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## NRCS 2012 Soil Geomorphology Institute: Developing a National Soil Geomorphology Framework for Soil Survey

By Doug Wysoki, research soil scientist, National  
Soil Survey Center

Soil properties and spatial patterns are the key guides for NRCS planning and land management activities. Sustainable management of our Nation's lands requires knowledge of how soils react to natural and anthropogenic actions. Soil surveys deduce and display spatial soil and substrate patterns, which are key determinates to land behavior. Soil geomorphology is a scientific tool that allows soil scientists to better understand soil patterns, to predict soil behavior, and to measure soil change, past, present, and future.

The Soil Geomorphology Institute (SGI) is an intense, 3-week, field-oriented training. The training provides soil scientists from NRCS, as well as other Federal agencies (e.g., USDA Forest Service, BLM, BIA, and APHIS), with comprehensive scientific principles and field techniques in diverse geographic and geologic settings. Emphasis is given to understanding water movement through landscapes, and the resultant impact on soils and land management, and to developing scientific skills to recognize, document, and explain soil observations in combination with digital soil survey techniques and modeling. SGI combines lectures, hands-on exercises, and field trips that emphasize field observations and discussion among participants. Extensive case studies serve as a means to evaluate existing soils information (e.g., Web Soil Survey data) and utilize emerging digital techniques

## Editor's Note

Issues of this newsletter are available at <http://soils.usda.gov>. Under Quick Access, click on NCSS, then on Newsletters, and then on the desired issue number.

You are invited to submit stories for this newsletter to Jenny Sutherland, National Soil Survey Center, Lincoln, Nebraska. Phone—(402) 437-5326; FAX—(402) 437-5336; email—[jenny.sutherland@lin.usda.gov](mailto:jenny.sutherland@lin.usda.gov).



and modeling. Via these integrated concepts, SGI yields a robust and consistent geomorphic approach for nationwide soil inventory during the ongoing transition to digital soil surveys. Participants also obtain on-the-ground knowledge of a wide range of needs from soil survey users and stakeholders. As the post-training task, each participant has to develop a soil-landscape model for a selected soil survey area.

This year's SGI, held from July 16 to August 3, 2012, was the first that used a travelling approach. The first week was spent in Lincoln. In the second week, participants traversed Nebraska with field stops in the Platte River Valley near North Platte, the Sand Hills east of Alliance, and in Tertiary soilscapes near Scottsbluff. The third week was spent in Fort Collins with field sites in the Front Range. SGI also incorporated ecological site description (ESD) concepts. Five NRCS personnel—Doug Wysocki, Phil Schoeneberger, Jim Richardson, and Fred Young (soil scientists) and Curtis Talbot (range management specialist)—led the training. There were 28 participants from 22 States (see photo).

Previous SGIs occurred at New Mexico State University (March 2008), Pennsylvania State University (October 2008), Alabama A&M University (June 2009), and University of California-Davis (June 2010). Since its inception, approximately 30 percent of NRCS soil scientists have participated in SGI. The participants' reviews have rated the training as outstanding and stated that the SGI experience had fundamentally changed their approach to Soil Survey. ■



Participants in the 2012 Soil Geomorphology Institute: 1—Doug Wysocki (Inst.); 2—Aaron Friend (MD); 3—Nathan Jones (SD); 4—Aaron Koop (KS-KU); 5—Rick Nielson (IN); 6—Steve Alspach (OK); 7—Mark Zucco (MI); 8—Grant Butler (MO); 9—Carl Fuller (WA); 10—Ryan Dermody (IA); 11—George Derringer (OH); 12—Henry Langston (AR); 13—Steve Depew (MS); 14—Fred Young (Inst.); 15—Scott Aldridge (KY); 16—Debbie Surabian (CT); 17—Laura Craven (CO); 18—Greg Brannon (AL); 19—Zamir Libohova (NE); 20—Jack Roberson (MT); 21—Grant Jackson (NE); 22—Phil Schoeneberger (Inst.); 23—Curtis Talbot (Inst.); 24—Charles Lagoueyte (GA); 25—Dennis Eck (KS-KU); 26—Brian Gardner (ID); 27—Rick Fracen (IL); 28—Gary Parks (KS); 29—Kevin Traastad (WI); 30—Jim Richardson (Inst.); 31—Daniel Wood (KS); and 32—Jeff Glanville (OH).

