



# 2017 Plan to Maintain the Soil Survey and Technical Soil Services, of Illinois

May 11, 2017

## 2016 Regional Planning Conference

“Soil Survey Interpretations — Bringing Soil Survey Users and Producers Together”

<http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/partnership/ncss/?cid=nrcseprd959208>

### LINKS

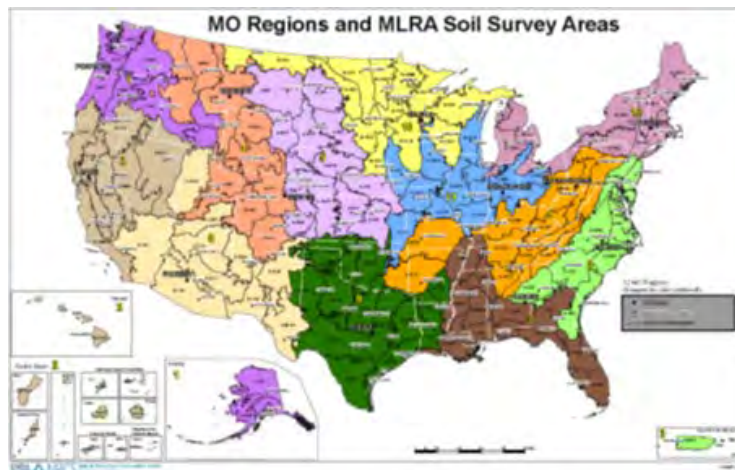
[Agenda](#) (includes links to reports and presentations)

[Proceedings](#) (PDF; 662 KB)

[List of Posters](#)

[List of Participants](#)

## SOIL SURVEY REGIONS 6,7,10,11,12



Full version is available on eFOTG in Section II, under Soil Planning Folder

[http://efotg.sc.egov.usda.gov/efotg\\_locator.aspx](http://efotg.sc.egov.usda.gov/efotg_locator.aspx)

### Natural Resources Conservation Service

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## Plan to Maintain the Soil Survey and Technical Soil Services of Illinois

2014 Plan to Maintain: [http://efotg.sc.egov.usda.gov/references/public/IL/Plan\\_to\\_Maintain\\_the\\_Soil\\_Survey\\_of\\_Illinois\\_2014\\_04April\\_04.pdf](http://efotg.sc.egov.usda.gov/references/public/IL/Plan_to_Maintain_the_Soil_Survey_of_Illinois_2014_04April_04.pdf)

2014 Minutes: [http://efotg.sc.egov.usda.gov/references/public/IL/2014\\_minutes.docx](http://efotg.sc.egov.usda.gov/references/public/IL/2014_minutes.docx)

2015 Plan to Maintain [http://efotg.sc.egov.usda.gov/references/public/IL/A\\_DRAFT\\_Plan\\_to\\_Maintain\\_the\\_Soil\\_Survey\\_of\\_Illinois\\_2015\\_05May\\_21.pdf](http://efotg.sc.egov.usda.gov/references/public/IL/A_DRAFT_Plan_to_Maintain_the_Soil_Survey_of_Illinois_2015_05May_21.pdf)

2016 Plan to Maintain [http://efotg.sc.egov.usda.gov/references/public/IL/STATE\\_IL\\_DRAFT\\_Plan\\_to\\_Maintain\\_the\\_Soil\\_Survey\\_of\\_Illinois\\_2016\\_07July\\_08.pdf](http://efotg.sc.egov.usda.gov/references/public/IL/STATE_IL_DRAFT_Plan_to_Maintain_the_Soil_Survey_of_Illinois_2016_07July_08.pdf)

An informal draft agenda includes:

- **Convene 9:30 am (CST)**
- **Opening Remarks**
  
- **Status Reports by Cooperators**
  - **Natural Resources Conservation Service**
  - **United States Forest Service**
  - **United States Fish and Wildlife Service**
  - **Illinois Department of Agriculture**
  - **University of Illinois**
    - **Prairie Research Institute**
    - **ACES**
    - **Illinois State Geological Survey**
    - **Illinois State Water Survey**
    - **Illinois Natural History Survey**
    - **Cooperative Extension Service**
    - **Midwest Regional Climate Center**
  - **Illinois Department of Transportation**
  - **Association of Illinois Soil and Water Conservation Districts**
  - **Illinois Soil Classifiers Association**
  
- **Other Reports**
  - **Agency Reports**
  - **MLRA Regional Offices**
  - **Other Contributors**
  
- **Discussion**
  
- **Lunch 11:30 AM**
  
- **Reconvene 12:30 PM**
  
- **Other Reports-- (continued)--**
  - **MLRA SSO Leaders**
  - **Resource Soil Scientists**
  - **Illinois State Office Soils Staff**
  - **POSTER PRESENTATIONS-We will have technical and informational posters of some of the activities that are ongoing**
  - **Time-permitting, a slide scanning presentation**
  
- **Closing Remarks**
  
- **Adjourn 2:30 PM**

## **CONTENTS**

### **BACKGROUND National Cooperative Soil Survey**

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- NCSS Region map
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- National and International Soil Committees
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- Illinois Cooperative Soil Survey
  - Partners
  - Objective

### **Alignment to USDA, NRCS, and SSD Strategic Plans**

- USDA Strategic Plan
- NRCS Strategic Plan
- NRCS Chief's Priorities

### **Soil Science Division**

**Mission**

**Responsibilities**

**Priorities**

### **Soil Business Area Analysis Group**

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- Update and Maintenance Phase
- Current Status of County Soil Surveys
  - 2015 Status
- “pseudo” SSURGO
- Evaluations
- Re-Organization, SDJR, and Soil Survey maintenance
  - MLRA Office Regions (MAP)
  - MLRA Boundaries and the Offices that serve Illinois (MAP)
  - MLRA Projects
  - Soil Data Join Re-Correlation (SDJR)

### **FUNDING** Historical and Current

### **STAFFING**

- **Current Staffing (Illinois)**
  - State Office Staffing and additional soils and GIS support
  - MLRA Staffing
  - Retirements!

