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The Coastal Plainer

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Message from the MO–Leader's Desk

By Charles Love, MO–15 Team Leader

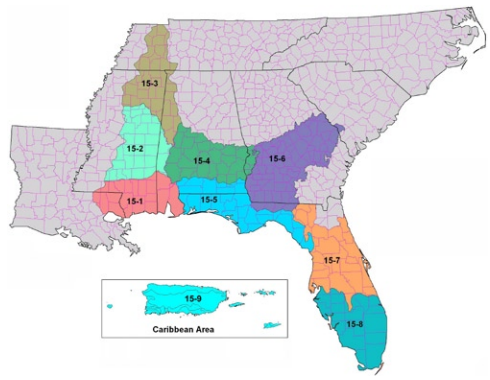
Again, greetings everyone!

During the week of March 30th, I attended the National State Soil Scientists' Workshop at Columbia, South Carolina. It was very informative and productive. The agenda was filled with items representing the national priorities of the Soil Survey Division. One of the priorities that generated a lot of discussion was the soil carbon project.

There is an urgent need for increased site-specific and condition-specific data pertaining to soil carbon. The data is needed to reliably estimate the amount of carbon that can be practically stored in soil. More specifically, information is needed regarding how land use and management systems affect the amount of carbon that can be stored in the nation's soils. The collection of the data will be a big project for the MOs and states for the next 2 years. We are being asked to collect data on soil carbon at various sites under differing land uses. The Soil Survey Laboratory at the National Soil Survey Center will provide guidance.

In the MO–15 region, our first step in the data collection process was to select an individual to serve as the data collector for the region. I worked closely with the MO–15 Management Team (the State Soil Scientists) to identify an individual to serve in this co-lateral position.

MLRA Soil Survey Region #15



James Mason, soil scientist on the Auburn (MLRA 15–4) Soil Survey Office staff, was selected. James has over 20 years experience mapping and correlating soils in the MLRA 15–4 work area.

During the week of May 17th, James and other soil scientists from across the country will receive extensive training from the staff of the NSSC Soil Survey Laboratory. Immediately after the training, the collectors will receive a visible and near-infrared (VNIR) spectrometer and other equipment necessary to support this effort. As I understand the plan, our MLRA soil survey leaders will help James with data collection at sites that were preselected by the NSSC Soil Survey Laboratory.