## NRCS State Office Employees in Alabama Explore a Local Archaeological Dig

By Cooper Nichols, soil scientist, MLRA Soil Survey Area 15-4, Auburn, Alabama

In the profession of soil science, one is always discovering new and interesting topics to study and examine, whether it is describing a soil profile, examining landscape geomorphology, or working with archaeologists.

On a hot and humid Friday in July, Teresa Paglione, Alabama NRCS cultural resources specialist, enabled a group of NRCS state office employees to visit a “dig,” as archaeologists call it, at Auburn University’s E.V. Smith Research Center farm. The archaeological excavations at this site are directed by Auburn University, but recently students from Vermont and from Lehigh University in Pennsylvania have been included in the work.

The group from NRCS included agronomists, foresters, legal document examiners, wildlife biologists, assistant state conservationists, and soil scientists. Archaeologists Dr. John Cottier, associate professor of Anthropology at Auburn University, and Dr. Cameron Wesson, Lehigh University, along with many students from both universities were also present at the site.

The Ebert Canebroke site is named in honor of Wylene and Charles Ebert in recognition of their dedication to archaeology. This important prehistoric site was occupied by various Native American groups over thousands of years. Recent



Dr. John Cottier (kneeling) talks to Alabama NRCS employees about the site.

research by archaeology students from Auburn University and Lehigh University suggests that the largest or densest occupation occurred during the Late Mississippian period. The archaeological excavations and remote-sensing surveys revealed a densely occupied village site that dates from about A.D. 1300 to 1500. Careful excavations over the last decade have resulted in the discovery of the remains of numerous houses, fortifications, and defensive walls. Analyses of the artifacts and excavated remains indicate a disproportionately large percentage of pottery typically identified with elite households, not the everyday utilitarian pottery normally found at village sites. Further research continues on this site in the hopes of more archaeological discoveries. (Site history provided by Teresa Paglione.)

Later in July, NRCS soil scientist John Burns and I were asked back to the site in hopes of answering Dr. Cottier's questions about the soils in the area. Dr. Wesson had determined that a pasture area had an extension of some kind of defensive wall that ran around the perimeter of the village. He was able to postulate the location by using a fluxgate gradiometer to measure soil disturbance through geophysics.

In the pasture in question, the site was flagged in 10-meter transects. Borings were taken at 1-meter intervals to find the exact location of this linear structure, which contained artifacts, charcoal, and fired clay (daub). Burns and I used a Giddings soil exploration probe to pull soil samples, helped describe the soil profiles, and discussed the landscape geomorphology of the area.

Evidence of the wall was confirmed on the fourth, fifth, and sixth holes, where soil composition was changed and remains of daub and charcoal occurred deep within the soil profile. This discovery proved that the gradiometer readings were extremely accurate in depicting soil disturbance.

The site is on the Coastal Plain landscape on an occasionally flooded flood-plain landform with slopes that range from 0 to 2 percent. The well drained, loamy soil was classified in the Riverview series.

This was an amazing experience that I will remember for the rest of my career. It really makes my job worthwhile when I make others happy as well as discover something new or make a science breakthrough. John Burns and I thank Teresa Paglione for setting up this learning and teaching opportunity and also thank Dr. John Cottier, Dr. Cameron Wesson, and the students involved in the project. ■



**Dr. Wesson displays the fluxgate gradiometer.**

## World's Premier Soil Survey Laboratory Named After Soil-Pioneer Charles Kellogg

By Linda Greene, ACES enrollee, National Soil Survey Center

On June 4, 2012, the National Soil Survey Laboratory (in Lincoln, Nebraska) was named after Dr. Charles E. Kellogg. Kellogg was an American pioneer of soil science who was instrumental in bringing a national awareness to the value of soil data for the public good.

