val Workshop NRCS Soil-Climate Monitoring Networks SCAN and SNOTEL

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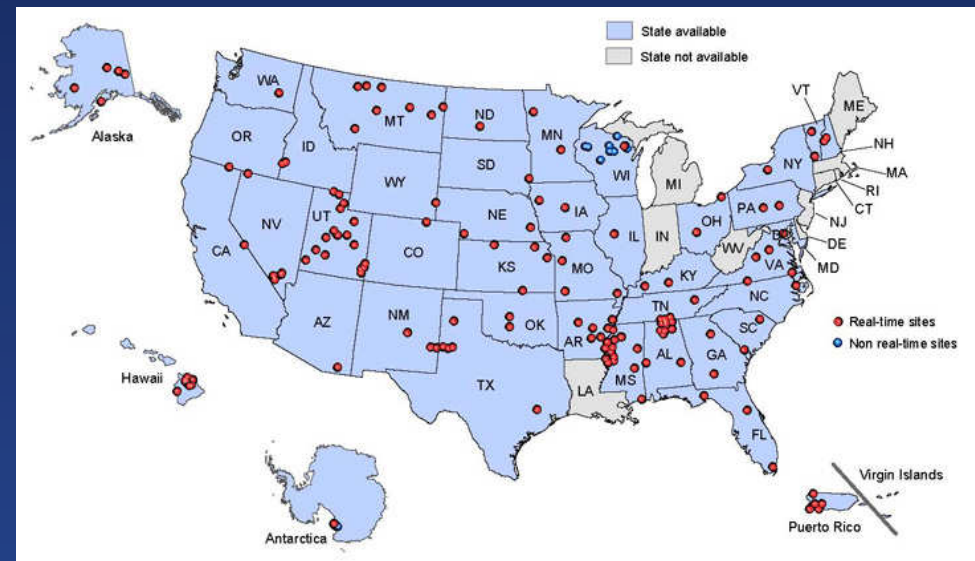
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Soil Moisture Monitoring

- SCAN
 - Soil Climate Analysis Network
 - Monitors lower elevation areas for climate parameters and soil moisture monitoring nationwide
- SNOTEL
 - SNOw pack TELmetry
 - Monitors high elevation areas for snow water content, climate parameters, and soil moisture in the Western United States

SCAN

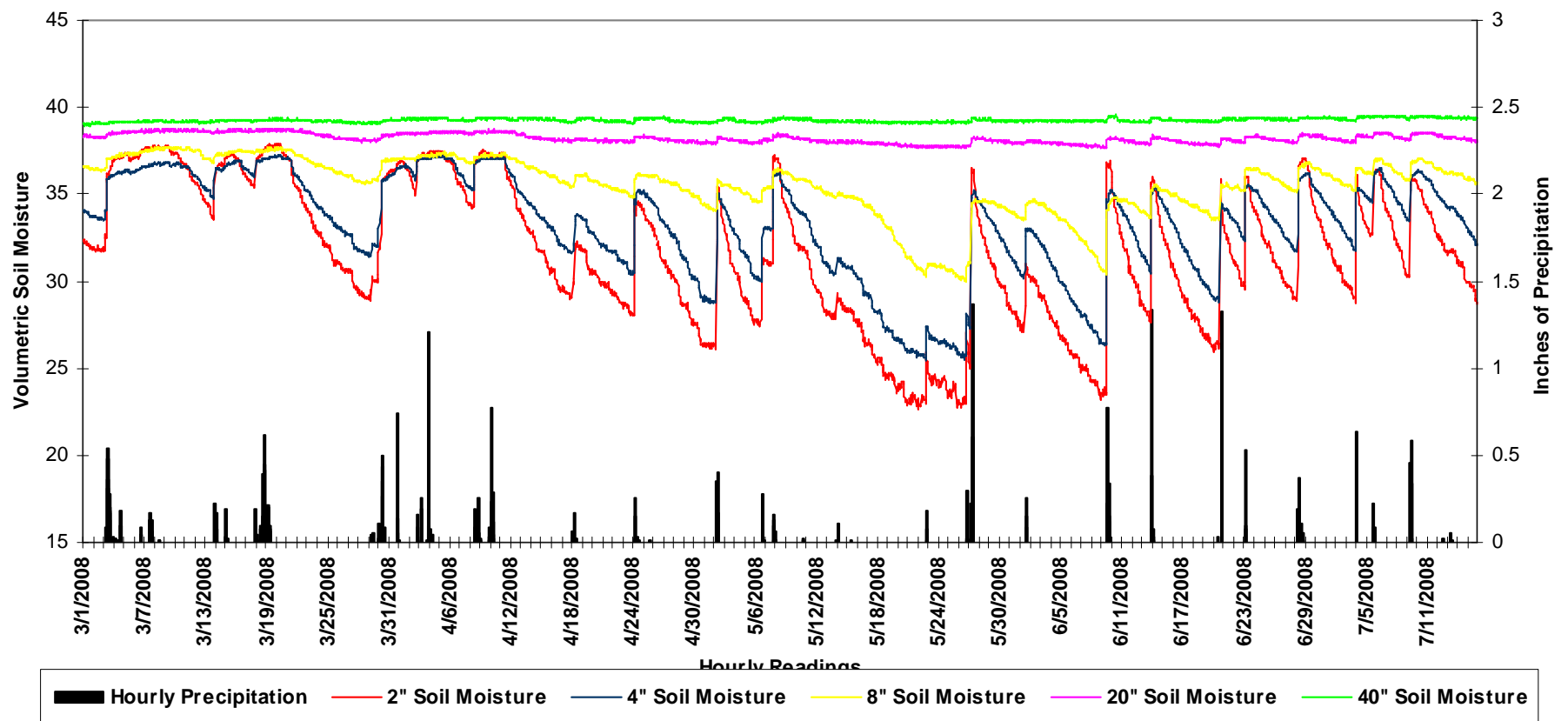
- Currently the network has 151 stations in 40 States
- Provides hourly data with
 - Precipitation
 - Air temperature
 - Relative humidity
 - Solar radiation
 - Wind speed and direction
 - Barometric pressure
 - Soil moisture and soil temperature
 - 5, 10, 20, 50, and 100 CM





