Mahantango Creek – Klingerstown, PA

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 line-of-sight or GOES technology to obtain remote site information in near real-time. Meteor burst communication is extremely reliable and cost effective.

DATA MANAGEMENT

Data management are performed in two stages. When the remote station data is received at the NWCC computer center, the computer automatically validates the incoming values against limits and flags any 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 May 1998 data were placed on the NWCC Internet homepage at http://www.wcc.nrcs.usda.gov. The web site contains the current and historic data for each site. In addition to the data, each site contains all of the soil pedon information, a site picture, and a "hot link" to the National Soil Survey Center Laboratory database, which contains all of the site characterization (chemical, physical, and mineralogical) information. Interest has grown dramatically since the data were made available on the Internet.

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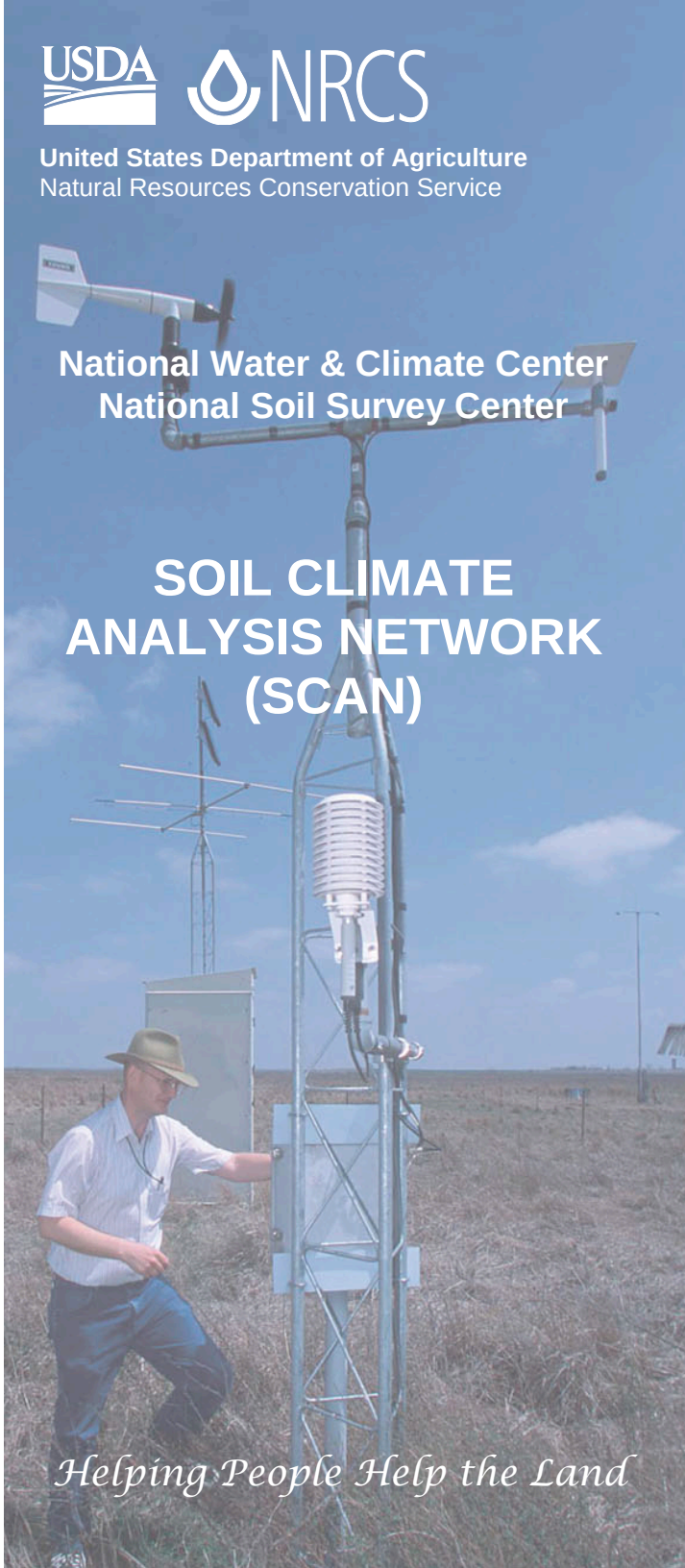
NWCC 09/20/12