### **WORKLOAD**

- **TECHNICAL SOIL SERVICES**
  - **State Soil Scientist: Leadership in the Soil Science Division**  
State Soil Scientist, duties
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    - Maintenance of Policy related needs
    - Development of New Technology and Delivery Methods
    - Addressing NRCS Priorities
    - Addressing SSD Priorities

- Inventory, Organization, & House Cleaning
- Training Given
- GIS Staff, duties
- Area TSS contributors: Area Resource Soil Scientists and GIS
  - Area Resource Soil Scientists
    - Program Support
    - RSS Wetlands
    - Training and Delivery of Soils Information, Outreach, Soil Health
    - NRI
    - FPPA (LESA)
    - RSS Conduct, assist, and provide leadership with special projects and committees while maintaining partnerships in support of NRCS Mission
- Wetlands and HEL State Compliance Team
- Soil Health
- **TSS Staffing Plan Looking to the Future**
  - **TSS Needs**
    - TSS\RSS Plan
    - History and Justification for RSS (embedded document)
    - Plan for additional RSS (embedded document)
  - **GIS Needs**
    - GIS Plan
    - Illinois GIS Plan (embedded document)
  - **Attrition discussion**
  - **Staffing Needs**

### Current State Projects and Activities

- **Grants and Agreements, Active**
  - **ACES**
  - **Captain Mine sampling**
  - **Slide Scanning and GIS Student Development and Status**
  - **LIDAR Acquisition, Storage, Derivative Development, Big Data, Tools and Distribution**
    - **USGS, NGCE acquisitions**
    - **Got LIDAR? (embedded document)**
    - **From Engineering Tools to Wetland Conservation Compliance**
    - **The Agricultural Conservation Planning Framework (ACPF)**
    - **BIG DATA –**
      - **Supercomputing solutions for high resolution elevation data (SSHRED) CYBER GIS Proof of Concept Data Processing Agreements**
      - **ISGS Landform Classification Derivatives over watersheds**
      - **ISWS RUSLE II Classification Derivatives over watersheds**
- Climate Summaries
- Land Evaluation and Site Assessment (LESA)
- National Resource Inventory (NRI) administration and data gathering
- Conservation Effects Assessment Project (CEAP)
- National Soil Monitoring network
- Rapid Carbon Assessment
- **ISEE\Soil Explorer**
- **St. Louis Science Center GROW Exhibit**
- **Soil Judging: Regional and National Hosted by Northern Illinois University 2016, 2017**
  - **Images and links**
- Ground Penetrating Radar and Electromagnetic Induction Field Investigations

- **VERIS**
  - Benchmark Soils: Classification/Correlation
  - Interpretations
    - General Soil Map Project
    - Conservation Tree and Shrub Groups (CTSG)
    - Soil Groups for Plants
    - Plant Groups for Soils
    - Ecological Site Descriptions (ESDs)
      - Ecological Site Inventory
      - Illinois Natural History Survey Contract Study
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    - Soil Productivity Index and Crop Yield Indices
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    - Urban Interpretations
- **MLRA provided TSS**
- **SOIL SURVEY MLRA Project Offices Potentially Contributing**
  - Aurora MLRA Office
  - Marion MLRA Office
  - Union, MO MLRA Office
  - Springfield MLRA Office
  - Onalaska, WI MLRA Office
  - Juneau, WI MLRA Office
  - Grand Rapids, MI MLRA Office
  - Owensboro, KY MLRA Office
  - Milan, TN MLRA Office
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    - Surface Mine Soil Series Project
    - Shawnee Hills Loess Catenas Project
    - Sangamon Paleosol/Geosol Project
    - Sodium Affected Soils Project
    - Image Processing for Sodium Affected Soils
    - Illinois on CD
    - Photo Mosaic of 1938 Imagery
    - Sodium Distribution Project
    - LIDAR projects slope analysis and maps
    - Hickory Distribution Project
    - Tazewell Co. Loess Terrace Project
- **SOIL SURVEY FUTURE PROJECTS**
  - Potential Projects Identified in Evaluations
  - Projects for all offices planned to start in FY 13 or later
  - Projects identified as future projects in Process of SDJR

## **DATA DELIVERY AND ACQUISITION**

- National Bulletins
- gSSURGO
- Geospatial Data Gateway Spatial data
- Web Soil Survey, Tabular Data
- Illinois Originated Web Soil Survey Data Requests
- National Soils Website
- Illinois NRCS Soils Website
- **LINKS Page: SOIL, Natural Resource, Education, Climate, Statistics, Biologic, Veg, GIS, GPS...**
  - [https://efotg.sc.egov.usda.gov/references/public/IL/Links\\_1\\_2017\\_05May\\_03.docm](https://efotg.sc.egov.usda.gov/references/public/IL/Links_1_2017_05May_03.docm)
- Report Tools linked to Soils Database and delivered through URL requested HTML
- Conservation Desktop
- EPA National Wetland Condition Assessment
- Climate Change Hubs
- Captain Mine Plots U of I
- Farmland Classification Inconsistencies in population

## **ACTIONS/STRATEGIES**

- Annual Illinois Cooperative Soil Survey Work Planning Conference
- **Regional Technical User's Conference?**
- **Map Unit Correlation and Numbering Protocols**
- **Landform Map based on LIDAR -- AGREEMENT**
- General Soils Map of Illinois
- **Soils of Illinois, Soil Systems of Illinois Digital Work in Progress**
- **Edaphology (Plant\Soil Interactions) of Illinois Soils**

## **OPPORTUNITIES**

- **USAJOBS!**
- Cooperative Ecosystem Study Units (CESUs)
- NEON
- Conservation Initiative Grants (CIG)
- RCPP: Regional Conservation Partnership Program
- Farm Progress Show and IL V. IN High School Soil Judging
- Illinois Soil Classifiers Association
- **Volunteers Needed!**
- Nutrient Loss Reduction and MRBI (with Maps)
- **ISCA Fall Tour**
- **Central States Forest Soils Workshop**
- **Friends of the Pleistocene Tour**

## **2016 Regional Meeting Highlights**

- Illinois NRCS Administrative Areas with Area Office locations

## **BACKGROUND**

### **National Cooperative Soil Survey** <http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/survey/partnership/ncss/>

The National Cooperative Soil Survey (NCSS) is a nationwide partnership of Federal, regional, State, and local agencies and private entities and institutions. This partnership works to cooperatively investigate, inventory, document, classify, interpret, disseminate, and publish information about soils of the United States and its trust territories and commonwealths. The activities of NCSS are carried out on national, regional (such as the Major Land Resource Area or MLRA), and State levels.

- [Overview](#) -- The definition, purpose, and history of the NCSS.
- [NCSS Conferences](#) -- Information regarding regional and national NCSS conferences.
- [NCSS Newsletters](#) -- Current and past and NCSS newsletters.