In a dedication ceremony at the laboratory, USDA's Deputy Undersecretary for Natural Resources and the Environment, Ann Mills, spoke about Kellogg's remarkable career and his dedication to helping land users conserve and improve America's natural resources by better understanding the Nation's soils.

Kellogg had one of the most distinguished careers in the history of soil science. He made a significant and lasting impact on the soil survey program of USDA by redirecting and refining its mission during his more than three decades of leadership.

"It seemed only fitting that the world's premier soil survey laboratory have a name synonymous with our mission," said Jon Hempel, director of the National Soil Survey Center. "Dr. Kellogg represents our commitment to providing leading soil analysis for the benefit of the land user and the Nation as a whole."

The Kellogg Laboratory is part of NRCS's National Soil Survey Center and is the primary source of the Nation's soil information. It maintains one of the largest archives of soil samples in the world and employs a team of leading soil analysts. These analysts provide technical assistance for a wide range of planning issues that affect both farm and nonfarm uses.

The dedication was attended by Stephen Kellogg (grandson of the late Dr. Kellogg), numerous State and local officials, and representatives for Nebraska Senators Ben Nelson and Mike Johanns. ■

## EUROSOIL 2012 Conference

By Jon Hempel, director, National Soil Survey Center

Jon Hempel, director of the National Soil Survey Center, attended the EUROSOIL 2012 Conference "Soil Science for the Benefit of Mankind and the Environment" in Bari, Italy. A EUROSOIL conference is held every 4 years and has been previously located in Reading, United Kingdom, in 2000; Freiburg, Germany, in 2004; and Wien, Austria, in 2008. This year's conference included many excellent presentations on 13 general topics and 63 symposia covering all areas of soil science. The scientific program included about 2,300 presentations (700 oral and 1,600 poster) and had approximately 1,800 participants.

As part of the conference, Hempel gave a poster presentation on the Universal Soil Classification (USC) Working Group and the progress that has been made towards a universal soil classification system. Through this presentation and other networking, a broad agreement was reached with the leadership of the International Union of Soil Sciences (IUSS) for a proposal to endorse Soil Taxonomy as a supported soil classification system within IUSS. This proposal would be a major step forward in the acceptance of Soil Taxonomy as a universally accepted standard for soil classification.

The USC Working Group is now developing an official request (in letter form) to be presented to the IUSS Executive Committee and Council. This request for the endorsement of Soil Taxonomy as an internationally recognized system for soil classification will have broad international support. With official IUSS endorsement, interfacing and communicating with the international community on their needs for classification proposals and ideas for Soil Taxonomy should become easier and more transparent, leading to an even wider acceptance of Soil Taxonomy as the Universal Soil Classification System. ■

## Train-the-Trainer Sessions and Soil Quality Kits for “Excellence in Ag Science Day”

By Mike Kucera, agronomist, National Soil Survey Center

A joint soils education workshop involving NRCS (Nebraska and NSSC), the University of Nebraska Extension Service, the Nebraska FFA Foundation, and the Nebraska Environmental Trust was conducted on June 14 in Mead, Nebraska, and June 15 in North Platte. The workshop provided hands-on train-the-trainer sessions for more than a dozen soil quality assessments. Mike Kucera, agronomist at NSSC, worked closely with Earth Team volunteers Dr. John Doran, retired ARS soil scientist, and Ed George, project coordinator. Instructors included NRCS staff from Nebraska and NSSC, UNL Extension Service specialists, and staff from commercial soil-testing labs.