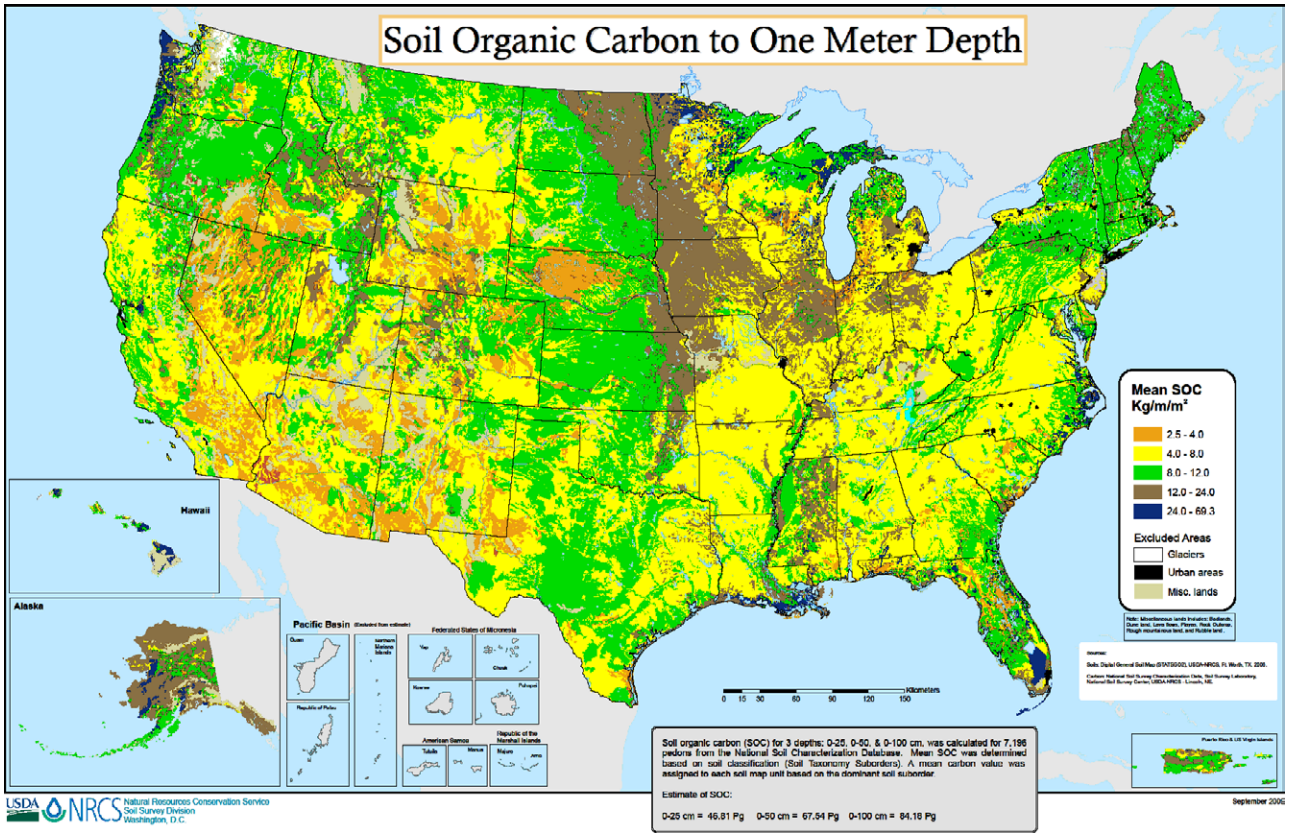
In This Issue:

The MO–15 Management Team is encouraging our MLRA Soil Survey Leaders and their technical teams to work unreservedly with James. They should help to develop comprehensive work plans and to collect the data within the next 2 years. The development of the work plans should involve our local and state cooperators. James will be contacting each of the MLRA Soil Survey Leaders to facilitate this work effort.

If you would like information about the other key priorities that were presented at the National State Soil Scientists' Workshop, please go to the Soil Survey Division SharePoint site at https://nrcs.sc.egov.usda.gov/ssra/ssd/default.aspx.

As always, thank you for your support.

—Charles



Rapid Assessment of U.S. Soil Carbon for Climate Change and Conservation Planning

A nationwide program has been initiated by the USDA–NRCS, Soil Survey Division, to derive a comprehensive inventory of soil carbon stocks for soils of the U.S. as affected by soil properties, agricultural management, ecosystems, and land uses. Enhanced carbon data are needed for evaluating the effects of conservation practices on soil carbon and for global carbon accounting.

- The initial inventory will be derived from the existing detailed soil survey (SSURGO), enhanced through an overlay of land cover, and validated against pedon data from the National Cooperative Soil Survey.

- The subsequent inventory will be based on measurement of soil carbon. Related data will be collected for benchmark soils and other important soils and stratified by agricultural management, ecosystem, and land-use conditions.
- The inventory will encompass all lands and include all ecosystems.
- The data collection protocol is based on substitution of space for time.
  →The same soils will be sampled at locations with different land uses, ecosystems, or management at a steady state.
- Evaluation will be for benchmark soils, other extensive soils, and soils that represent important ecosystems, such as wetlands and flood plains.
  →Stratification will be within soils by management/ecosystem groups that are expected to have similar soil carbon stocks.
  →Dominant and "optimum" condition will be evaluated to provide a basis for current and potential carbon sequestration through changes in land use and management.
- Sufficient replicate sites will be sampled to provide statistical confidence in the data for each combination of soil management and ecosystem.
  →About 35,000 sites are planned for evaluation.
- Data will be collected for horizons to a depth of 1 meter and will include morphology, soil carbon, bulk density, and rock fragments.
- Data collection will be by field soil scientists using procedures and equipment adapted for the field or small laboratories.
- Soil carbon measurement will be with visible and near-infrared UV (VNIR) diffuse reflectance spectroscopy.
- Soil carbon for 3 to 5 percent of the horizons will be analyzed by the NSSC Soil Survey Laboratory for quality assurance.
- Products:
  →Scientifically and statistically valid inventory of the effects of agricultural management, land use, and ecosystem properties on the amounts of soil carbon and on the distribution of U.S. soil carbon stocks
  →Publically accessible soil carbon database for model development and validation