General Manual 430, part 402 – Soil Surveys **(contains authorities)**

<http://directives.sc.egov.usda.gov/RollupViewer.aspx?hid=17074>

### **Strategic Plan**

**Vision:**

**Mission Statement:**

**Strategic Plan:**



The NCSS Strategic Plan for the next 5 years is being updated and discussed. It was discussed at the National Meeting in Duluth in 2015 and has been under development. The plan WAS a topic of discussion at the regional meeting.

- [NCSS strategic plan.pdf](#)  
[https://content.govdelivery.com/attachments/USDANRCS/2016/06/20/file\\_attachments/570879/NCSS\\_strategic\\_plan.pdf](https://content.govdelivery.com/attachments/USDANRCS/2016/06/20/file_attachments/570879/NCSS_strategic_plan.pdf)

### **Figure**

**National Cooperative Soil Survey (NCSS) Regions**



## **PARTNERS**

Primary Federal agency NCSS participants include the Bureau of Indian Affairs (BIA), Bureau of Land Management (BLM), Department of Defense (DoD), Forest Service (FS), National Park Service (NPS), and Natural Resources Conservation Service (NRCS). [Appendix 601-1](#) has a short description of the roles of these partners. In addition to these Federal agency partners, there are numerous State and local partners participating in NCSS.

### **Additional Partnerships**

[North America Node of GlobalSoilMap.net](#) -- A node (continent) of a global consortium formed to make a new digital soil map of the world.

[Earth Team](#) -- A history of volunteers in the Natural Resources Conservation Service. Also includes volunteer needs in Lincoln, Nebraska.

## **National and International Soil Committees**

- [Federal Lands Advisory Group](#)
- [Federal Geographic Data Committee](#)
- [Federal Geographic Data Committee Soils Subcommittee](#)
- [International Taxonomy Committee](#)
- [Hydric Soils Committee](#)
- [Soil Business Area Analysis Group](#)



## Congratulations!

2016 Soil Scientist of the Year: **Rob Tunstead**, MLRA Soil Survey Leader, Hammonton, NJ  
2016 Soil Scientist Achievement Award: **Wes Tuttle**, Soil Scientist, National Soil Survey Center, Wilkesboro, NC

2016 Cooperator Achievement Award: **Dr. Douglas Malo**, Assistant Department Head/Distinguished Professor, Soil genesis, classification, land use, and pedology, Department of Plant Science, South Dakota State University, Brookings, SD received his award at the Regional planning conference in Illinois.



2017 Soil Scientist of the Year: **Suzann Kienast-Brown**; Suzann is the Soil Scientist/GIS Specialist for NRCS Soil Survey Region 4 in Bozeman, Montana.



2017 Soil Scientist Achievement Award had two recipients: **Debbie Anderson**, the Regional Director for Region 3 in Raleigh, North Carolina; and **Steve Campbell**, a soil scientist at the NRCS West national Technology Support Center in Portland, Oregon.



2017 NCSS Cooperator Award: **Darrell Schulze**. Darrell is a Professor of Soil Science in the Agronomy Department at Purdue University.



## Illinois Cooperative Soil Survey

The soil survey program in Illinois is a cooperative endeavor of federal, state, and local government. Nine cooperators have signed the Illinois Cooperative Soil Survey memorandum of understanding in the past.

The Plan to Maintain the Soil Survey of Illinois outlines the strategy for the soil survey progress of Illinois, delivery of data and products, and delivery of Technical Soil Services. The plan evolved from annual updates to the December 1991 long range plan, and now summarizes the workload and framework within which the soil survey will function to carry out the NRCS Mission and assist users in Illinois.

The Plan to Maintain the Soil Survey of Illinois is showcased to partners and interested parties in an effort to maintain the spirit of the original MOU. Illinois recognizes the importance of the cooperative partnership necessary to meet the goals of soil survey and data delivery in Illinois.

State conferences deal with the coordination of State soil survey efforts, review of research findings, setting of work priorities, and the development of work schedules. They serve as vehicles for determining and incorporating the views of individuals and organizations and for providing guidance for activities in the NCSS program for each State.



**Partners:** [Association of Illinois Soil and Water Conservation Districts](#), [Illinois Department of Agriculture](#), [Illinois Soil Classifiers Association](#), [Illinois State Geological Survey](#), [Illinois Department of Transportation](#), [University of Illinois, College of Agricultural, Consumer and Environmental Sciences \(ACES\)](#), [University of Illinois Extension Service](#), [University of Illinois Ag Experiment Station](#), [USDA Forest Service](#), [USDA Natural Resources Conservation Service](#).

County Boards of Commissioners are key partners in most projects. In addition, County Soil and Water Conservation Districts, RC&D Councils, and Regional Planning Commissions cooperate in some projects. Several Cooperative Agreements have been honored over many years of soil survey mapping and updates resulting in one of the most successful soil survey programs in the country. Several other state and federal agencies, associations, private groups and individuals work with and collaborate with NRCS to meet goals of the NCSS and its partners; and to provide natural resource technical support for USDA and its partners.

**Objective:** The objective of the Illinois Cooperative Soil Survey is to provide a soil survey of the state that is complete, current, and meets the needs of the users.

## Alignment to USDA, NRCS, and SSD Strategic Plans

**USDA Strategic Plan:** (<http://www.ocfo.usda.gov/usdasp/sp2010/sp2010.pdf>)

**NRCS Strategic Plan:** ([http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb1045272.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1045272.pdf))

- *Get More Conservation on the Ground*
- *Increase Organizational Effectiveness and Efficiency*
- *Create a Climate Where Private Land Conservation Will Thrive*

**NRCS Chief's Priorities 2016:** **No new Chief Yet: Sonny Perdue selected for Secretary of Agriculture.**  
To implement NRCS's mission, the agency will pursue the following priorities:

**1. Deliver excellent and innovative service.** NRCS is the nation's preeminent private lands conservation organization and our hallmark for 80 years has been to our ability to deliver high-quality technical advice and voluntary conservation solutions for America's farmers, ranchers, and communities. The agency will build upon our successes by fully utilizing the authorities and programs provided to us by Congress, as well as using innovative approaches for achieving the best conservation results for both our customers and taxpayers.

