New Technology Committee Report

Northeast Region National Cooperative Soil Survey Conference

Bordentown, New Jersey
May 22-25, 2006

Charges

- Explore data collection tools for improving the quality of existing soil survey data;
- Explore new ways of visualizing and delivering soil survey data;
- Explore data analysis tools and effects of data quality on the analysis
- Explore strategies for information sharing and technology transfer

Committee Members

- Caroline Alves, NRCS**
- Brian Bills, Penn State*
- Darcy Boellstorff, Bridgewater State*
- Leander Brown, NRCS ENTSC*
- James Brewer, NRCS*
- Tim Craul, NRCS*
- Steve DeGloria, Cornell
- Chris Fabian, NRCS*
- Edward Griffin, NRCS CNTSC
- Wayne Hoar, NRCS
- Steve Indrick, NRCS
- John Kelley, NRCS
- David Kriz, NRCS
- Vicki Meyers, NRCS*
- Amanda Moore, NRCS*
- Edwin Muniz, NRCS*
- E.J. Neafsey, Cornell
- Jonathan Rossell-Anelli, Cornell
- Fred Schoenagel, NRCS*
- Jerry Smith, NRCS
- Bruce Thompson, NRCS
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- Jim Turenne, NRCS*
- Olga Vargas, NRCS*

*Members who participated in pre-meeting work
**Members who participated in pre-meeting work, but not NCSS conference

Field Tools for Data Collection

- Fred Schoenagel (NRCS-NJ) and Vicki Meyers (NRCS-PA) surveyed the NE region to determine what kind of field data collection tools were being used – this information was presented to the committee and a summary available in committee report.
- Consensus was:
  - Appropriate field data collection tools for a survey will depend on the intent of the survey (initial, update), the physiography of the survey, and the skill and interest levels of staff. For these reasons, it is not reasonable to make a recommendation for a standard configuration of field data collection devices. However, the following recommendations regarding field data collection tools can be made:

Field Tools for Data Collection - Recommendations

- Develop a list of technology tools currently available for use in soil survey, document the positive and negative aspects of each tool, identify where each tool is being used, indicate other locations where each tool might be employed successfully, and post this list to a public website. Update regularly.
- Appoint soil survey liaisons to ITS to bring forward IT-related issues affecting soil survey offices and to communicate solutions back to MLRA SSOs. The liaison could be the State Soil Scientist or Assistant State Soil Scientist. (NRCS-specific)
- Develop and/or communicate a coordinated plan for deployment of software (products/versions) specific to soil survey offices across an MLRA SSA, State, or region; ensure that a high priority is assigned to addressing hardware or software problems that affect field collection tools. (NRCS-specific)
- Revisit this topic in two years, as soil survey staff gains more exposure to new data collection tools.

Using and Visualizing Soil Information

- Brian Bills (Penn State) and Caroline Alves (NRCS-VT) compiled a report describing opportunities for developing and presenting soil information to non-technical users to augment the wealth of information available on Web Soil Survey (see committee report for complete text).
- Premise of report is:
  - Soils are complex natural bodies. Likewise, the information resources developed by the National Cooperative Soil Survey (NCSS)—traditional soil surveys, characterization information, attribute databases—are also complex and generally unfamiliar to those outside of the discipline of soil science. Whereas members of the soil science community and knowledgeable users can generally navigate through this range of resources, non-soil scientists and first-time users are often overwhelmed by the complexity of locating and determining the specific soil information to meet their needs. The challenge has been, and remains, to provide diverse customers with access to this vast body of soil information in forms that are easily understood and applied.
  - By facilitating the development of soil information products and services that are easier to access, easier to understand, and customized to the consumer's needs, the NCSS will move beyond simply delivering data to providing information. Through creative partnerships between cooperating members, NCSS can effectively build the capacity of the consumer base for soil information resources, thus reaching new markets and increasing the awareness and understanding of soils.

Visualizing and Using Soil Information - Recommendations

- Actively support the development of tailored soil information products based on SSURGO data delivered from the Soil Data Mart or Web Soil Survey (examples: Soil Series Extent Mapping Tool, Forages Decision Support System, etc.)
- NRCS should continue to work towards the development of an API to allow direct access to SSURGO and other soils data; upon implementation, support to developers interested in accessing this data should be provided.
- Establish a Developer Network for developers (NCSS partnership? Others?) working with SSURGO and other soils data; share information with developers through workshops, technical support, documentation, training, etc.
- Prepare official disclaimer for custom soil applications regarding potential problems with spatial or tabular data and clearly stating that the official source of soil survey data is the Soil Data Mart.
- Consider establishing an NCSS subcommittee on use and visualization of soil survey information.

Digital Soil Mapping Standards

- Digital soil mapping methods are rapidly being incorporated into soil survey procedures at local, state, and regional levels; however, no overarching national framework for the application of these methods exists. Current National Cooperative Soil Survey (NCSS) standards for digital soil mapping and digital soil map products are primarily cartographic and do not address key issues in digital data analysis, management, and use.
- In order to effectively and efficiently integrate digital soil mapping methods into the NCSS on a national basis, and subsequently to support the appropriate use, management, and maintenance of the resulting data, a subcommittee to develop a framework for Digital Soil Mapping in the NCSS is needed. The primary objectives of this framework are to maintain consistency and enhance scientific credibility of digital soil map products through the development of guidelines and recommendations for producing and using digital soil map products.

Digital Soil Mapping Standards - Recommendations

- Support the establishment an NCSS committee or subcommittee (under Standards and/or New Technology) to review existing NCSS mapping standards for the soil and ecology business areas and their transfer to a digital geospatial environment.
- Develop a framework for digital mapping standards, their review and documentation.
- Establish a special team of knowledgeable scientists to work toward this goal by the 2007 National NCSS meeting.

Technology Transfer, Communication, and Training - Recommendations

- Successful implementation of new technology in the NCSS is dependent upon the ability to disseminate ideas from research to applied settings as well as the ability to share information among the NCSS partnership throughout the year.
- Some recommendations for facilitating technology transfer and communication include:
  - Develop a web page for the Northeast Region National Cooperative Soil Survey Partnership with links to other regions, NRCS, FS, NPS, University and other web pages, conference information, committee information, and a bulletin board for information exchange.
  - Post minutes from NRCS and other agency or university advisory groups relevant to the NCSS to a central location in a timely fashion.
  - Update the NCSS newsletter format – consider a web-based newsletter with hyperlinks, etc. to encourage a wider audience.

Technology Transfer, Communication, and Training - Recommendations

- Adjust the current federal requirements for soil scientist positions (GS-470) to incorporate GIS and Remote Sensing training; recommend that universities also incorporate GIS and Remote Sensing coursework into soil science degree programs.
- Develop a list of recommended GIS/RS skills for current and new soil scientists and provide a means of obtaining these skills to current soil scientists in the NCSS through on-line, face-to-face, or on-the-job training.
- Utilize Geospatial Extension Specialists at Land Grant, Sea Grant, and Space Grant Universities to provide training in GIS/RS.
- Develop call list/bulletin board/etc to facilitate sharing GIS/RS tips/tricks/instructions amongst NCSS; Include contact information and/or moderate the discussion.
- Consider implementing quarterly teleconferences/ net-meetings among soil survey GIS users for training, communication, etc (NRCS-specific?, Tech Centers?).
- NGDC and NCGC should appoint representatives to serve as (permanent?) liaisons to regional New Technology Committees (2 each for a total of 4)

Any Questions?