Soil Moisture/ Precipitation

UAPB Point Remove, AR
Soil Moisture vs. Precipitation
PRELIMINARY DATA SUBJECT TO CHANGE



SCAN Data

- All SCAN stations have full soil characterizations and available on the web
- All historic and real-time SCAN data are available on the web
 - <http://www.wcc.nrcs.usda.gov/scan>
- Special Reports
 - Special “Spreadsheet” compatible reports can be created

Soil Description

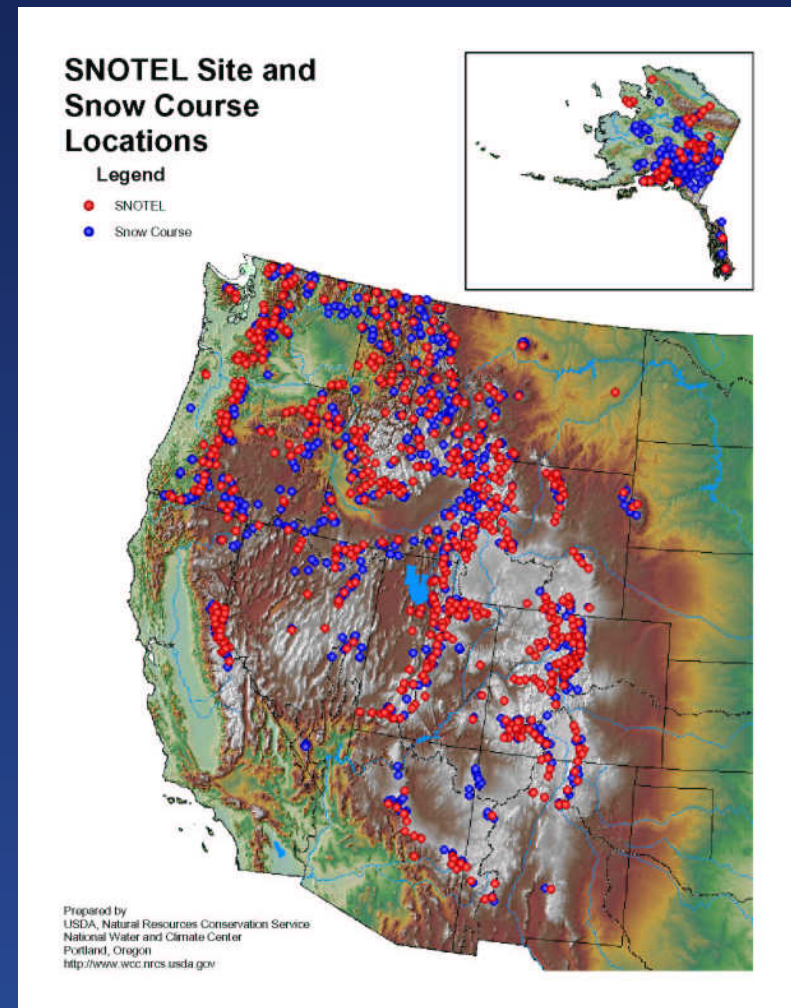


SNOTEL Network

- Large Automated Climate Network
 - Generally in high elevation areas
 - Located in the 13 Western States and Alaska
 - Utilizes meteor burst communication technology to transmit remote station data in near real-time
 - All data are available on the web within minutes of collection

SNOTEL Network

- Large Automated Climate Network
 - Began in 1978
 - 765 remote stations
 - ~ 1200 manual snow courses adding additional data
 - Generally in high elevation areas
 - Located in the 13 Western States including Alaska



SNOTEL Parameters

- Typical Sensor Array
 - Snow water content
 - All season precipitation
 - Air temperature (maximum, minimum, and average)
 - Snow depth
 - Soil moisture and soil temperature at 35% of network measured at 10 cm, 20 cm, and 50 cm with 10 % using the same depths as SCAN
 - ~ 40% report hourly data and only the midnight data are quality controlled and edited by NRCS

Typical SNOTEL Station



Issues and Opportunities

- **SCAN**
 - Not currently a funded network, operated with NRCS and cooperator funding
 - NRCS Directive issued May 2009 freezes SCAN at 2009 level and provides some limited funding for maintenance, but no permanent increase in staff
 - FY 2009 will be adding 10 new stations in AL and 10 more in 2010 funded by Alabama A&M, 4 stations in NM, funded by EPSCor, 1 additional station in CA in FY2009 funded by ARS
 - Beginning this year, more active remote station maintenance will begin partnering with local people to assist with maintenance operations
 - NRCS will purchase CONUS meteor burst communication system (4 master stations)
 - Currently working on a 2011 Budget Initiative to fully fund network
 - Potential to add additional 5 cm soil moisture sensors around existing stations to improve spatial variability at some stations
- **SNOTEL**
 - SNOTEL is a funded network
 - Nearing maximum station density for current staffing levels
 - Currently working on a 2011 Budget Initiative to expand the network by 1,000 new stations, mostly converting the manual snow course network
 - Stations receive yearly maintenance
 - Installing new meteor burst master station at Dugway Proving Ground to enhance remote station communications in the West
 - Starting upgrade of the Alaska master station to bring it up to current NRCS CONUS standards

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