**2. Strengthen and modernize conservation delivery.** NRCS' scope and programmatic responsibility have grown significantly over the past two decades. At the same time, our customers are becoming more diverse and agricultural production and resource management is becoming more complex. In order to prepare the agency to continue delivering excellent service, NRCS must ensure it has the information technology, business operations, and workforce support that enables us to offer timely and cost-effective solutions to our customers.

**3. Enhance and expand NRCS's scientific and technical capabilities.** NRCS' conservation science, technical standards, and decision support tools inform and drive on-the-ground solutions. Improving and expanding on NRCS' scientific and technical capabilities—including the development, acquisition, dissemination, and use of tools and knowledge—will ensure that the agency remains a leader for delivering conservation for farmers, ranchers, and forest landowners.

**4. Broaden our reach, customers, and partners.** NRCS has significant experience working with farming, ranching, and private forestry operations, but we have opportunities to increase access and opportunity by identifying new customers, reaching out to new partners, and building local capacity to plan and deliver conservation solutions.

### The Mission of the Soil Science Division, Natural Resources Conservation Service

- *Provide leadership and service to produce and deliver scientifically-based soil information to help society to understand, value, and wisely manage global resources.*

**NSSH Part 600** ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/?cid=nrcs142p2\\_054212](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/?cid=nrcs142p2_054212))

Four functions are the core mission areas of the Soil Survey Division:

([http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs143\\_020393.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs143_020393.pdf))

- *Make an inventory of the soil resources of the United States;*
- *Keep the soil survey relevant to ever-changing needs;*
- *Interpret the information and make it available in a useful form; and*
- *Promote the soil survey and provide technical assistance in its use for a wide range of community planning and resource development issues related to non-farm and farm uses.*

### Soil Science Division - Responsibilities

- **National Soil Survey Center** - national standards, database, training, interpretations, research, and analysis.
- **Geospatial Research Unit** (formerly National Geospatial Development Center).
- **Soil Quality Team** - information for research and practical technologies.
- **World Soil Resources** - global soil information and education.

- [National Geospatial Center of Excellence](#) - responsibilities.
- [State Soil Survey Offices](#) - responsibilities for NRCS State Offices.
- [Soil Survey Regional Offices](#) - responsibilities of SSR Offices.

## Soil Science Division 2016 Priorities

The Soil Science Division (SSD) supports the NRCS mission by delivering vital information and expertise to agency staff, partners, and the public in innovative ways. The division's priorities for FY 2016, listed below, will enable it to continue that service. All of the priorities are of equal importance.

- Assist States in providing science-based technical soil services to enhance and support soil health activities, conservation planning, and program delivery and to maintain and expand our partnerships with university cooperators and other external customers.
- Accelerate the foundational (initial) soil inventory on all lands, including private, Tribal, and Federal lands.
- Provide ecological site products to broaden applications and training in collaboration with national and State technical staff and Federal partners.
- Enhance the integration of soil science with USDA and NRCS climate change initiatives.
- Strengthen the National Cooperative Soil Survey (NCSS) through increased transparency and collaboration with internal and external partners.
- Finalize the Soil Survey Data Join Re-correlation (SDJR) initiative to evaluate and harmonize soils information across landscapes and incorporate the evaluation and harmonization process into standard operating procedures.

The significance of each priority is described below.

**Technical Soil Services** – The Soil Science Division is committed to assisting the State Conservationists and State soil scientists in providing technical soil services assistance to support agency priorities. The SSD and the Soil Health Division will continue to work in partnership with States to provide science-based soil health information and applications. The SSD will continue to collaborate with State soil scientists to promote increased technical assistance field training in resource assessment for conservation planning, assessments of soil health and dynamic soil properties, hydric soil identification for wetland determinations, and other conservation technical assistance needs. The SSD is also committed to assist States to provide technical soil services to customers with understanding and properly using the soil survey, to provide customers with predictions and interpretations about the behavior of each kind of soil mapped or identified under defined situations, and to offer onsite investigations, soil workshops, training sessions, and volunteer opportunities to traditional, nontraditional, and underserved customers. These services will be beneficial to NRCS's Regional Conservation Partnership Program and critical conservation areas and to broaden the conservation partnership.

**Soils Inventory** – Priority will be given to initial soil inventory on Tribal and private lands on which conservation technical assistance and farm bill program delivery are NRCS priorities. An initial soil inventory is the foundation upon which all subsequent soils products and information are developed, maintained, and interpreted. Customers continue to ask new questions, request existing and new data, and need current and new soil interpretations to develop conservation programs and address issues on climate change, soil health, and other emerging land use concerns. More than 90 percent of the United

States has a detailed soil survey (97 percent of non-Federal and Tribal lands) and maps and data are accessible through Web Soil Survey. However, there are over 180 million acres of soils in the United States that have no soil inventory. Most of this acreage is on Federal lands (109 million acres); however, high- conservation-priority areas have no foundational soils inventory, particularly on Tribal lands in Alaska. In 2015, and in collaboration with Tribal, Federal, and NCSS partners, including State Conservationists and State soil scientists, the SSD will develop and implement a plan to accelerate the inventory of the remaining private, Tribal, and Federal lands with a proposed accomplishment of the foundational soil inventory by 2026.

**Ecological Sites** – Ecological site inventory and descriptions are critical to selecting, implementing, and assessing conservation practices; recognizing thresholds for irreversible change in managed ecosystems; estimating potentials for soil carbon sequestration; and developing options for climate change adaptation. Using ecological site information for conservation planning is an application of NRCS existing guidelines. The first step is inventory (selecting ecological site and ecological state); the next step is defining conservation goals and objectives; then selecting appropriate conservation practices and monitoring their impacts to adjust future management decisions. Soil survey long-range and project plans will include protocols for the definition, inventory, and description of ecological sites. Provisional ecological sites are planned to be completed and available within five years.

**Climate Change** – NRCS programs and conservation planning activities were historically designed to provide conservation of natural resources under climatic conditions that varied regionally. Currently, climate change and extreme weather events, as evidenced by recent high rainfall events along the east coast and severe drought in the west, now require these programs and activities to be updated with respect to these new benchmarks of variable climate. The Soil Science Division helps make conservation programs more effective by using localized expert knowledge of soil science in order to increase soil resilience against future impacts of climate change. The SSD has a leading role in supplying soils expertise, soil survey data, and ecological site information to these agency programs. With the increasing need to raise awareness of and prepare for the impacts of climate change, the SSD will provide an increasing level of assistance to maximize the use and value of soils data in support of these agency activities and in support of the mission and goals of the USDA Climate Hubs.

