

Newsletter

In This Issue—

Future of Soil Survey	1
Jim Doolittle Receives USDA Award ..	2
Data Mining the NSSC Soil Survey Laboratory Soil Characterization Data	3
Language Matters	3
International Meeting	3
Robert Grossman Retires	5
Soil Risks and Hazards	6
Soils in the News	6
NRCS Soil Geochemistry Program Developed	7

Editor's Note

Issues of this newsletter are available on the World Wide Web (<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 Stanley Anderson, National Soil Survey Center, Lincoln, Nebraska. Phone—402-437-5357; FAX—402-437-5336; email—stan.anderson@nssc.nrcs.usda.gov.



Future of Soil Survey

By Russ Kelsea, National Leader, Soil Survey Technical Services, NRCS, National Soil Survey Center, Lincoln, Nebraska.

I can't predict the future of course, but we might gain some perspective on the future of soil survey by examining its history.

The soil survey program of the United States is conducted under several statutory authorities, the least ambiguous of which is Public Law 89-560, enacted in 1966 and codified under Title 42 of the United States Code—the Public Health and Welfare, in Sections 3271-3274. Taken together, the statutory authorities direct the Secretary of Agriculture to (1) make an inventory of the soil resources of the United States, (2) keep the inventory current to meet contemporary needs, (3) make the information available in a useful form by preparing reports and interpretations, and (4) provide technical assistance and consulting services to promote the use and application of soil survey information. These four parts are the core mission of the soil survey program.

We have been mapping soils in the United States, the first part of the core mission, for more than a century. We have extensive policies and elaborate procedures for conducting the initial survey. Nearly all of the United States has been mapped at least once at some level of detail, and the job of initial mapping is nearly complete.

The second part of the core mission, update mapping and soil survey maintenance, has been underway for more than 40 years and will never end so long as we continue to use soil

surveys. Policies and procedures for update and maintenance activities are still evolving. Currently, update mapping far exceeds initial mapping, and update activities are the main focus of the soil survey program.

We have made interpretations and delivered reports, the third part of the core mission, but many of these interpretations and reports are long-term standard products that may not meet contemporary needs in all cases. New capabilities in NASIS have given us the opportunity to customize interpretations, and the Web has provided new opportunities to deliver soil survey information, but we have not developed this part of the core mission to the same extent as we have the first two parts.

Finally, nearly 40 years after Congress directed the Secretary of Agriculture to do so in 1966, we have still done relatively little in providing technical assistance, the fourth part of the core mission. There are, of course, many notable exceptions. But again by comparison, we have not developed the policies, procedures, career path, staffing structure, and budget to the same extent as we have for the other parts of the core soil survey mission.

So what does this perspective suggest for the future of soil survey? Clearly, initial mapping is decreasing. However, we will not abandon the inventory and update process. We will always need to keep the inventory up-to-date to meet ever-changing land uses, new agricultural programs, and new environmental technologies. Mapping, updating, and maintenance are part of what we are charged to do, and we must maintain and even

enhance our capability to conduct these parts of our mission. Nevertheless, statutory authorities direct the soil survey program to make interpretations, deliver soil survey information that meets public needs, and provide technical assistance to promote the use of soil survey and understanding of soils. To achieve a more evenly balanced soil survey program, we must strive to grow in these areas.

What does it take to meet the challenges of rebalancing the soil survey program?

First of all, soil scientists. Scientists who are technically competent, who can see soil-landscape relationships, visualize stratigraphy, imagine processes working in soils, and understand the evolution of soils and landscapes over time. Scientists who are politically astute, who know that public policy is about decision making and conflict resolution, understand the adversarial process we use to make decisions, and are not intimidated by the process. Scientists who can communicate effectively, who can assimilate new information, participate effectively in the political process, and advocate for the role of soils and soil survey in land use management and public policy.

Second, change in our agency and in the soil survey in general. Like any large, long-standing organization, we find it difficult to change course. Change is likely to be slow and incremental. We have made some changes in the delivery of soil survey information through the Web, but these are mostly traditional business approaches in a new medium—an example of incremental change. We will also need performance measures that make us accountable for more than

just acres mapped, so we can measure the parts of the soil survey mission beyond mapping.

Third, we must recognize that we are professionals in soil science, not just employees of an agency or institution. We must also recognize that our colleagues in other agencies and the private sector are our professional peers and allies, not our competition. As professionals in soil science, we have a compatible mission across agency, institution, and corporate boundaries—a mission to serve the public interest with regard to the soil resource.

Finally, we must continue to institutionalize soils and soil survey in law, regulation, and the public conscience—a main theme in Public Law 89-560.

The future is full of opportunity and challenge. It will demand much from us. ■

Jim Doolittle Receives USDA Award

By Stanley P. Anderson, Editor, NRCS, National Soil Survey Center, Lincoln, Nebraska.