For additional information, contact: Larry West, National Soil Survey Center, (402) 437–5138, larry.west@lin.usda.gov; or Chris Smith, Soil Survey Division, (202) 205–0346, christopherw.smith@wdc.usda.gov. ■

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

MLRA Connection

By Scott Anderson, Soil Data Quality Specialist, MO–15

Evaluating the quality and content of existing published soil survey reports is a major part of the MLRA soil survey update process. A significant part of the first year or two should be devoted to this task. Information gathered from these evaluations can then be used to finalize your long range plans and project plans.

The purpose for evaluations is to identify spatial and tabular data that need to be updated or corrected in order to produce a consistent, standardized MLRA soil survey product. Your goal is to collect enough information to answer the following management questions:

- What work needs to be done to bring this soil survey up to current standards?
- How much office work is required to update this soil survey?

- How much field work is required to update this soil survey?
- How many total staff years are required to update this soil survey?

The State Soil Scientists will provide leadership for the evaluation process within their respective states. The actual work will be done by the MLRA Soil Survey Office Leaders and their staff. The MO will provide guidance and training for the process and quality assurance reviews for the final product.

The first step in the process is research. Gather up all notes, maps, field data (pedon descriptions and transects), lab data, field review reports, and correlation documents. Interview Resource Soil Scientists, District Conservationists, NRCS discipline specialists, and NCSS cooperators. Capture their knowledge about the survey area, including any improvements they think should be made. Get your technical team involved in the process. Once the research is gathered, organized, and summarized, you can start answering some basic questions, such as:

- Has land use changed significantly over the years?
- What are the current and projected user needs in the area?
- Are there any data gaps, either spatial or tabular?
- Are there any questionable, undocumented correlation decisions?
- Are there any local interpretation ratings that need to be developed?

Next, review the soil survey legend, including the map unit names and components. Note the obvious problems first. Components classified above the series level will need study and should be reclassified to the series level under the MLRA concept. Areas that are correlated as “Miscellaneous Areas” should be named and mapped according to current standards. Soil associations and undifferentiated groups may need to be remapped. Are slope groups and eroded phases used consistently?

Do not overlook the value of field work in producing good soil survey evaluations. Road check, spot check, and run a few transects. Identify problem areas. Determine how much remapping is needed. Are similar map units consistently found to have the same parent material and to be on the same landforms?

You will need to pull an MLRA legend for your entire area of responsibility and identify identically named map units. Describe in your long range plan how you plan to handle these units. Don’t jump the gun on the correlation process. Follow the steps: research, evaluate, plan, correlate.

Review the quality of current correlations (refer to the final correlation documents). Do correlated typical pedons fit the current official series descriptions (OSDs)? Are the current OSDs up to date? Remember to include the review and update of OSDs as part of your long range plan. Have any of the soils had conceptual or classification changes? Check the geographic distribution of soils and map units using GIS tools.

And speaking of GIS tools, that brings us to the spatial-data part of the evaluation process. All join problems between soil surveys of adjacent counties need to be documented. Some of this information is already available in the reports from final field reviews. If not available, then you need to develop a listing yourself. Plans to correct each specific join problem need to be included in evaluations. Remember, the SSURGO product may be different from the old soil survey publication. SSURGO is the official version.