**National Cooperative Soil Survey** – The strength of the NCSS relies on the collaboration between NCSS partners – Federal, State, and local government agencies, universities, private sector – to achieve common goals in advancing soil science. Through State Conservationists and State soil scientists, the SSD will strengthen communication lines to further agency priorities in soil health, conservation initiatives, and providing science-based conservation planning to landowners. The SSD will build on the success of the 2015 International Year of Soils by working in partnership with all NCSS participants to develop a NCSS strategic plan. Also, the SSD will encourage the NCSS partners to actively participate in regional and national conferences and serve in training cadres.

**Soil Survey Data Join Re-correlation (SDJR)** – In the final year of this multiyear, accelerated initiative, the SSD will continue to create continuous and joined coverage within the database through a process of data harmonization. The evaluation was designed to capture corporate knowledge from State soil scientists, experienced employees, and historical documentation (such as manuscripts, correlation documents, point data, research, and laboratory data) and then use that knowledge to harmonize the individual map unit concepts across multiple counties into a similar MLRA map unit concept and improve the soil properties and interpretations. The resulting uniform map unit database paves the way for calculations, such as those for K and T factors, needed to produce accurate information across soil survey area boundaries and provides the framework for future enhancement and improvements within each MLRA. The evaluations are an integral part of the update process and will continue to provide a complete

understanding on what soils information needs to be collected to support agency conservation planning needs from the local level up through the national level.

**Soil Business Area Analysis Group (SBAAG)**--The Soil Business Area Analysis Group (SBAAG) acts as a forum to analyze and facilitate the integration of technical and operational business processes into the National Cooperative Soil Survey Program. This includes the coordination with National Centers in order to assure that research, development, delivery, and marketing of soil survey products and services follow an overall system plan. The objective of the group is to improve the quality and delivery of soil information and the process by which that information is collected, managed, and presented. Including, technical specification of equipment and software, data distribution methodologies, and assistance with navigating the current IT framework.

SBAAG provides recommendations to the National Soil Science Division leadership on all issues related to the soil survey business area.

SBAAG accepts ideas, thoughts, or issues relating to soil survey business functions from any level within the National Cooperative Soil Survey. Items should be passed to the appropriate State Soil Scientist for submission to the SBAAG chair.

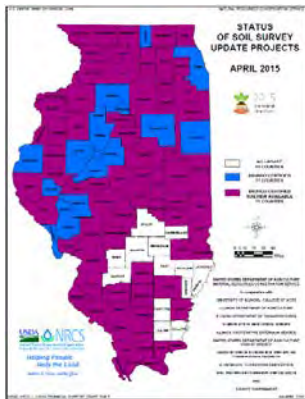
## **IL STATUS OF SOIL SURVEYS**

**Update and Maintenance Phase:** An update/maintenance program was initiated in 1990 to bring the patchwork of county soil surveys to a common, state-of-the-art standard. The “MLRA concept” was adopted and five MLRA soil survey project offices were established to begin the work of updating and digitizing the soil survey of Illinois. All 102 counties have been digitized and are SSURGO certified. Seventy-five of the counties were updated and re-correlated before they were digitized (see status map). The other 27 counties were digitized without an update or re-correlation effort and are considered “pseudo-SSURGO” projects. In addition to increased data from more observations, the data and maps were improved through the introduction of new technologies and methods. This includes Provisions of **New Data and Data Delivery Methods**.

**Current Status of County Soil Surveys:** The status of soil surveys in Illinois 2015 is presented in **Figure** “Status of Illinois Update Counties” map.

Soil survey reports have been published for all 102 counties. Eleven (11) are University of Illinois publications and 91 are SCS/NRCS publications. Four (4) reports were published in the 1950’s, 9 in the 1960’s, 23 in the 1970’s, 23 in the 1980’s, 32 in the 1990’s, and 11 since 2000. The source for the latest, most up to date soil survey information is the [Web Soil Survey: http://websoilsurvey.nrcs.usda.gov/app/](http://websoilsurvey.nrcs.usda.gov/app/). Large data sets are available from the [Geospatial Data Gateway http://datagateway.nrcs.usda.gov/](http://datagateway.nrcs.usda.gov/). Over 170 Published Soil Surveys for Illinois are archived on the web at: [Soil Surveys by State:](http://www.nrcs.usda.gov/wps/portal/nrcs/soilsurvey/soils/survey/state/)

[\(http://www.nrcs.usda.gov/wps/portal/nrcs/soilsurvey/soils/survey/state/\)](http://www.nrcs.usda.gov/wps/portal/nrcs/soilsurvey/soils/survey/state/).



Seventy-five counties have a SSURGO certified data base via a Soil Survey Update Project. Twenty-seven counties have been SSURGO certified via the SSURGO initiative (pseudo-SSURGO).

**Figure: Status of Illinois Update Counties, 2015.**  
**“pseudo” SSURGO**

Description: Twenty-seven counties in Illinois have not been updated over that last 15-20 years of update activities in Illinois. Evaluations were completed on all 27 counties. These counties have minimal data sets and have not been reviewed and updated to the standards of Illinois Update counties. In an effort to bring the completeness and consistency of the data up to a standard for Illinois, data of

adjoining update counties will be linked to the map units of these counties where it can be done without



extensive revision or field work. With the additional review, spatial and tabular data from adjacent counties may be updated as well.

**PROGRESS:**

Pseudo SSURGO update complete for eleven counties. Calhoun, Hancock, Greene, Scott, Morgan, Brown, Livingston and Iroquois. These projects are complete with the exception of soil map units that will need further field work to better identify the distribution. Most map units have been linked to updated soil data map units – linking them to updated data and conforming to MLRA mapping conventions.

Some map units, through the Soil Data Join Re-correlation, have had updated data incorporated into these legends. Additional field work will be needed to update maps and confirm decisions made during SDJR. Additionally, the next phase of maintenance projects will include disaggregation of map units based on landform and other significant geographical and defensible separations.

**Evaluations:** In 1990 and 1991 soil survey evaluations were completed for each of Illinois' 102 counties. These evaluations were done in order to document the need for updating the survey and to estimate the staff years and costs required to update and digitize. The evaluations were revised in 1996 and again in 2009. Of the 27 counties that have not signed an “update agreement” 19 require minimal field work (.1 to .4 staff years) and 8 require significant field work (.5 to 3.8 staff years). The workload in these 27 counties was re-evaluated in 2009 in order to begin work on the “pseudo-SSURGO” updates. In 2011 and 2012, map units from 13 legends were linked to updated data from adjacent counties that had gone through the full update process. Some field work was done, and future projects were recorded for those map units that needed more field observations.