Jim Doolittle, research soil scientist, National Soil Survey Center, was a recipient of a USDA Honor Award in the category of “individual achievement in protecting and enhancing the Nation’s resource base and environment.” The Honor Awards, presented each year, are the most prestigious awards given by USDA. Jim was selected for his outstanding service in “developing new, non-invasive subsurface observation technology, contributing to much higher levels of efficiency and effectiveness within the Nation’s soil survey program.” The award was presented to Jim by Chief Bruce Knight.



Jim Doolittle taking onsite measurements by means of ground-penetrating radar.

Jim was later honored by Secretary of Agriculture Ann M. Veneman at the 58th Annual USDA Honor Awards Ceremony in Washington D.C.

This is the second time that Jim has received a USDA Honor Award. In 1988, he received one for “developing ground-penetrating radar techniques and interpretations for soil survey and engineering projects.”

Jim is the leading expert on the use of GPR in soils. He has been asked to contribute chapters to two books—a revision of *Surface-Penetrating Radar* by David Daniels and *Ground Penetrating Radar Theory and Applications* by Brian Moorman and Henry Jol. These two books are the only texts that provide an explicit overview of GPR and its applications.

Jim’s work is internationally known. It has been featured in numerous newspaper articles and journals. ■

Data Mining the NSSC Soil Survey Laboratory Soil Characterization Data

From “NRCS Technology News,” September 2004.

The Soil Survey Laboratory (SSL) has developed a Web site (<http://ssldata.nrcs.usda.gov/default.htm>) that provides access to soil characterization data. One feature of the Web site is the ability to query the soil characterization database. Two forms of query are possible. The first is a simple query form (<http://ssldata.nrcs.usda.gov/querypage.asp>) based on geopolitical boundaries (country, state, county) and/or soil series name, user pedon identifier, and laboratory pedon number. This form is sufficient for most queries.

The second query form (<http://ssldata.nrcs.usda.gov/advquery.asp>) adds SSL project, site, and pedon information to the query. The results of either query are displayed as pedon number, user pedon identifier, and series name. A maximum of 100 pedons are returned for each query.

The results of a query generate a report for display or download data to your computer. The report selection Web page allows users to view up to four reports. The download option has more report choices than the generate report option. By default, the name of the file is download.tar. Use a program, such as WinZip®, to extract the files within the download.tar file. The most common destination for the extracted files is a spreadsheet program.

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Language Matters

By Stanley P. Anderson, Editor, NRCS, National Soil Survey Center, Lincoln, Nebraska.

In May I received the following message from Bill Johnson, soil scientist, NRCS, Major Land Resource Area Soil Survey Region 8, Phoenix, Arizona:

I was taking a well-deserved break from working on my GASSP assignments, and I noticed a link on my.NRCS to something called Thunder Book. From the time that I hired on, whenever someone would provide me with a piece of technical information, they would say, “Put that in your thunderbook.” I always

wondered about the origin of the word and its definition. When I saw this electronic version on my.NRCS, I decided to look it up in the dictionary. I couldn’t find any reference to the word. I also did a search on the Web to no avail. Can you help? I think this might make a nice piece for your “Language Matters” column in the NCSS newsletter. What do you think? Later dude.

I told Bill that I had no idea what the term means. If anyone can shed light on this matter, shed it on me through email

(stan.anderson@nssc.nrcs.usda.gov).

Other questions: Is it “thunderbook” or “thunder book”? Is it capitalized? ■

International Meeting

Excerpted from the SUITMA Web site (<http://www.eun.eg/suitma/>).

The Third International Conference on Soils of Urban, Industrial, Traffic, Mining, and Military Areas (SUITMA) will be held in Cairo, Egypt, November 17–25, 2005.

Introduction

Scientists in the soil and related disciplines have often focused their work on agricultural and forest land, overlooking soils of urban, industrial, traffic, mining, and military areas that were left to appear as white areas on maps. It is most likely that the evolution of these soils is a function of the conventional formation factors just like any soil category, yet the anthropogenic factor is more intense. In the process, it triggers rapid and irregular transformation cycles comprising addition of exogenous materials and subsequent mixing.

These disturbed soils are characterized by extreme spatial heterogeneity. Furthermore, soils in localities may incorporate pollutants, inducing environmental degradation and posing a potential hazard to human health.

These problems were recognized by the Working Group on SUITMA of the International Union of Soil Sciences. An objective was to define appropriate procedures to survey, analyze, manage, and utilize soils of the urban, industrial, traffic, mining, and military areas. Additional work is needed to modify/devise procedures seeking compatibility with unconventional soils. A new research frontier was recognized by the soil scientists who met twice in the past few years, SUITMA 2000 in Essen, Germany, and SUITMA 2003 in Nancy, France.