And finally, you need to conduct a thorough review of the NASIS database. Run validations. Look for data errors and gaps. Look for consistent application of data population. Determine where actual lab data should be used in place of data generated by algorithms. Does the agricultural performance data (site index, yield data) need updating?

And remember, never edit or link data for another state before first getting permission from the appropriate State Soil Scientist. ■

View showing the general landscape of the Caribbean National Forest.

Progress Field Review for the Caribbean Area Soil Survey Update

By Jorge L. Lugo-Camacho, MLRA Soil Survey Leader, Soil Survey Office 15–9, and Greg Brannon, Soil Data Quality Specialist, MLRA Regional Office 15

A progress field review for the Caribbean Area soil survey update was conducted February 8 to 11, 2010. The update is being conducted by MLRA, and the review consisted of an evaluation of the soil map units and typical pedons in the Caribbean National Forest in Puerto Rico.

The soil maps for the 2002 Soil Survey of Caribbean National Forest and Luquillo Experimental Forest, Commonwealth of Puerto Rico, were originally developed using aerial photographs. Because of a lack of adequate orthophoto imagery, the soil lines were transferred to 1:20,000 USGS quadrangle topographic maps for purposes of reproduction. Although the soil maps were produced in a digital format, the joins are not seamless to adjacent soil survey areas, which were compiled using orthophoto quadrangles. The taxonomic classification of the pedons was based on the 8th edition of Soil Taxonomy.

The main objectives of the project are to update the soil survey by MLRA, to meet SSURGO standards by digitally compiling the soils map to orthophoto quadrangles, and to make the survey available to the public through the Soil Data Mart and Web Soil Survey. The results of the study will enable NRCS to SSURGO-certify the Caribbean National Forest and to use the data as a starting point in the update of MLRA 270 (Humid Mountains and Valleys). It will lead to better soil interpretations and a better understanding of the soils for land use and water management. ■

Signing Ceremony

By Christopher Ford, MLRA Soil Survey Leader, Soil Survey Office 18–3

March 25, 2010, celebrated another landmark collaboration between Alabama A&M University and the USDA–NRCS in Alabama. The University and NRCS joined together to sign a collaborative agreement to provide scholarships for students majoring in environmental sciences with a concentration in soil science.

Dr. Andrew Hugine, President of Alabama A&M University, and Dr. William Puckett, Alabama State Conservationist, came together to sign this tremendously important agreement, potentially increasing the pool of minority students entering the fields of soil conservation and soil science. Joining Dr. Hugine and Dr. Puckett at the signing ceremony were the Dean of the School of Agricultural and Environmental Sciences, the Chair of the Department of Natural Resources and Environmental Sciences, a retired professor, three students, and two additional NRCS employees.

The NRCS in Alabama has a commitment to historically black colleges and universities. This agreement will enhance the long-standing relationship between Alabama A&M University and NRCS by recruiting, mentoring, and providing valuable training opportunities to minority scholars in the field of natural resources and related sciences.

Dr. William Puckett and Dr. Andrew Hugine signing a cooperative agreement between USDA–NRCS and Alabama A&M University.

The cooperative agreement establishes four scholarships that may be awarded for up to 3 years. In addition to the scholarships, recipients have the opportunity to gain valuable work experience during the summer of 2010. The students will be working in Major Land Resource Area soil survey offices across the United States. Work opportunities are being provided in Cartersville, Georgia, to Bashia Long; in Normal, Alabama, to Jonjala Jackson; in Hays, Kansas, to Stefanie Gresham; and in Auburn, Alabama, to Darnae Scott. ■

"I was very impressed with our four students from Alabama A&M University. I look forward to getting to know them better as students and potential USDA employees. USDA–NRCS in Alabama wants to continue our strong relationship with Dr. Hugine and Alabama A&M University as we move ahead in the future."