USDA NRCS

United States Department of Agriculture
Natural Resources Conservation Service

National Water & Climate Center
National Soil Survey Center

SOIL CLIMATE ANALYSIS NETWORK (SCAN)



Helping People Help the Land

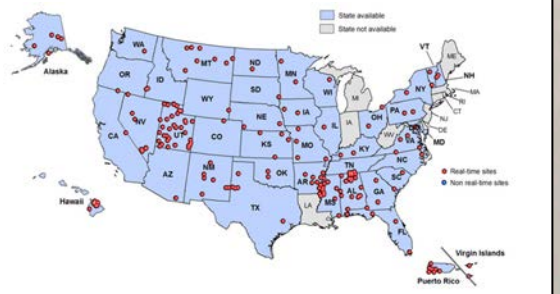
CONCEPT

The Natural Resources Conservation Service (NRCS) is the leader of a cooperative nationwide, comprehensive soil moisture and climate information system. This is designed to support natural resource assessments and conservation activities through the 21st century. This system, if funded, will add 1,000 or more new remote sites and integrate existing cooperator networks to develop the first nationwide soil-climate network.

Through the Soil Climate Analysis Network (SCAN) proposal, the NRCS will:

- Integrate information from existing soil-climate data networks and
- Establish new data collection points through partnerships with Federal, State, local, and tribal entities.

SCAN focuses on the agricultural areas of the United States. In addition to the benefits gained from establishing a national SCAN network, it will also make it possible to extend the NRCS snow surveying and water supply forecasting technology into other regions of the U.S. Currently SCAN has more than 180stations located in 41 states with many outstanding requests for additional stations.



The current SCAN network

BACKGROUND

The NRCS has operated a national Soil Moisture/Soil Temperature (SM/ST) Pilot Project since 1991. Significant knowledge and experience have been gained in the type of sensors used, maintenance, network operation, quality control, product analysis, and dissemination of information to users.

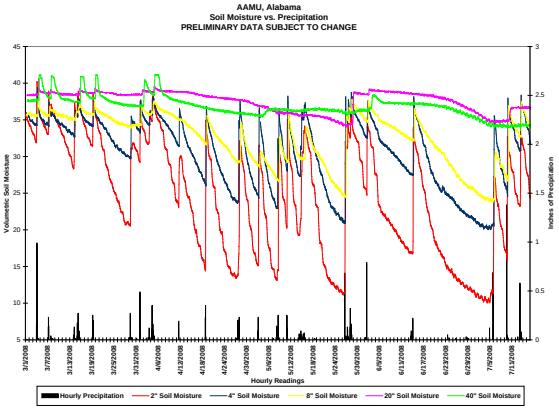
The ability of NRCS and its partners to make sound resource assessments and watershed decisions has been severely limited by the lack of quality, historic and real-time soil-climate information. Existing data from other networks are essentially inadequate for a national network, as they tend to be application specific, short-term, incomplete, limited in area of coverage, and often include non-standard data that are difficult to access.

NRCS will use SCAN to build, operate, maintain, and develop products that our customers require in order to make sound resource management decisions.

USES OF SCAN DATA

National resource management issues for which long-term soil/climate information is needed include:

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



Example of Soil Moisture versus Precipitation plot for AAMU station near Huntsville, Alabama

STANDARD SCAN SITE CONFIGURATION

Parameter Measured	Description
Precipitation	Storage-type gage 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
Barometric Pressure	Measured by a silicon capacitive pressure sensor.
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. (not on all stations)
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.