

**Office of the Chief
Weekly Report**

**Soil Science and Resource Assessment
Soil Science Division**

Date April 17, 2013

Deadline Reminders

Mid-Year Reviews are due by April 30. Our internal deadline was April 15. Please finish these as soon as possible.

Abstract submission for Soil Science Society of America (SSSA) Annual Meeting, Nov. 3-6, 2013, Tampa, FL, is open. The early deadline for abstracts is April 30, 6:00 pm; Final deadline: May 14, 6:00 pm EST. Don't forget to allow at least one week for abstract review before submission!

Upcoming Meetings/Conferences

SSSA is allowing remote presentations for the first time this year. Learn more at: <https://www.acsmeetings.org/poster-oral-papers/remote>.

Soil Science Division Update

NEON Scientists Visit the NSSC

Eve-Lyn Hinckley and Ed Ayres, staff scientists with the NSF funded National Ecological Observation Network (NEON), visited the NSSC on April 15 and 16, 2013. Drs. Hinckley and Ayres have primary responsibility for soil sampling and instrumentation at each of the 60 NEON sites across the U.S. While at the NSSC, they gave a seminar outlining the objectives, structure, and methodology of NEON. Their visit also provided an opportunity for NSSC staff to explore areas of mutual interest and potential collaboration between NEON, the NSSC, and the Soil Science Division. The exchanges were extremely beneficial for both groups, and specific areas of interchange and collaboration will be further discussed and implemented over the coming months.

Illinois Geophysical Surveys

During the period of April 8 - 12, Jim Doolittle, Research Soil Scientist from the NSSC's Soil Survey Research and Laboratory Staff, assisted the Illinois NRCS Staff and MLRA 115C soil scientists characterize the variability of soil properties across several reclaimed surface-mined areas located in Fulton County, Illinois. The objectives of this research are to assess spatial differences in soil properties that affect land use and to improve interpretations of soil materials that have been excavated, replaced, and graded during surface mining operations. Reclaimed surface-mined areas are used as croplands, pastures, forest lands, fish and wildlife sanctuaries, and industrial, commercial and residential sites. According to Illinois laws, the reclaimed soils must be restored to row crop capability based on the characteristics of the soil. In this study, spatial

variations in soil properties are inferred and mapped using electromagnetic induction methods and the analysis of samples extracted from soil cores.

Geophysical Assistance to North Carolina State University and the North Carolina Coastal Federation

Wes Tuttle, Geophysical Soil Scientist from the National Soil Survey Center, provided technical assistance using ground-penetrating radar (GPR) to NC State University and to the North Carolina Coastal Federation during the week of April 8 - 12, 2013. The investigation sites were located in very poorly drained soils of the Lower Coastal Plain (Hyde County, NC) and are at elevations near sea level. Drainage canals and dikes are in place to control water levels across the area which comprises approximately 45,000 acres. Hydrologic studies indicate that the dikes are not functioning as desired and water is seeping through the structures which are also used as roadways. GPR investigations were conducted at multiple sites to evaluate the effectiveness of GPR for determining changes in underlying soil strata and soil properties as they relate to soil



Fig. 1. Dr. George Chescheir, NC State University, examines the banks of a dike/road for water seepage. GPR surveys were collected on the top of the dike/road (right). The dikes contained woody debris and logs thought to contribute to increased water movement through the dike. The area to the left of the canal is enrolled in the Wetlands Reserve Program.

hydrology as well as the construction of the dikes. Preliminary results revealed many areas with dike structures containing high amounts of fibrous wood material (logs, roots and wooden debris) thought to be porous and contributing to water movement through the dikes. This is not just a localized situation as many roads and dikes have been constructed in a similar manner during the early to middle 20th century across the southern and eastern US. Additional investigations are planned to help provide more information to aid in the

most efficient and economical remedy for these situations. Results will help direct further investigations and also provide valuable interpretive information for the Coastal Plain region of the southeast US and similar low lying areas of the US.

Ecological Site Assistance in MLRA 134

NSSC staff recently assisted with a technical team meeting for ESD development in MLRA 134, Southern Mississippi Valley Loess. MLRA 134 is a linear area paralleling the Mississippi River and occurs in seven states including Mississippi, Tennessee, Louisiana, Arkansas, Kentucky, Missouri, and Illinois. Soil scientists and ecological site specialists from three MLRA-SSOs participated, as well as state and soil survey regional staff. Plans were made during the meeting to coordinate the inventory and classification efforts across the whole MLRA through an

umbrella project plan. This project will serve as a template for the successful implementation of similar efforts in other multi-state, multi-SSO projects in the region.

Soil Sampling supports Soil Survey Efforts in the Mojave National Preserve

Fig. 2. Leon Lato, NRCS soil scientist, sampling a soil in the Mojave National Preserve.



