Research Agenda Committee

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Research Agenda/New Technology Forum

- Ecological sites in Pennsylvania landscapes and their response to land use change
- Incorporation of Geologic Data with Soil Survey Information
- Quantifying soils landscape relationships in the Shawnee Loess Hills: A university and soil survey collaborative project
- NGMC Map Services and Data
- Use of gridded soil survey data
- Are People Ready for Raster Digital Soil Data
- Portable Xray Florescence Spectroscopy
- JAVA Newhall Simulation Model (jNSM) – Traditional Soil Climate Modeling in a Digital Geospatial World
- Inorganic Carbon: Second Largest Terrestrial Pool but how much Carbon has been Sequestered?
- Vesicular horizon function in the arid western United States: Hydropedology and recovery from disturbance
- Humic Contents of US Topsoils
- Soil variability and human-induced pedological change across Iowa
- Digital soil mapping in the northern Everglades

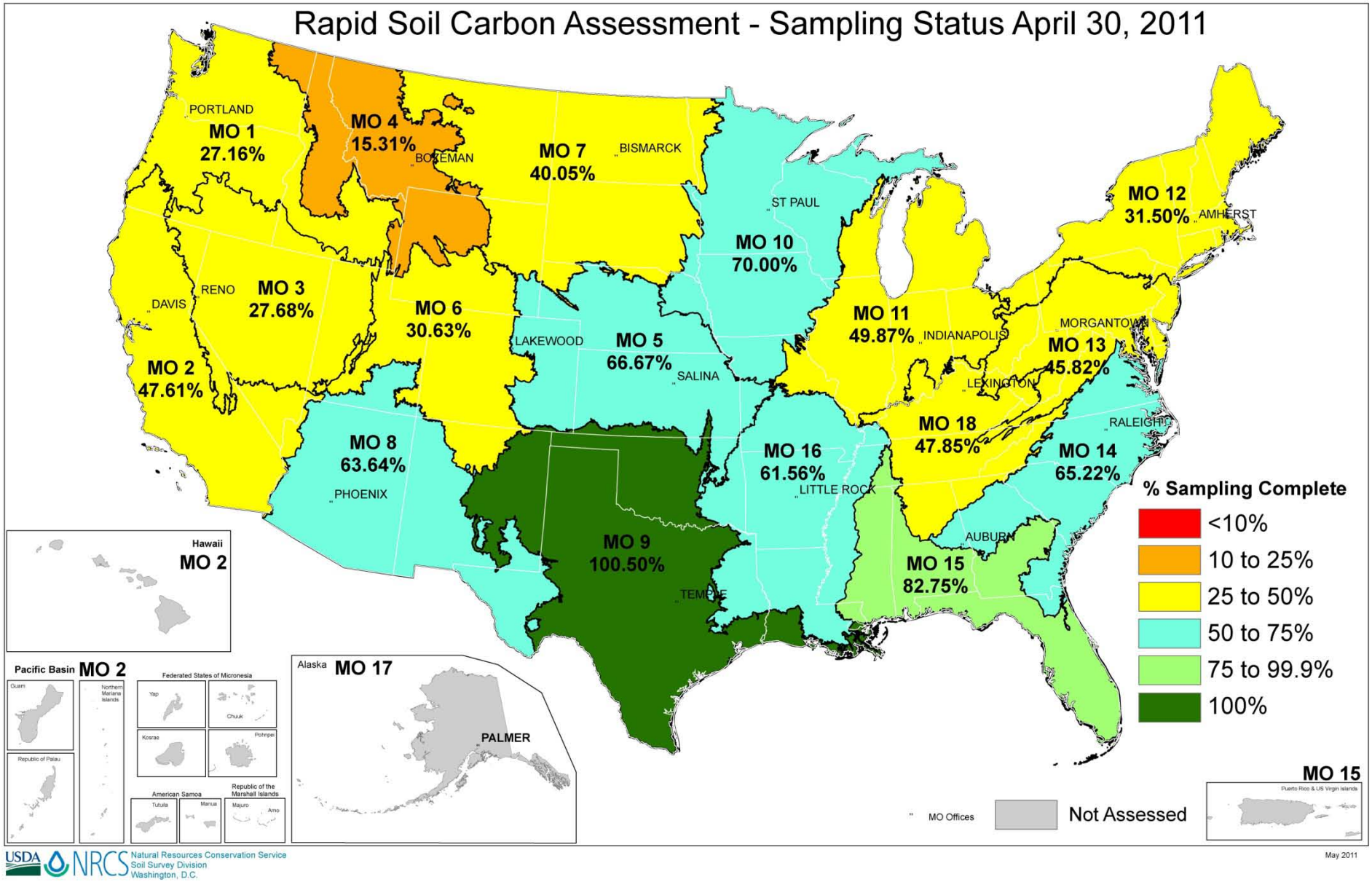
Charges

1. Review reports and recommendations from 2010 NCSS Regional Conferences.
2. Identify, document, prioritize, and address the critical research and development issues within the NCSS.
3. Discussion of Rapid Soil Carbon Assessment Activities in the NCSS.
4. Identify opportunities for funding priority research needs.
5. Continue and update progress on Task Force / Working Group activities:
   a. Benchmark Soils and Landscapes in Soil Survey
   b. Gypsum and Expanding Salts in Western States
   c. Open File Task Force
6. Identify an Outstanding Research Project within the NCSS partnership to present at the National NCSS Conference.
7. The NCSS Research Agenda Standing Committee will be required to report its activities at each National Conference