As part of the project, 110 soil quality kits were provided to educators through funds by the Nebraska Environmental Trust. The kits included buckets and vests, gram scales, measuring wheels, soil probes, spades, measuring tapes, and other equipment. The kits were assembled in the storage area of NSSC. In addition, 110 EC meters were calibrated and equipped with a resistor that would eliminate the need to calibrate the meter for every use.

The materials in the soil quality kits are useful in determining bulk density, infiltration, soil moisture, soil electrical conductivity, soil temperature, soil phosphate, soil/water nitrate and nitrite, soil pH, soil aggregate stability, soil organic matter, and soil respiration. The workshop also discussed soil sampling for soil quality, soil texture classification, and overall soil health.



Ray Ward, owner of Ward Laboratories, and students in the morning breakout session examine soil texture and soil horizons and discuss sampling for soil quality.

To aid the educators, nine Soil Quality Kit Educator Guides were developed. The guides were adapted from the existing "Soil Quality Kit Guide." The guides each included a brief introduction about the soil quality measure, inherent factors affecting the measure, how to manage the measure, problems related to soil function, materials needed for the measurement, steps to complete the test, interpretations of the test, data tables, discussion questions, and a glossary of common terms. The guides were "Soil Sampling for Soil Quality," "Bulk Density/Moisture/Aeration," "Soil pH," "Infiltration," "Soil Nitrogen," "Soil Phosphorus," "Soil EC," "Soil Organic Matter," and "Soil Respiration."

More than 100 educators attended the sessions. Educators were broken into three groups. In the morning, they provided training in the field on how to conduct the various soil quality tests contained in the buckets and vests. In the afternoon, they provided instructions on completing tests in the classroom.

Future plans are to provide the guides, soil bucket contents, agendas, and other information nationwide so that other States can customize and utilize the materials. Feedback from educators was overwhelmingly positive, and 100 percent of the educators plan to utilize the soil quality test kit, guides, and knowledge gained at the workshop in their classroom curriculum this coming year. Follow-up sessions are being planned to provide additional soil science training for vo-ag educators and also to provide the information to science teachers. For information about this soil health education project, contact Mike Kucera at [michael.kucera@lin.usda.gov](mailto:michael.kucera@lin.usda.gov). ■

## Soil Data Joining and Recorrelation (SDJR) in MLRA Soil Survey Projects

By Kenneth F. Scheffe, Cameron Loerch, and Paul Finnell, National Soil Survey Center

The first 100 years of soil surveys concentrated on the mapping of individual soil surveys and providing soil information specific to the survey area. In the last two decades, the soil survey manuscript reports were altered to a digital format. The digital format has substantially increased the customer base using soils information. Soils information that was survey based is now easily presented as thematic maps on a State or regional basis. Information that was originally developed for a specific county is now perceived as improper where it joins across survey boundaries. The next generation of soil survey will focus on the correlation of the soil properties and interpretations as they flow across survey boundaries. This "harmonization" of the soil map units will remove, or at least reduce, the perception of different soil properties and interpretations for the same-named map units.

In the next 3 to 5 years, soil scientists will analyze the current 288,000 map units across the U.S. in an effort to reduce the number of survey boundary joins that are perceived as mis-joins. Analyses will rely on data in the correlated soil survey manuscripts, supplemented by tacit knowledge, historical correlation documents, and laboratory analysis. Using this information, the major land resource area (MLRA) soil survey office staffs will study the county-based (survey-based) map units and correlate new MLRA-based map units. This process will reduce the multiplicity of map unit information and reconcile map unit names across MLRAs. It will alleviate many of the conservation planners' concerns by providing a unique set of map unit data crossing county boundaries.

This analysis of map units by MLRA will identify other issues, including soil polygon lines that may not match at survey boundaries, the need for ecological site information, the need to gather additional soil properties due to erosion or land use, and the need

to re-correlate soil map unit names to match at survey boundaries. These issues will require new projects and additional time, beyond the scope of data harmonization, for field data collection. These new projects will be captured in the National Soil Information System (NASIS). After the harmonization phase is completed, the focus will shift to working on these additional projects.