**Re-Organization, SDJR, and Soil Survey Maintenance:** In late 2012 and into 2013, the soil survey division re-organized. MLRA offices were re-aligned from oversight by the state to MLRA Regional Offices. Illinois' data is now maintained through 5 MOs (6, 7, 10, 11, and 12) that divide the data on boundaries relative to the MLRA boundaries. There are 3 MLRA offices located in Illinois that are responsible for most of the state (Aurora, Springfield, and Carbondale). The MLRA office in Onalaska, Wisconsin services MLRA 105 in Illinois; The MLRA office in Juneau, WI services MLRA 95B; The MLRA office in Owensboro, KY services MLRA 120A; and The MLRA office in Milan, TN services MLRAs 131A and 134.

**MO Region 12**-Amhurst, Maine manages Grand Rapids, Michigan

**MO Region 11**-Indianapolis manages Aurora, Marion (formerly Carbondale), and Springfield.

**MO Region 10**-St. Paul, Minnesota manages Onalaska, Wisconsin

**MO Region 7**-Auburn, Alabama manages Milan, Tennessee

**MO Region 6**-Morgantown, West Virginia manages Owensboro, Kentucky

**Figure. MLRA Office Regions**

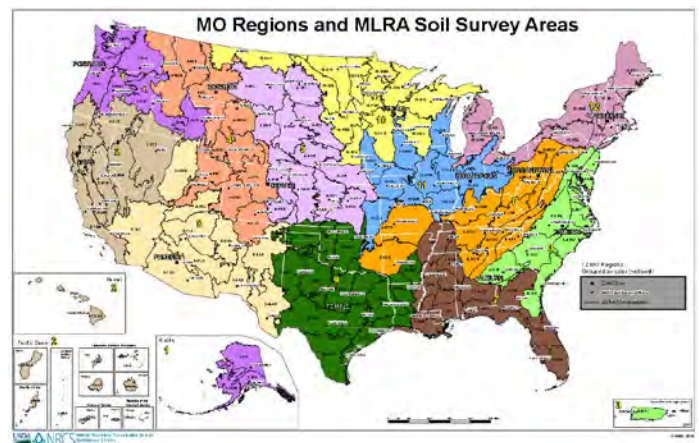
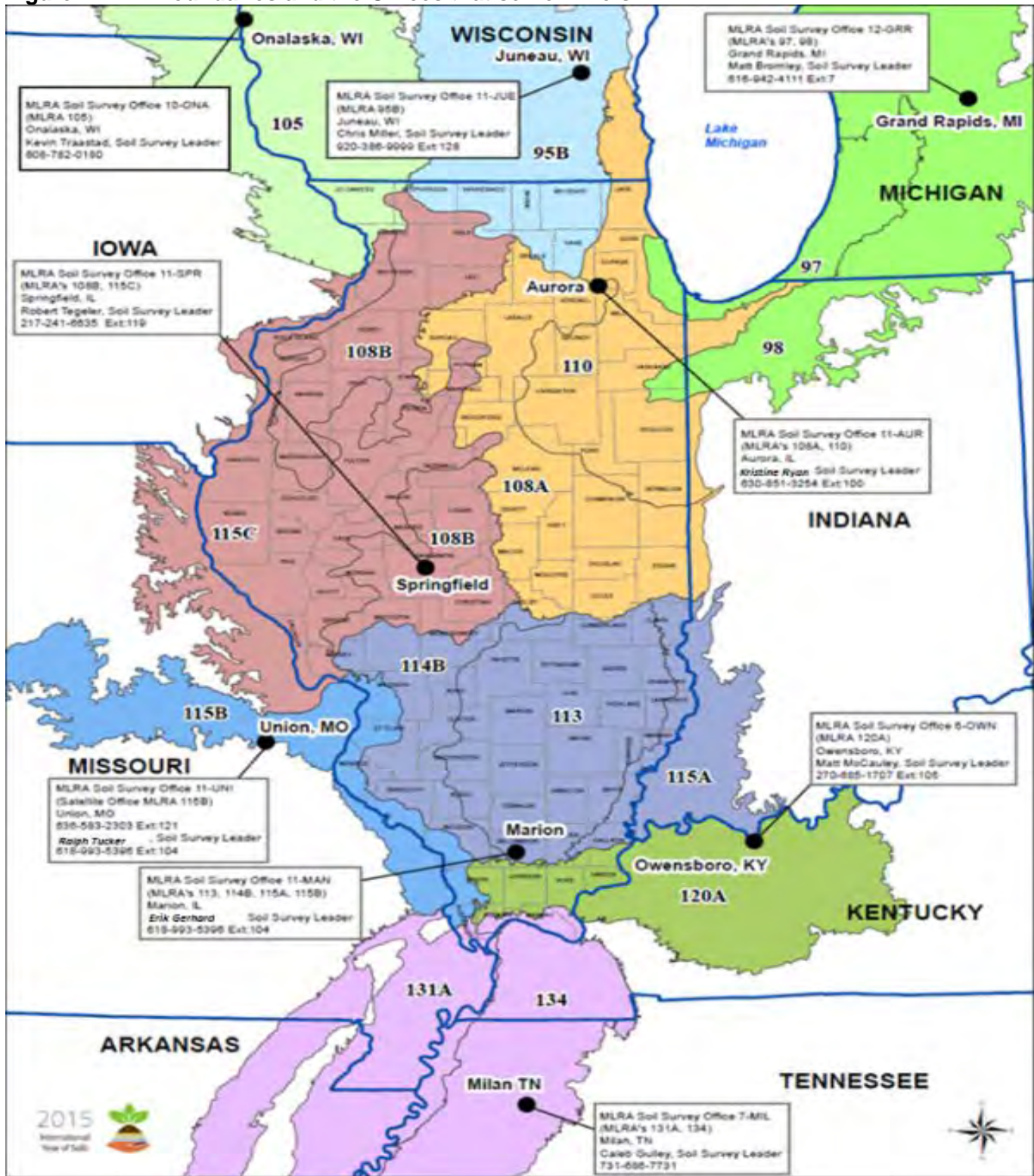


Figure. MLRA Boundaries and the Offices that serve Illinois



**MLRA Projects--** The Soil Data Join Re-correlation (SDJR) is the focus of the Soil Survey Division for FY 2016 and has superseded several planned projects. SDJR will be passed out with MLRA Projects becoming the focus once again.