Charge 1:

- Extensive list from all regions
- Reflect regional issues
- 3 recurring themes
  - Rapid Carbon Assessment
  - Hydropedology
  - Urban

Charge 3: Rapid Assessment of Soil C



Charge 3: Rapid Assessment of Soil C

- More than ½ of the locations sampled.
- 80% of the locations sampled by September 30.
- Processing of bulk density samples is on-going as are collection of the VNIR spectra
- Completion of sample processing by March 30, 2012.
- Cooperative agreements established with various universities for student help in sample collection and processing
- Needs to help expand inventory and make it more robust include:
  - Samples from or access to long-term tillage and agricultural management research plots
    - Verification of VNIR models
    - place RaCA data in perspective relative to other soil C research results.
  - Soil C data from urban and suburban ecosystems.
  - Data from long term monitoring studies to evaluate rates of change under different management systems or other types of disturbance.
- The VNIR spectrometers will remain in the MOs after the initial soil C data collection is complete
  - May be used for other property evaluations

Charge 3: RaCA – Committee Recommendations

- Humic acid quantification
  - Test method through cooperator sample exchange
  - Additional data collection
    - NSSC sample archive
    - RaCA samples
  - Data available for development of relationships with SOC fractions and fluxes, DSP, dissolved OM
- Cooperator task force
  - NRCS and cooperators (non-traditional)
  - Data organization
  - Computational issues
  - Inorganic C
  - Extrapolation models and model framework
  - Data applicability and use
    - What questions can be answered?
  - Workshop to address these and other issues
    - AFRI funded?

Charge 4: Funding Opportunities

- Soil Survey Division has made a limited amount of funds available for competitive research projects in 2011 to address priority areas
  - 3rd year
  - Expected to continue in future years as the budget allows
- Global Research Alliance on Agricultural Greenhouse Gases (GRA)
  - Not direct funding
  - Opportunity to develop international collaboration for potential funding
- NIFA soil processes program
- Other
  - EPA
  - NOAA
  - Etc.

Charge 5: Task Force Updates

- Benchmark Soils and Landscapes in Soil Survey
  - Benchmark list is being revised by MOs
  - Benchmark pedons are being sampled for characterization and other properties including Ksat and infiltration rate
  - Data from 8 university characterization programs have been incorporated into the NCSS Soil Characterization database
  - Data from ~20 additional universities are in process

Gypsum and Salts

- Objectives of original task force mostly completed
  - Classification
  - Methods for analysis
  - Interpretations
  - Morphological features
  - Geomorphic relationships
- Limited activity since 2009
  - Field trip through Colorado and Nevada in 2010
  - Pedons with salts and gypsum sampled and analyzed
- Continue reorganized task force
  - Charges to be developed
  - Wayne Hudnall, chair
  - Nelson Rolong
  - Susan Cosby-Horton
  - Curtis Monger
  - Others

Open File Reports

- Similar to USGS Open File System
- Planned to be part of NASIS Content Manager
- Review requirement report from task force
  - Types of material
  - Content
  - Review
  - Etc.
- NSSC SSIR series available
- Disband task force

Charge 2: Priorities identified at the 2009 NCSS conference

- **Short-Term Priorities**
  - Soil change
  - ~~New technology~~
  - Ecological site descriptions
  - Subaqueous soils
  - Landscape soil water relationships (hydropedology)
  - Gypseous and salt-affected soils
- **Global Priorities**
  - Scaling/extrapolation
  - Landscape-scale carbon processes and accounting
  - Integration of soil organic carbon and landuse
  - Soil adaptation and mitigation strategies for climate change
  - Soil function
  - Soils and ecosystem services
- **Application of Soil Survey Data**
  - Decision support tools
  - Integration of carbon and landuse
  - Data validation
  - Landscape soil water relationships (hydropedology)
  - Urban/suburban interpretations

Charge 2: Priorities identified at the 2009 NCSS conference

- Regional issues
  - Urban/suburban interpretations
  - Aquods - genesis, landscape distribution, water table heights
  - Plinthite - landform related processes, water movement, identification (slaking)
  - Anthropogenic soils (mine soils)

Soil Systems (Benchmark Landscapes?)

- Aerially extensive "Soil Systems" as focal point for research
  - Potential for extrapolation of information and knowledge
- Permanent infrastructure
- Soil and landscape properties and relationships intensively evaluated
  - Genesis
  - Hydrology
  - Geochemistry
  - Salinity
  - DSP
  - Ecological sites
  - ….
  - Specific objectives will depend soil system

Soil Systems (Benchmark Landscapes?)

- Shawnee Hills project as example - IL, IN, KY loess covered landscapes
- Urban, subaqueous, drastically disturbed
- Most evaluations in small watershed typical for the soil system
  - Larger defined area for larger scale evaluations
- Cooperative effort
  - MLRA Soil Survey Offices (required)
  - University and other agency scientists (critical)
  - NSSC (critical)
- Limited number of 4-6 year projects
- Outcomes
  - Data and understanding
  - Interpretations
  - Training

Soil Systems (Benchmark Landscapes?)

- West will develop written description of concept and widely circulate for comment
- Task force to define operational and research considerations
  - Current volunteers
    - Phillip Owens
    - Joey Shaw
    - Billy Kingery
    - Bruce Vasilis
    - Patrick Drohan
    - Mike Wilson

Other

- Salinity and sodicity in Great Plains
  - Inconsistently mapped
  - Criteria
  - Measurement methods
  - Expanding problem?

Questions?

Discussion?