Soil scientists in the MLRA soil survey offices will initiate the process by developing harmonization projects during FY–2012. The number of these projects based on map units and MLRAs will increase during FY–2013; project completion is expected at the end of FY–2015. Time will be spent over the next 3 years to analyze the work that took over 100 years to create. This period of analysis will provide a direction for future projects necessary to improve the soil survey of the United States and its territories.

## 4th IUSS Soil Classification Conference

By Kenneth F. Scheffe, soil scientist, National Soil Survey Center

The International Union of Soil Sciences (IUSS) held their 4th Soil Classification Conference in Lincoln, Nebraska, from June 11 to 14, 2012. Dr. Mark Kuzila at the University of Nebraska, College of Agricultural Science and Natural Resources, hosted the conference with additional sponsorship from IUSS, Virginia Tech, and the National Soil Survey Center. The 4-day conference was the venue for international exchange and discussions of soil classification systems utilized around the world with a focus on achieving a Universal Soil Classification System.

IUSS is a global union of soil scientists whose objectives are to promote all branches of soil science and to support soil science activities around the world. The society was founded on May 19, 1924, as the International Society of Soil Science (ISSS) and reconstructed in 1950 under the leadership of Dr. Charles E. Kellogg. In 1998, ISSS was restructured and emerged as the International Union of Soil Sciences (IUSS). IUSS has been a member of the International Council for Science (ICSU) since 1993. The scientific activities of IUSS are undertaken through four divisions, and each division has four to six commissions. The Universal Soil Classification Working Group was founded under the Soil Classification Commission under IUSS Division 1 (Soil in Space and Time).

The mission of the Soil Classification Commission (SCC) is to promote cooperative research, communication, and collaboration for the design, maintenance, and improvement of soil classification systems. Worldwide, many soil classification systems support the making of soil surveys. The main goal of SCC is to promote standardization of soil descriptions, laboratory analytical methods, database values, diagnostic features, and correlation between systems for facilitating the sharing of data and advancing the science. The mission of the Universal Soil Classification System Working Group, chaired by NSSC Director Jon Hempel, is to develop a Universal Soil Classification System by working with all sectors of the soil science community to improve the consistency of soil classification tools.

The 4th Soil Classification Conference welcomed over 50 participants representing 19 countries from the 6 inhabited continents. Included were participants from universities, private soil science consultants, NRCS employees, and invited guests. Twenty NRCS soil scientists gave oral presentations at the conference plenary sessions or led discussions at the two conference field tours. In addition, a poster session covering various aspects of soil classification, description and mapping, and soil geomorphology had numerous contributions.

With regard to soil classification, the discussions centered principally on the similarities and differences between Soil Taxonomy and the World Reference Base

(WRB) for soil resources. In addition, various aspects of soil classification systems used in Russia, China, and Australia were considered because each system has strengths in the country where it developed and weaknesses outside this country. Soil classification in the U.S. was influenced early on by European and Russian soil scientists and evolved from the 1938 Classification System, to the 7th Approximation in 1960, and through two editions of Soil Taxonomy. The World Reference Base system was a project initiated by FAO and UNESCO in 1980. It has been supported by the United Nations Environmental Program (UNEP) and the International Society of Soil Science. The intention of the project was to establish a framework through which soil classification could be harmonized on a global scale. Its objective was to reach international agreement on the major soil groups as well as on the criteria and methodology to use in defining and separating the groups. The first draft of WRB was presented at the 15th World Congress of Soil Science at Acapulco, Mexico, and has been subjected to testing for consistency in several countries. The final text of the WRB was adopted and presented at the 1988 World Congress of Soil Science in Montpellier, France.

The theme of the 4th Soil Classification Conference conducted in Lincoln, Nebraska, was “Toward a Universal Soil Classification System.” The conference highlighted the history and evolution of soil science and soil classification systems around the world. It included 6 symposia (with a total of 8 sessions), 32 speakers, and 16 posters.