During the week of April 8th, 2013, NRCS soil survey staff completed soil sampling at the National Park Service's (NPS) Mojave National Preserve. Three of the four major North American deserts converge at the Mojave National Preserve: the Mojave, the Great Basin and the Sonoran. The area has many soil types, due to complex geology, and elevation gradients ranging from 880 to almost 8,000 feet above sea level. These factors create special habitats supporting a widespread diversity of plant and animal life. There are also complex climatic and hydrologic regimes, which includes seeps and springs, adding to the complexity of the park mapping. Cactus gardens, relict plant communities of white fir and chaparral and the densest, largest Joshua tree forest are in the park. The 1.6 million acre soil survey area has mountain ranges, dry river beds, mesas, sand dunes, cinders cones, domes and lava flows.

Nine sites were selected because of their unique soil characteristics and importance for ecological site development. Sites were sampled for either full laboratory characterization or reference sampling. Leon Lato, of Las Vegas, is the project lead for the soil survey, working with Carrie-Ann Houdeshell, MLRA soil survey leader and the soil survey staff of Victorville, CA. Also participating with the sampling was Nathan Starman, soil data quality specialist,

Phoenix, AZ and Susan Southard, NSSC soil scientist and liaison to NPS.

The Victorville survey staff are completing their third field season of initial mapping in the Preserve. When completed this soil survey will provide valuable information to support NPS management efforts in the unique and important ecosystems of the Mojave National Preserve.



Fig. 3. Carrie-Ann Houdeshell, Genevieve Widrig, and Nathan Starman discuss a new ecological site dominated by galleta grass that is associated with a stabilized dune soil. This dune area receives less than 5 inches of mean annual precipitation.

Ground Penetrating Radar Application

Thomas Reinsch attended a US Forest Service International Programs Seminar titled "Modeling carbon accumulation dynamics in tropical peat swamp forests under pressures from land use and climate change". The subject introduced efforts to model peat accumulation and degradation in Indonesia. The authors were Professor Steve Frohking and Sofyan Kurnianto, University of New

Hampshire, and Dr. Matthew Warren, US Forest Service. IPCC defines peatland as a wetland such as a mire or bog slowly accumulating peat. We discussed the use of GPR as a potential tool to thickness of the peatland.

Foreign Agricultural Service Honor Award

Jon Fripp, engineer with National Design, Construction & Soil Mechanics Branch, and Thomas Reinsch, soil scientist with the Soil Science Division, were recognized as recipients of a 2012 Foreign Agricultural Service Honor Award. The Outstanding Cross-Agency Team Award was given to members of the Office of Agricultural Affairs Pakistan. Fripp and Reinsch have made multiple trips to Pakistan to formulate and evaluate projects relating to watershed rehabilitation and increase plant and soil nutrient efficiency in order to increase agriculture sustainability and food security.

International Delegation of Authority

Melvin Westbrook and Thomas Reinsch met with Howard Anderson, Director, Policy Coordination and Planning Office of Capacity Building and Development, USDA-FAS, to brief him on the efforts of NRCS to request delegation of international authority relating to soil survey on Friday, April 12, 2013. Otto Gonzalez from FAS also attended. Dr. Anderson said that he would review the material and elevate the subject to his supervisor. A follow up meeting is anticipated.

Haiti Soil Survey Weekly Report

A teleconference was held on April 09, 2013 to review the status of the preparations for the Haiti Soil Survey Pilot Project. Participating in the teleconference were: Melvin Westbrook, LeRoy Duval, (International Agricultural Programs); Paul Reich, and Charles Kome (World Soil Resources); Harold Tarver, Jane Luxner (FAS), Rodrigo Brenes, Marie Danielle, Isidor Frislain (USAID-Haiti); and for the Haiti Agriculture Ministry; Karly Jean Jeune, Louis Buteau, Donald Joseph, and Pierre Louis Ogé.

The agenda included: an overview of the project proposal, revision of work plan and workflow for the field implementation and training of Haitian scientists for the pilot; specifying the role of Faculty of Agriculture and Veterinary Medicine (FAMV) student interns, specific contributions and anticipated outcomes; clarifying roles and responsibilities of project partners NRCS, FAMV, USAID, FAS and MARNDR; acquisition of imagery, digital elevation model and orthophotos for the pilot area; strategy for optimizing access and use of three soil testing laboratories in-country; completion of proposal revisions, including timelines and budget line items based on recent feedback from USAID/FAS. Other items on the agenda were: the inclusion of the Cochran Fellowship Study Tour in soil survey project narrative and budget; site identification and preparation for Cochran Fellowship Study Tour; lining up speakers and presenters for the Cochran Fellowship Study Tour and the selection of potential MARNDR candidates for Cochran Fellowship Study Tour.

Personnel Highlights

none