In Cairo 2005, we promise to create the enabling environment to generate more knowledge and facilitate information exchange. In this context, we need your participation to enrich our collective ability to learn new aspects of soil science. Furthermore, we need your participation to prove that we soil scientists can extend mutual understanding between cultures and enhance human tolerance.

Key Dates

- Registration brochure released 15 June 2004.
- Abstract submission closes 15 February 2005.
- Notification of abstract acceptance approximately 8 weeks later.
- Early registration deadline 15 March 2005.
- Final papers due 15 May 2005.
- Accommodation booking deadline 15 June 2005.

Conference Themes

- Methodology and classification of urban soils

- Biological, chemical and physical properties of urban soils
- Pollution of urban soils and transfer risks
- Cycling of city refuse and soil forming substrates
- Cities and desertification
- Soils and quality of life in the city
- Soil problems of urban encroachment
- Rehabilitation of deserted military sites
- Soils of historical sites
- Open themes in the field of SUITMA

Abstracts

The deadline for abstracts submission is 15 November 2004.

Needed abstracts are no longer than one page with 2.5 cm margins, written in English, single spaced, and in Times New Roman. The title is given in capital letters, centered, and font 14 in bold. The author(s) name(s) is (are) given centered, bold, and font 12. The institutional affiliation of each author is centered in font 12. The corresponding author is designated with an asterisk and his/her email or postal address is given as a footnote. The body of the abstract is given in font 12. No tables, figures, and references are needed. We are advised to load the abstract with as much information as possible.

Abstracts should be based on fresh unpublished data.

The International Scientific Committee will review abstracts and allocate those accepted to either oral or poster sessions.

Authors will be notified of abstract acceptance and the form of presentation 8 weeks after the close of abstract submission.

Tours

Tour A: 17 November 2005—visiting the bentonite deposits and the

mineral extraction plant from the brackish water of Lake Karoun in El-Fayoum, about 100 km west of Cairo.

Tour B: 18 November 2005—visiting the stabilized sand dunes in the Greater Cairo area, an afforestation project utilizing treated sewage effluents, and a newly established city on Eastern Desert fringes with the Nile Delta.

Tour C: 22–25 November 2005—visiting the urban and rural soils of Siwa Oasis in the Western Desert, military and cemetery sites of El-Alamain on the Mediterranean coast, and the Alexandria Library.

Tour D: 22–25 November 2005—visiting the mega soil reclamation Toshka project of southern Egypt, the new agro-industrial complexes, and the historical sites of Luxor and Aswan.

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Robert Grossman



Bob Grossman, at left, and Lee Gile sampling a pedon in New Mexico.

Robert Grossman Retires

Dr. Robert “Bob” Grossman, research soil scientist, National Soil Survey Center, retired on June 30, 2004, after 46 years of meritorious federal service.

Bob was born in New York City, New York, on May 15, 1931. He received his primary and secondary education largely at Edmeston New York Central School. He attended Cornell University (1948-54), where he received his Bachelor and Master of Science degrees. He earned his Ph.D. in 1959 from the University of Illinois.

Bob was first employed by the Soil Conservation Service in 1958 as a soil scientist at the Soil Survey Laboratory in Beltsville, Maryland. He was transferred shortly thereafter to the Soil Survey Laboratory, Lincoln, Nebraska, where he remained as a Supervisory Soil Scientist and then Laboratory Head until 1975.

In September 1975, he was detailed on a 2-year IPA assignment to the University of Missouri, Columbia,

Missouri, where he served as a professor in the Agronomy Department.

He returned to the consolidated National Soil Survey Laboratory in Lincoln, Nebraska, as a research soil scientist. His principal professional activities have been in the application of physical methods and analysis to soil interpretations.

Aside from his extensive laboratory and research work, Bob may best be remembered for the numerous training sessions he has conducted at the Soil Science Institutes and Basic Soil Survey courses.

Bob is married to the former Natalie Doris Ross. They have two sons and three grandchildren.

Editor’s Note

By Stanley P. Anderson, Editor, NRCS, National Soil Survey Center, Lincoln, Nebraska.

In the May 1999 issue of the NCSS Newsletter (issue 7), I reproduced Dr. Charles E. Kellogg’s poem “A Lament for B” and then, with the help of Bob

Grossman attempted to explain the poem:

The meaning of the poem centers on what Dr. Kellogg calls the “death of Mother B.” Apparently, the concept of the B horizon changed from one of position in the profile (lines 5-7) to one of “new-found erudition” (line 8). This erudition involves the various morphological processes that result in the formation of subsurface horizons, such as those described in the 1975 edition of *Soil Taxonomy*. In a note to me, Bob Grossman indicates that the major conflict in the poem involves an irony: “The main point is the tension between Kellogg, the traditionalist and broad brusher, and his creation through Smith of a quantitative approach which he must have known was an assault on authority—now everyone was equal.”