—Dr. William Puckett

Left to right: Dr. Taylor Byrd, Retired Professor; Dr. Teferi Tesgaye, Chair for Department of Natural Resources and Environmental Sciences; Charles Love, State Soil Scientist/MO–15 Leader, NRCS; Dr. William Puckett, State Conservationist, NRCS; Stefanie Gresham, sophomore; Jonjala Jackson, junior; Bashia Long, sophomore; Dr. Andrew Hugine, Jr., President of Alabama A&M University; Dr. Robert Taylor, Dean of the School of Agricultural and Environmental Sciences; and Christopher Ford, MLRA Soil Survey Leader (18–3), NRCS. Danea Scott, sophomore, was present but not pictured.

Geomorphic Assistance in the Caribbean Area

By Jorge L. Lugo-Camacho, MLRA Soil Survey Leader, Soil Survey Office 15–9; Samuel Ríos, Soil Scientist, Soil Survey Office 15–9; and Dr. Philip Schoeneberger, Research Soil Scientist, National Soil Survey Center

From March 1 to 5, 2010, the Caribbean Area soils staff received technical support with the evaluation of physiography, geology, and related resources in several municipalities in Puerto Rico. The assistance was supplied by Dr. Philip Schoeneberger of the National Soil Survey Center and primarily focused on karst- and limestone-influenced portions of former soil surveys areas on the island.

Major Land Resource Area 272 (the Humid Coastal Plains) encompasses the karst formation area, which has two distinctive zones. The main zone features karst cones and towers (fig. 1). Karst topography is shaped by the dissolution of a layer or layers of soluble bedrock, typically carbonate rock, such as limestone. This zone covers approximately 28 percent of Puerto Rico. The dominant soils are Mollisols, mostly of the Haprendolls suborder. The “Limestone outcrop” miscellaneous land type is common.

The second zone in the karst formation area consists of sharp limestone cliffs adjacent to coastal beaches (fig. 2). The dominant soils are Oxisols and Ultisols. The Oxisols were deposited as a result of a concurrent process of uplift, erosion of laterized landscapes in the interior portion of the island, and litoral sedimentation and redistribution along the north coast (Beinroth, 1979).

Figure 1.—Karst cones and towers landform.

Figure 2.—Karstic marine terraces with mogotes. Mogotes are geomorphologic structures characterized by a rounded, tower-like shape.

The karst areas in Puerto Rico contain the island's largest freshwater aquifer. They have different physiography, geology, water resources, soils, biological resources, and land uses than the humid coastal plains.

Another area of interest is Major Land Resource Area 271 (the Semiarid Mountains and Valleys), which encompasses the tectonically uplifted Mio-Pliocene carbonate island in the Mona Passage. The island is approximately halfway between Puerto Rico and Dominican Republic (Frank et al., 1998). It includes approximately 13,649 acres of the "Limestone outcrop" miscellaneous land type and has an aridic soil moisture regime. The mesa-like formation of the Mona Limestone Plateau restricts the area to dry forest vegetation.

The Caribbean Area soil survey update may add new map units to the MLRA legend. Dr. Schoeneberger agreed with the staff of MLRA SSO 15–9 that strong arguments exist in support of the project proposal to re-evaluate the karstic and limestone areas within MLRAs 270, 271, and 272. The proposal more accurately and consistently recognizes and partitions land-use areas based on geomorphology, dominant soil types, prevailing land use, and associated management concerns. The proposal also rectifies discrepancies within and between key MLRA documents (USDA–SCS, 1981; USDA–NRCS, 2006) and associated maps. The proposal calls for retaining the current MLRAs but recognizing several explicit sub-areas within each MLRA.

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Just Because It's Easy Doesn't Mean It's Legal

By Aaron Achen, Editor, MO–15

The copy-and-paste ability of our computers makes it very easy to steal other people's work. One might argue about the word "steal," but the argument is irrelevant to authors of government documents, such as soil surveys and this newsletter. Very simply, in our official capacity we must obey copyright law. It's not just good scholarship, it's a job requirement.

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