**Soil Data Join Re-correlation (SDJR)** Priority effort to provide seamless soil survey. The initiative provides guidance on the population of the NASIS database, outlines specific blanks to fill in, and calculations to use. The end products will be more consistent maps, legends, and interpretations across county boundaries and state boundaries

- The Soil Survey Leader “manages” a project
- The MLRA office collects and populates the local database and is responsible for quality control
- The Regional MLRA Office (MO) reviews the data and is responsible for quality assurance
- The State Soil Scientist “publishes” a legend and uploads the data to the National Database at the Soil Data Warehouse ANNUALLY.

### **SOIL SURVEY FUNDING**

NRCS has provided more than \$48 million in funding for the cooperative soil survey effort since 1972. [Illinois Department of Agriculture \(IDOA\) http://www.agr.state.il.us/](http://www.agr.state.il.us/) serves as the soil survey liaison to the Illinois General Assembly and allocates soil survey funds as appropriated. Since 1980 the State of Illinois has appropriated more than \$12 million for soil survey activities. [County Boards of Commissioner http://ilcounty.org/](http://ilcounty.org/) provide the local level support needed to initiate and complete soil survey projects. More than \$13 million of local monies have gone to support soil survey projects throughout the state since 1972.

Current funding structure is from federal sources and covers salary plus 10 to 15 percent of salary for remaining Soil staff, travel, supplies, maintenance of equipment, and vehicles. The state soil scientist is funded by the SSD through the Illinois NRCS. NRI provides funding of 1.5 staff years to conduct annual NRI collection. The MLRA staffs are funded by the SSD through the Regional Directors’ office.

### **CURRENT ILLINOIS STAFFING**

**The NRCS State SOILS staff includes:**

- 1 State Soil Scientist (Collman),
- 1 Resource Inventory Specialist (NRI and GIS) (Prescott),
- 1 Resource Analyst (GIS, GPS, and Technical Equipment) (Bonjean),
- 4 Resource Soil Scientists (Bramstedt, Fehrenbacher, Fitch, Zucco) Provide Technical Soil Services and are Supervised by Area Asst. State Conservationists.
- 2 Additional Resource inventory\GIS\toolkit specialists support the area staff (Kuhel, Kremmel)
- 1 Office Automation Assistant (Jeanie—who also provides support to Ecological Sciences and Engineering staff).
- 1 ACES Employee (NRI, ESD Review, Slide Scanning, Forestry Assistance), (Sipp)
- 1 ACES Employee (technical consult, presentations, organization of the planning conference, data and document archiving)

**ACES -- Agriculture Conservation Experienced Services Program.** This partnership between the National Older Worker Career Center and the Natural Resources Conservation Service (NOWCC/NRCS) places experienced workers into positions supporting conservation and environmental protection efforts.

Jaylynn Maxey, came to us as an Earth Team Volunteer from the U of I. Jaylynn, took a job with the U of I extension.

Jeanine Adomaitis, is providing much needed volunteer support in scanning slides for wetland compliance. This tedious task has been a background technical service for some time.

Mary Ann Rinkenberger helps to put training materials together.

**We appreciate our EARTH TEAM VOLUNTEERS!**

## RETIREMENTS-2016

Cartographer (Maps and Technical Equipment) (Withers), RETIRED-vacant  
State Geologist/RSS/Soil Health P.O.C. (Windhorn), RETIRED;

A geologist (Diane Lamb) has been added to the Engineering staff.

The Soil Health P.O.C. duties are covered by the State Agronomist, Brett Roberts  
Steve Suhl, Area Resource Soil Scientist, RETIRED- This position in Springfield was filled by Marc Zucco

Steve Higgins, Area Resource Soil Scientist, RETIRED-vacant not to be filled

Sam Indorante, MLRA Project Leader, Marion, RETIRED The Acting Project Leader is Erik Gerhard

Dale Calsyn, MLRA Project leader, Aurora, RETIRED The Project Leader is Kristine Ryan

The MLRA soil survey staffs in Illinois who provide update of soil survey and some technical soil services include:

Aurora	3 Soil Scientists	Sarah Smith, Pathways Student was converted to full time
Marion	3 Soil Scientists	1 GIS specialist
Springfield	4 Soil Scientists	
	-----	-----
	910 soil scientists, 1 GIS specialist	

Illinois NRCS did fill one RSS position in Springfield (Marc Zucco). Illinois did see the addition of two new soil scientists in the Aurora MLRA (Tiffany Justus and Sarah Smith).

A hiring Freeze due to the election year, held up at least one position in the Springfield office for an ESD specialist.

### WORKLOAD—Documentations and Inventory, Maintenance of Policy related needs, Development of New Technology and Delivery Methods, Addressing NRCS Priorities, addressing SSD Priorities:

The State Soil Scientist and staff deliver technical support for Federal programs. The State Soil Scientist is supervised by the State Conservationist. Performance is tied directly to the delivery of technical support and leadership of the State Conservationist, which in turn, is in line with the NRCS Chief's priorities, the NRCS Strategic Plan and the USDA Strategic Plan. The State Soil Scientist is also part of the Soil Survey Division and has responsibility to coordinate between the soil survey division, soil survey teams, cooperators, and Illinois NRCS.

State Soil Scientists: Leadership in the Soil Survey Division [http://efotg.sc.egov.usda.gov/http://efotg.sc.egov.usda.gov/references/public/IL/State\\_Soils\\_Scientists\\_Leadership\\_in\\_the\\_Soil\\_Science\\_Division.pdf](http://efotg.sc.egov.usda.gov/http://efotg.sc.egov.usda.gov/references/public/IL/State_Soils_Scientists_Leadership_in_the_Soil_Science_Division.pdf)

[National Soil Survey Handbook \(NSSH\) | NRCS](#)  
[Technical Soil Services Handbook \(TSSH\) | NRCS](#)

### 2016 NRCS Chief's Priorities: We currently have an acting Chief due to the election

1. Deliver excellent and innovative service.
2. Strengthen and modernize conservation delivery.
3. Enhance and expand NRCS's scientific and technical capabilities.
4. Broaden our reach, customers, and partners.