Cameron Loerch, national leader for Soil Survey Standards, opened the conference by introducing Dr. Ron Yoder, associate vice chancellor of CASNR at the University of Nebraska–Lincoln, who welcomed participants to Nebraska. He was followed by welcoming remarks from Karl Stahr, IUSS Division 1 chair; John Galbraith, Commission 1.4 chair; Pavel Krasilnikov, Commission 1.4 vice chair; and Jon Hempel, director of USDA–NRCS National Soil Survey Center.

The first action of the conference was to award to Dr. Hari Eswaran the second Guy Smith Medal for achievement in soil science. Lúcia Helena Cunha dos Anjos, Federal Rural University of Rio de Janeiro, discussed the history of the Guy Smith Medal. Ms. Amy Smith presented the tribute “Life of Guy Smith—My Grandfather” which chronicled the early life of her grandfather, Guy Smith, through his letters and photos sent home to his wife during his military service in Indonesia and China during World War II. Dr. Eswaran was unable to attend the meeting due to health issues.



**Ms. Amy Smith chronicles the life and military service of her grandfather Guy Smith, with his grandson Curtis Smith and son Arthur Smith, during the Guy Smith Medal award at Hardin Hall.**

Symposium 1 of the conference was on “Soil Classification,” with a keynote address by Pavel Krasilnikov of the Lomonosov Moscow State University, Moscow, Russia. Krasilnikov presented “Milestones of Soils Classification: A Review of the History with an Emphasis on Russian Experience.” Each of the symposia included a keynote presentation and three or four additional presentations along the same theme from other U.S. and international scientists.

Symposium 2 of the conference was titled “Towards a Universal Soil Classification,” with a keynote address by Peter Schad of the Technische Universitaet Muenchen in Freising, Germany. Shad presented “WRB: State of the Art and Next Steps.”

Symposium 3 featured “Worldwide Classifications: Their Improvement, Correlation and Harmonization,” with a keynote address by NSSC soil scientist Joe Chiaretti. Chiaretti presented “Soil Taxonomy: Past, Present, and Future.”

Symposium 4 covered “Marginal Soils: Strongly Transformed and Subaqueous Soils,” with a keynote address by John M. Galbraith of Virginia Tech, conference co-host and chair of ICOMANTH. Galbraith presented “Development of Anthropogenic Soil Classification.”

Symposium 5 consisted of a series of presentations on “Case Studies: Examples From (Sub)Tropical Areas,” with a keynote address by H. Curtis Monger from New Mexico State University. Monger presented “Soil Classification of Desert Soils; Past, Present, and Future.”

Symposium 6 explored “Novel Methods and Approaches in Soil Classification,” with a keynote address by Erika Michéli of Szent István University, in Gödöllő, Hungary. Michéli presented “Numerical Classification for Defining Diagnostic Horizons.”

The conference included three after-hour social events arranged by the University of Nebraska–Lincoln. Tuesday evening a mixer was hosted at Morrill Hall, home of

the University of Nebraska State Museum, featuring exhibits on the natural resources and paleontological history of Nebraska.

Wednesday evening a conference banquet was held at the historic Lincoln Station (train station) and featured the Many Moccasins Dance Troupe from the Winnebago and Lakota Tribes. The entertainment included a segment in which the international guests participated in a “Friendship Circle Dance.” The banquet concluded with a keynote presentation by Robert and Anne Diffendal on the “Geology Along the Lewis and Clark Trail Through Nebraska.”

