

Southern Regional Soil Survey Conference, Bryan, TX, July, 12-15, 2010

Soil Interpretations Committee Report

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Committee Members:

Julia McCormick	Chance Robinson	Sixte Ntamatungiro
Ed Griffin	Steve Blanford	Steve Lawrence
Richard Reid	George Peacock	Dennis Williamson
Wayne Gabriel	Ron Williams	Laurie Kiniry
Edward Ealy	Jim Fortner	Sam Brown
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Charge 1: Review and document current progress on dynamic soil properties and Ecological Site Inventory and its future effects on soil survey interpretations in the Southern NCSS regions.

Response/Points of Discussion

- ▶ Most ESD progress is being made in TX and OK (25-30 % by contractors), some work being done in LA and FL, just starting in AR and GA, no progress in KY
- ▶ Difficulties may exist in finding appropriate reference sites
 - ▶ For those not available, describe steady-state ecosystems in surrounding site
 - ▶ May need to investigate historic accounts
- ▶ Some DSP projects are on-going in TX and GA
 - ▶ Inventory stage only, interpretation development stage yet to come
 - ▶ DSP issues/questions
 - ▶ Where does this data go once collected?
 - ▶ NASIS Database not fully capable yet of accommodating DSP data, but work is underway to resolve this
 - ▶ How will DSP data be used and interpreted?
- ▶ ESD/DSP work could be continued/augmented through collaboration/cooperation with university researchers
- ▶ NRCS needs researchers to mine data and explore data statistically in more depth, then integrate results into interpretations
- ▶ Further collaborations to discuss appropriate measurement methodologies/protocols and validate/compare techniques
- ▶ Discussion/cooperation among states for consistent development of ESDs should be promoted
- ▶ Temporal variability of soil properties may be important too (i.e., seasonality), but will be difficult to generate this data on more than just a few strategically located sites
- ▶ Questions may arise in areas where rangeland and forestlands transition (i.e., savanna in eastern OK and western AR) regarding which kind of ESD to develop (rangeland or forest ESD)
- ▶ Remember that the landowner is the target customer for the ESD

Recommendations

- ▶ Develop a protocol for aggregating ESD data
- ▶ Develop a structure in the ESD to facilitate making interpretations
- ▶ Develop/make available ESD prototypes from western states to guide/train initial work in eastern states
- ▶ Build a prototype framework to deal with DSP data and begin identifying/testing its flaws
- ▶ Make NASIS pedon data and all associated lab data available to a wider audience (i.e., university researchers, interagency)

- ▶ Have states offer to sponsor login, view-only privileges to appropriate users upon request
- ▶ Push forward with supplying customers with as much information as possible, even making the process of making/using interpretations an educational tool – work is already being done here, but should continue to be emphasized
- ▶ Always strive to view interpretations spatially in map form

Charge 2a: Continue to establish a formal mechanism (charter) within NCSS to: Identify, document, prioritize, and address the critical interpretation and technical development issues within the NCSS.

Response/Points of Discussion

- ▶ Additional interpretations from ESDs could be made for wildlife habitat (i.e., turkey roosting/loafing areas, other game species, specific plant species for food and/or habitat, and endangered species)
 - Wildlife interpretations from soil survey data are valid in the context of growing a certain species or type of vegetation for food/habitat as these desired characteristics are directly related to soil factors
 - Other individuals/groups would use soil survey's interpretations to make additional interpretations
 - Addition of wildlife biologist to ESD team will greatly facilitate development of new wildlife-related interpretations
- ▶ Interpretations are needed for new, emerging, and specialty crops such as grapes, commercial vegetable production, and truck farms
- ▶ Interpretations related to the landscape visual diversity and the idea of visual diversity
- ▶ Additional interpretations from ESDs could be made for biofuels
 - Suitability for switchgrass and other biofuel crop production
 - DOE and NIFA may likely be interested in these interpretations
 - May be opportunities to write work on additional interpretations into next NIFA RFP
- ▶ Progress is already under way in the Southern region to develop a list of additional relevant/requested interpretations
- ▶ A procedure is in place, initiated in 2006, but now in the National Soil Survey Handbook, to elevate interpretations from a local request to the national level
- ▶ Other issues:
 - Need to be able to geospatially display soil interpretation reasons and indices
 - Need soil interpretations for pedons and their own lab data
 - Need relevant aggregate interpretations where multiple interpretations are combined
 - Need ability to access and combine with outside data sources to develop new interpretations
 - Need to develop a sustainability index
 - Need to overcome privacy issues with using and exporting pedon data, but without exact spatial coordinates
 - Much additional work needs to be done with subaqueous soils prior to developing relevant interpretations
 - Some questions exist as to the validity/accuracy of some interpretations from the National Commodity Crops Productivity Index (NCCPI)
 - Database integration with outside sources is a high priority for new interpretations

