DATA TRANSMISSION

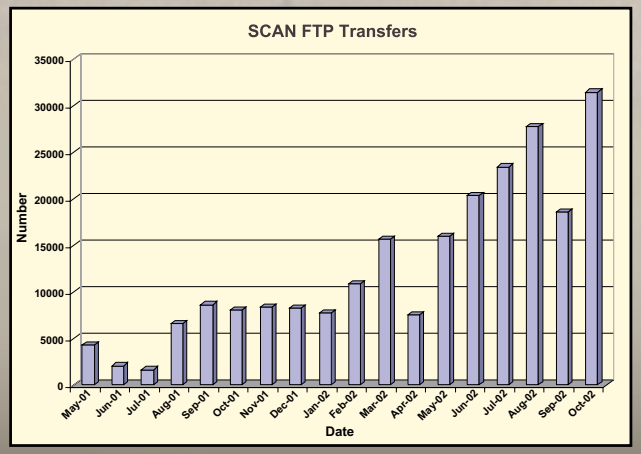
SCAN uses meteor burst telemetry to obtain remote site information in near real-time. Meteor burst communication is extremely reliable and cost effective.

DATA MANAGEMENT

Data management is performed in two stages. The computer automatically validates the incoming value 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 was placed on the NWCC Internet homepage at *www.wcc.nrcs.usda.gov*. The website 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. Other Soil Moisture Team projects are also available through this website. Interest has grown dramatically since the data were made available on the Internet. The graph below shows the current level of interest in acquiring SCAN data.



For More Information

National Water and Climate Center
101 SW Main Street, Suite 1600
Portland, OR 97204
503-414-3055
www.wcc.nrcs.usda.gov

or

National Soil Survey Center
Federal Bldg, Rm. 152, MS32
100 Centennial Mall North
Lincoln, NE 68508
402-437-5499
www.statlab.iastate.edu/soils/nssc