The conference featured two field tours to demonstrate the classification of soils under both Soil Taxonomy (11th edition of “Keys to Soil Taxonomy”) and the World Reference Base for soil resources (first update of WRB, 2007). At all field tour sites, soil morphology and classification in both Soil Taxonomy and the World Reference Base systems were discussed extensively. Joe Chiaretti and Peter Schad led discussions on classification of the soils in these two systems as well as entertained comments from participants about the relationship between soil morphology and



**A mother and her daughter from the Many Moccasins Dance Troupe initiate the Shawl Dance for the entertainment of the conference participants at the Wednesday evening banquet in Lincoln Station.**

taxonomic classification in their national soil classification systems. Doug Wysocki and Phil Schoeneberger explained the geomorphic history and settings. All sites included detailed laboratory analyses conducted by the NSSC Kellogg Soil Survey Laboratory under the direction of Steve Monteith and Ellis Benham. Ken Scheffe compiled a tour book of the field sites. The tour book provided descriptions, analyses, and discussion of the soils and geomorphic history of the landscapes on the tours. Ken also selected the technical references, which were made available to the participants through Kindle eReaders.

The first field tour Wednesday afternoon was to a local soil excavation site. The site contained a 5-meter vertical exposure that displayed the Pleistocene glacial stratigraphy of eastern Nebraska. The surface soil was correlated to the Aksarben series, which formed in the late Wisconsin-age Peoria Loess. Aksarben is an important soil for agriculture in the region and classifies as fine, smectitic, mesic Typic Argiudolls in Soil Taxonomy and as Luvic Phaeozems (Anthric, Siltic, Bathythaptoluvic) in the WRB system. The surface soil overlies two buried Paleosols that formed in reworked Gilman Canyon Loess and an unnamed pre-Illinoian till that occurs below a depth of 3 meters. NRCS State Soil Scientist Neil Dominy provided an overview of the soils and agricultural systems of eastern Nebraska. Phil Schoeneberger and Doug Wysocki discussed the geomorphic and pedologic history and features displayed in the extensive soil exposure.



**Conference participants examine soil morphology and exchange ideas and concepts at the Aksarben-Paleosol site north of Lincoln, Nebraska.**

The second field trip was a daylong tour with stops in eastern Nebraska and western Iowa. The first stop was at the Hitchcock Nature Center (HNC) in the Loess Hills north of Council Bluffs near Honey Creek, Iowa. Chad Graeve, natural resource specialist at HNC, provided an orientation and a history of the nature center. Retired

NRCS soil scientist Richard Lensch discussed soil development in the Loess Hills based on his years of mapping soils in western Iowa.

The first soil viewed was one of the Onawa series that formed on flood plains. It was decided during conference planning that the only sure way to see flood-plain soils was to utilize cores. This decision was based on the unprecedented 4 months of flooding on the Missouri River that occurred during the spring and summer of 2011. The 2-meter-deep soil cores of the Onawa series illustrated the stratification of alluvial materials by the Missouri River and the influence of saturation by ground water on the morphology.

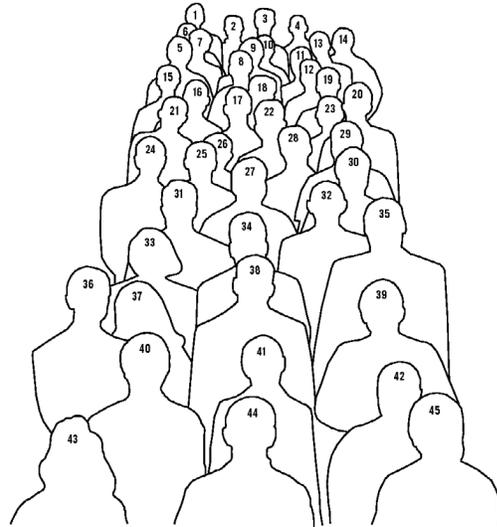
The second site was actually in the Loess Hills at the Hitchcock Nature Center. Dan Pulido of the Atlantic, Iowa, MLRA Soil Survey Office discussed the Monona soil at this site. The Monona series developed in young silty loess derived from the Missouri River and displays the development of a mollic epipedon on cooler and moister, east and north aspects. The Monona soil was contrasted with a soil developing in the same loess deposit on the warmer and drier, south and west aspects. The contrasting soil exhibited less accumulation of organic matter and less removal and redistribution of calcium carbonate.