Recommendations

- ▶ Additional interpretations need to be multi-disciplinary, pulling information from ESD and NASIS and other potential uniform, consistent databases that could be developed
- ▶ “Old” standard interpretations need to be reviewed based on newest information (i.e., septic system absorptions field suitability)
- ▶ Work to improve ability to assist customers in making land use decisions to overcome soil limitations
- ▶ Identification of what data is necessary and developing the database framework to enter and store data to support the ESDs and resulting interpretations needs are critical to address in the near future
- ▶ Research needs to be encouraged, conducted, and supported to develop new interpretations and their associated criteria
- ▶ Interpretative thematic maps need to be end result of new interpretations to facilitate use by customers
- ▶ A single, uniform national database of ecosystem properties needs to be developed from which new interpretations can be generated and supplied to customers

Charge 2b: Continue to establish a formal mechanism (charter) within the NCSS to: Identify opportunities for partnering on investigation, validation, documentation and delivery of newly developed interpretations within NCSS.

Response/Points of Discussion

- ▶ Partnering more with university researchers and other agencies (i.e., Fish & Wildlife Service) will become increasingly more important and necessary

Charge 2c: Continue to establish a formal mechanism (charter) within the NCSS to Identify opportunities for funding validation of interpretations in the soil survey.

Response/Points of Discussion

- ▶ Recommendations could come from NCSS as input for next NIFA RFP as a mechanism to support university researchers in generating and compiling data to develop and validate new interpretations
- ▶ Funding for the update phase of on-going soil survey work could be dedicated to developing/validating new interpretations
- ▶ Initial SSURGO funds could be redistributed for addressing specific questions, concerns, and issues that have come up in the initial phases of ESD work
 - ▶ However, a list of questions, concerns, and issues need to be compiled in the near future to maximize any potential opportunities that may arise from funding/resource re-allocation

Charge 2d: Continue to establish a formal mechanism (charter) within the NCSS to Identify coordination and communication protocols with ongoing Standing Committees of NCSS - Research Needs, New Technology, and Standards/Taxonomy.

Response/Points of Discussion

- ▶ Perhaps circulating final committee reports to all conference participants and identify overlapping/consistent themes

Charge 3: Support, direct and summarize activities associated with Task Forces on Gypsum Interpretations, and the Soil Change and Subaqueous Soils Working Groups

Response/Points of Discussion

- ▶ Gypsum interpretations have been modified/updated
 - ▶ However, pre- and post-modification reports that show differences in the interpretations need to be developed so that reviewers can evaluate changes

Charge 4a: Discuss development of 'Second Generation Interpretations'. Explore and discuss how to take the first steps to initiate 'Second Generation Soil Survey Interpretations'.

Responses/Points of Discussion

- ▶ Will likely require someone to develop several prototype examples and document process
- ▶ A list of more complex interpretations will need to be developed

Charge 4b: Discuss development of 'Second Generation Interpretations'. Soil interpretation derived from pedons and lab data nearest to the area of interest.

Responses/Points of Discussion

- ▶ Using local pedon information and lab data as an option to generate interpretations would be helpful in some instances
 - However, privacy/confidentiality issues may exist
 - Also helpful might be allowing a user to input pedon information or to be able to select a particular pedon to generate interpretations

Charge 4c: Discuss development of 'Second Generation Interpretations'. Interpretations that take into account temporal data (precipitation, temperature, etc)

Response/Points of Discussion

- ▶ Participants requested a definition of “2nd Generation” interpretations...

Charge 4d: Discuss development of 'Second Generation Interpretations'. Real-time Interpretations (Doppler radar, soil moisture probes)

Response/Points of Discussion

- ▶ Opportunity to partner with state climate networks for real-time interps.

Other Issues Raised/Discussed

- ▶ Interpretations for urban landuses/issues
 - Septic systems
 - Erosion/compaction at construction sites
 - Runoff/drainage
 - Exposed sub-soils from topsoil removal
 - Also an agricultural soil disturbance issue (i.e., land-leveling for irrigating rice)
- ▶ Soil hydraulic property (K_{sat}) methods/data
 - Need to review what university research has been done already to avoid “reinventing the wheel”
 - There is lots out there! (i.e., previous three decades of research conducted by the Southern Regional Soil Physics Working Group and their several completed regional projects)
 - Need to identify and partner with university researchers more to find this data and glean their knowledge for guidance in this area
 - Units for reporting K_{sat} should be changed to cm/hr!!!

Conference Participant Contributions

- ▶ Thank you to all conference participants who contributed ideas, thoughts, and discussion on these many charges and topics!