I thought that Bob's comment showed a keen insight into human nature. I have seen many other examples of Bob's insight since I met him in 1976. ■

Soil Risks and Hazards

By Stanley P. Anderson, Editor, NRCS, National Soil Survey Center, Lincoln, Nebraska.

A work entitled *Understanding Soil Risks and Hazards* has been sent to GPO for printing and binding. Two PDF versions of this publication are available on the Web (<http://soils.usda.gov/use/risks.html>). One is a low-resolution file (2.5 MB), and the other is a high-resolution file (8.5 MB) intended for printing.

The following passage from the editor's Preface explains how this publication was assembled and describes its intent:

This publication is an introduction to soil conditions that can be risks or hazards for many land uses. Local knowledge and experience were used to develop this publication. Discussions of 26 soil-related concerns were developed by authors within the National Cooperative Soil Survey. In my opinion, each of the authors is an expert. The intent of this publication is to expand awareness of various soil risks and hazards to human life and property and encourage city and county officials, planners, developers, and others to consider the soil in their land use decisions.

At some point in the future, the National Soil Survey Staff will create and distribute a CD that includes this and similar publications. ■



Understanding Soil Risks and Hazards Using Soil Survey to Identify Areas With Risks and Hazards to Human Life and Property

Gary B. Muckel (editor), United States Department of Agriculture, Natural Resources Conservation Service, National Soil Survey Center, Lincoln, Nebraska



Soils in the News

By Gary Muckel, Soil Scientist, NRCS, National Soil Survey Center, Lincoln, Nebraska.

The NRCS soils Web site (<http://soils.usda.gov>) has added a feature topic area called "Soils in the News." Various news articles concerning soil survey and soil education are selected from the news search available from Google at <http://news.google.com>.

The topics of the news articles on the soils Web site have included use of soil survey for tax assessment, location of building sites, wetland delineation

and protection, preservation of prime farmland, release of new soil survey publications, failed septic systems, trench safety, zoning, soil education, and envirothons. Some of the articles have been about various people in the soil survey program.

The articles are rotated off the Web as new ones are added. The soil information is varied and is significant to very broad and diverse groups of users. The diversity of the news articles speaks well for the value of soil survey. The new Web site feature provides users an opportunity to scan the topics that make the news. ■

NRCS Soil Geochemistry Program Developed

From "NRCS Technology News," May 2004.

A soil geochemistry program has been developed by the National Soil Survey Center in Lincoln, Nebraska. The major objectives of the program are to:

- evaluate, institute, and monitor quality of laboratory geochemical methods and data,
- investigate concentrations and distribution of native (background) concentrations of trace metals in U.S. soils, and
- provide leadership in the application and use of geochemical data for NRCS and the Soil Survey.

A usable soil geochemistry database has been compiled. This database includes major and trace elements with associated characterization data. These data are available at the USDA Soil Web site (<http://soils.usda.gov/survey/geochemistry/index.html>), featuring a geospatial display of data. This Web site has four layers: site characteristics, major elements, trace elements, and associated characterization data. A fifth layer of trace element data from the *Journal of Environmental Quality* (Holmgren et al., 1993) is also included. These efforts on the Web site represent a unique and original effort in our agency.

The analytical focus of the program has been the examination of soil geochemistry of major horizons within pedons, including both

anthropogenically and nonanthropogenically contaminated soils. This approach allows a greater utility for these data compared to geochemical surveys that analyze only trace elements of surface horizons. It functions for evaluation of background levels for site remediation and pedogenic interpretations with depth. A statistical evaluation was conducted to assess general trends in the data set and published in the *Journal of Environmental Quality* (Burt et al., 2003).

Major soil series in the United States, their geographic distribution, and background (native) elemental content are being evaluated. This effort has resulted in a study to systematically evaluate all benchmark soils and other geographically extensive soils in the United States. The effort has initiated a new evaluation of the long-term goals for sampling pedons in the United States for both characterization and geochemical data.

The soil geochemistry program is developing cooperative research for soil survey application. This work is designed to incorporate soil

geochemistry into the mainstream products of soil survey. It will better position the NRCS soil survey program to address needs of current and future customers. Data have applicability in pedology, geomorphic landform definition, and environmental assessment. This assessment of land use impact by urban and industrial users is a new direction for the soil survey program and will improve the applicability of soil surveys and widen the user base in an increasingly urban society. These data have a direct application to the research mission of the agency, link to the agency's mission to support the Clean Water Act, and add value to the soil survey program for a wide array of applications.

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