Following lunch, the tour continued to the now-closed Sarpy County landfill in Bellevue, Nebraska. The current concepts of anthropogenic soils and their landscapes were the pertinent topics at this stop. An extensive discussion of the description and classification of anthropogenic soils and landforms was led by John Galbraith, Shawn McVey, and Joe Chiaretti. The latest recommendations of ICOMANTH on human-altered and human-transported materials were reviewed. The extensive discussions included both morphological and taxonomic aspects of anthropogenic soils.

The final stop of the tour was to view loess- and till-derived soils at the Chalco Hills Recreational Area, southwest of Omaha, Nebraska. The two soils discussed were Judson soil, which formed in loess derived from colluvium at the base of a hillslope, and a soil similar to Liston soil, which developed in pre-Illinoian till exhibiting significant



**International and NRCS soil scientists observing the features and discussing the soil pedogenic processes of the Judson soil, which formed in colluvium derived from loess at the Chalco Hills Recreation Area.**



June 11-14, 2012 4<sup>th</sup> IUSS Soil Classification Conference



Participants of the 4th IUSS Soil Classification Conference, hosted by the University of Nebraska–Lincoln: 1—John Hempel, USA; 2—Neal Stolpe, Chile; 3—Stephen Cattle, Australia; 4—Mark Kuzila, USA; 5—Phil Schoeneberger, USA; 6—Edwin Muniz, USA; 7—Joe Chiaretti, USA; 8—Cornie Van Huyssteen, South Africa; 9—Larry West, USA; 10—Juan Comerma, Venezuela; 11—Shawn McVey, USA; 12—Phillip R Owens, USA; 13—Pavel Krasilnikov, Russia; 14—Sergey Goryachkin, Russia; 15—Dylan Beaudette, USA; 16—Ben Harms, Australia; 17—Fengrong Zhang, China; 18—Peter Schad, Germany; 19—Vince Lang, Hungary; 20—Einar Eberhardt, Germany; 21—Cezary Kabala, Poland; 22—Hiroshi Obara, Japan; 23—Yuji Maejima, Japan; 24—Thomas Reinsch, USA; 25—Ganlin Zhang, China; 26—Juan Herrero, Spain; 27—Ken Scheffe, USA; 28—Stefaan Dondeyne, Belgium; 29—Eliseo Guerrero, Mexico; 30—Doug Wysoki, USA; 31—Cameron Loerch, USA; 32—Terry Cook, USA; 33—Catherine Fox, Canada; 34—Arthur Smith, USA; 35—Karl Stahr, Germany; 36—John Galbraith, USA; 37—Lucia Anjos, Brazil; 38—Curtis Smith, USA; 39—Erika Micheli, Hungary; 40—Markus Anda, Indonesia; 41—Amy Smith, USA; 42—Candiss Williams, USA; 43—Maxine Levin, USA; 44—Zamir Libohova, USA; and 45—Cathy Seybold, USA.

paleosol development. Nebraska soil scientists Dan Shurtliff and Patrick Cowsert discussed the occurrence of these soils on the landscapes in eastern Nebraska.

The field tour and IUSS Soil Classification Conference concluded with a barbeque and social at Mahoney State Park on the hills above the Platte River. Jon Hempel and Cam Loerch acknowledged the contributions of the organizers and presenters of the conference and tour and thanked the international participants for contributing to the conference and sharing their experiences for a universal classification system.

To find out more about the IUSS and the Soil Classification Commission, go to <http://clic.cses.vt.edu/IUSS1.4/>. For more information about the 2012 Soil Classification Conference, go to [http://clic.cses.vt.edu/IUSS1.4/IUSS\\_SoilClassification\\_Newsletters.htm](http://clic.cses.vt.edu/IUSS1.4/IUSS_SoilClassification_Newsletters.htm). ■

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