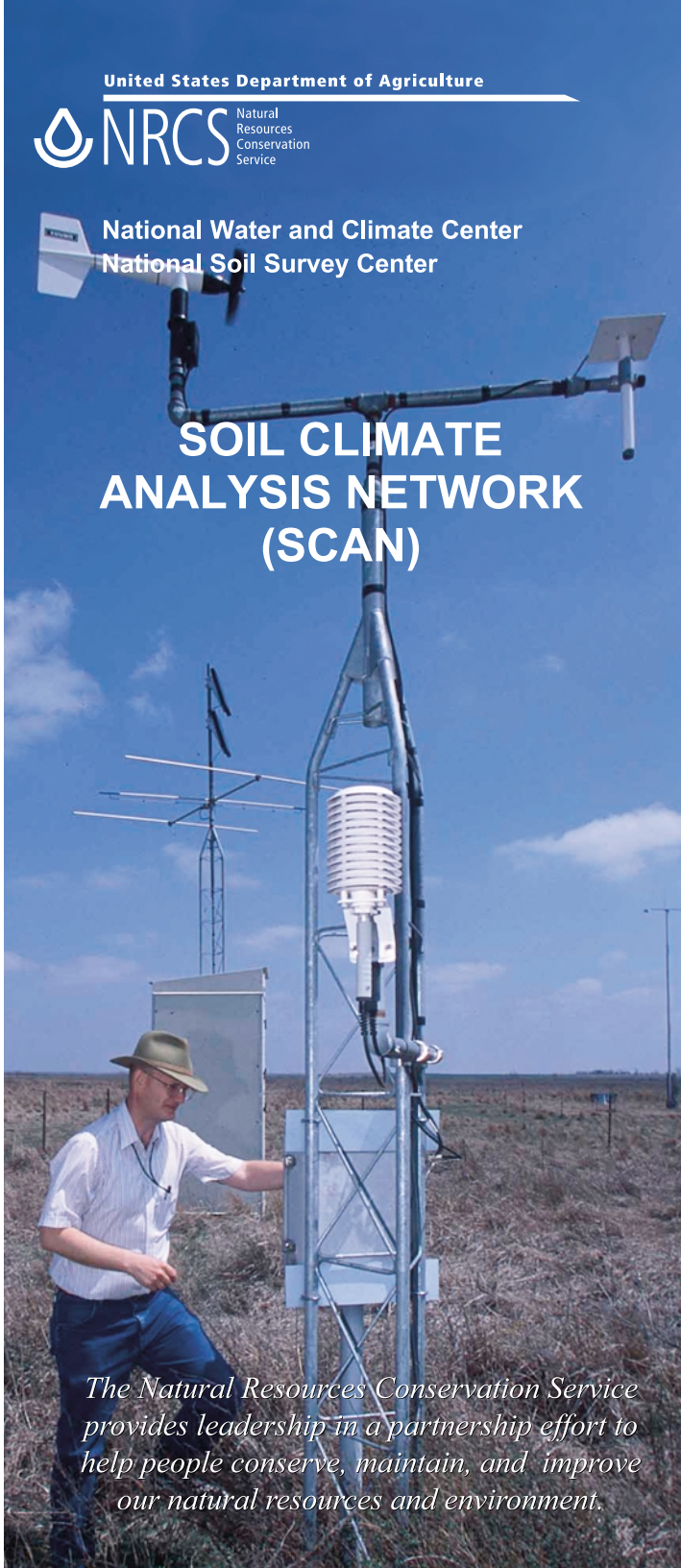
January 2003

United States Department of Agriculture

NRCS Natural Resources Conservation Service

National Water and Climate Center
National Soil Survey Center

SOIL CLIMATE ANALYSIS NETWORK (SCAN)



The Natural Resources Conservation Service provides leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment.

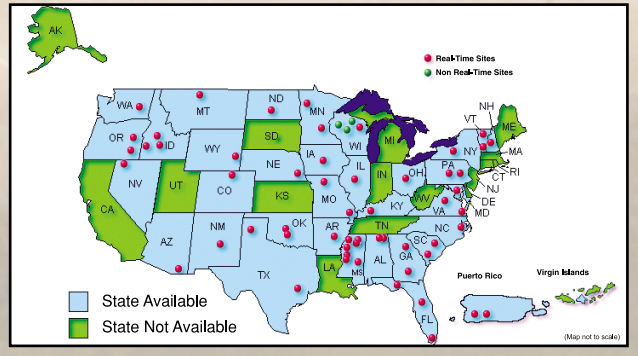
CONCEPT

The NRCS is the leader of a cooperative nationwide, comprehensive soil moisture and climate information system designed to support natural resource assessments and conservation activities. 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 Natural Resources Conservation Service (NRCS) will:

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

SCAN will focus on the agricultural areas of the United States. In addition to the benefits gained from establishing a national SCAN network, NRCS will be able to extend data collection expertise and water supply forecasting technology into other regions of the U.S.



The current SCAN network

BACKGROUND

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 most purposes, 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.

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.

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

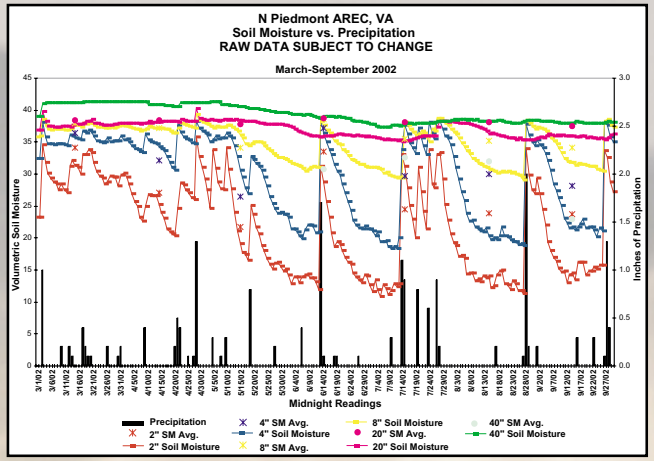
NATIONAL DROUGHT MONITORING OPPORTUNITY

It is anticipated that the National Drought Policy Commission (NDPC) will recommend a national automated monitoring network to assess national drought trends. SCAN utilizes proven technology and stands ready to be implemented to meet this need.

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
- For soil classification
- For engineering applications
- For Input to global circulation models
- To develop new soil moisture accounting and risk assessments
- 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 predict changes in runoff that affect flooding and flood control structures
- To be able to verify and groundtruth satellite and soil moisture model information
- To predict the long-term sustainability of cropping systems, and watershed health



Example of Soil Moisture versus Precipitation plot including June averages for the Northern Piedmont site near Orange, Virginia

STANDARD SCAN SITE CONFIGURATION

Parameter Measured	Description
Precipitation	Storage-type gage or tipping bucket
Air Temperature	Collected by a shielded thermister
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.
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.