These priorities tie directly to the performance evaluation of the State Soil Scientist

## **TSS, Management Team Member, Liaison, Tech Review, Admin**

- Source of statewide soils data and explanation, query and map development, including WSS assistance
- Maintenance of the NRCS Illinois soils website <http://www.il.nrcs.usda.gov/technical/soils/index.html>
- Maintenance of eFOTG Section 2 soil and climate information [http://efotg.sc.egov.usda.gov/efotg\\_locator.aspx](http://efotg.sc.egov.usda.gov/efotg_locator.aspx)
- Liaison between soil partners (Cooperative Soil Survey); Illinois NRCS; Soil Survey Division; Regional MLRA offices and Aurora, Carbondale, and Springfield MLRAs; and Onalaska, WI, Juneau, WI; Milan, TN; Owensboro, KY; and Grand Rapids, MI.
- Supervision of State GIS staff and input on technical aspects and management of MLRA SS and RSS
- Maintain the “Plan to Maintain the Cooperative Soil Survey and Technical Soil Services of Illinois” Includes long range plan, history, and training development
- Maintain the “Technical Soil Services\RSS in Illinois”
- Maintain the “Illinois GIS Plan”
- Soil training
- Provide technical review of data submissions and changes
- Serve on the MLRA management team for approval of projects
- Participate in Leadership Team meetings and discussion
- Member of Soil Business Area Analysis Group—National Technical Committee for soil equipment, software, and computer needs
- Provide input for National Cooperative Soil Survey Strategic Plan
- Provide technical review and input on technical publications for the state, including development of publications
- Coordinate Soils Information, Special Studies, and Data Delivery
- Provide Programs support including compliance assistance with HEL and Wetland determinations and guidance
- NRCS Climate Point of Contact
- Facilitate Soils and GIS training for employees

## **Inventory, Organization, and House Cleaning**

- Equipment
- Scanning and Archiving. Scanning Continues in my spare time 😊
  - Data books
  - Soil Descriptions
  - Old survey reports
  - County original materials
  - Other maps and sets of maps
  - Training materials

## **Training Given:**

- Intro to Soil Survey – Fall 2017 20+ participants Scheduled
- Hydric Soils Course –Fall 201X, XX participants Not currently planned
- Conservation Planning, soil\landscape changes and hydric intros – Spring, 2017 completed in April

## **GIS Staff**

### **GIS\NRI specialist: GIS Leadership, Training, Processing, Maps**

- National Resource inventory (NRI) leadership and coordination
- Farmland protection Policy Act (FPPA) documentation and reporting
- Watershed boundary stewardship
- Ad-hoc requests for data and maps
- GIS support for toolkit, soil survey, programs, etc.

- Support for wetlands digitizing
- Support for easement management
- Development of new GIS tools, processes, and algorithms
- GIS and LiDAR strategy, coordination, and planning
- LiDAR processing and support
- Use LIDAR and LiDAR enhancements to evaluate and update spatial data
- Process raw LiDAR data using MARS software for 1 meter DEMs, soil wetness index, and 2 foot contours
- Coordinate acquisition and distribution of “Big data”

### **GIS\Area Specialist**

- Geodata Administration, Data transfer, Data maintenance
- GIS and CST Training and Support
- GPS Training and Support
- Geospatial Analysis and Scripting
- Technically supervising FSA Compliance Slide Scanning and Archival
- GIS Toolkit Support

### **Area Resource Soil Scientists**

#### **Program Support**

Provide or review soil information and interpretations for CRP, CSP, GRP, EQIP, EWP, WRP and other programs as needed. This includes farmland classification (prime, unique, etc.) and Highly Erodible Land (HEL) determinations, status reviews, and field reviews. Interprets soil data and makes determinations during the program signup and application periods. Soil and geologic evaluations

#### **RSS Wetlands**

Provide leadership for Area and Field Office responsibilities in the wetland conservation provisions of the Farm Bill. Provide technical expertise in wetland inventories, determinations, minimal effect exemptions, appeals, wetland reserve program (WRP) and quality control. Delineate wetlands following procedures outlined in the Wetland Memorandum of Agreement (MOA). Provide training on wetland issues, wetland determination, and wetland restoration for NRCS and partner employees. Provide soil expertise during program and technical appeals and National Appeals Division (NAD) Hearings. Provide leadership with compliance slide scanning guidelines and strategy.

#### **RSS Training and Delivery of Soils Information**

Serve on statewide training cadres for Hydric Soils, wetland inventories and determinations, Introduction to Soil Survey, OJT, RUSLE2 training, Soils in Conservation Application, and certain public health issues. Provide leadership and assistance in the use of soil information and soil interpretations to technical specialists, Field Office personnel, partnership employees, and the public.

Assist users with Customer Service Toolkit, Soil Data Viewer, Web Soil Survey, MS Access soil databases and other soil report and analysis tools. Serve on multidisciplinary teams with technical specialists from other disciplines to utilize soil survey information for new and challenging needs.

Maintain partnerships, lead, organize, and provide training in soil science to employees, volunteers, teachers and students in support of Soils “Outreach” – Local and State Envirothons, Farm Progress Show, SWCD Field Days, U of I Field Days, School Conservation Field Days, High School FFA and Collegiate Land Judging Contests, Conservation Planning Course, Assist with U of I, Vo-Ag brochures, etc. Coordinate the Scientist at the Field Museum in Chicago, which are volunteers who interact with visitors in the Underground Adventure (soils) Exhibit, Presentations at seminars for soil health, soil productivity, drainage water management, organic matter, septic systems, and nature of disturbed soils. Makes soil displays and monoliths and creates formal

presentations in the form of technical publications, fact sheets, correspondence, articles, and effective presentations to internal and external user groups to address local, regional, and statewide soil issues.

Serve as team members for field office quality assurance reviews and program appraisals. Review field office use of soils information (source data) in the application of conservation practices and programs. Recommend necessary changes to policies, guidelines, organizational structure, or field office procedures. Assist in the maintenance and review of all soil information in FOTG.

### **RSS National Resources Inventory (NRI) and Conservation Effects Assessment Project (CEAP)**

Provide leadership and assistance to the Natural Resources Inventory (NRI) process; including Area coordination, data collection, and assistance to grassland specialists in sampling point verification of soil type and in data acquisition for the pastureland NRI.

### **RSS Farmland Protection Policy Act (FPPA), Farm and Ranchland Protection Program (FRPP), and Land Evaluation and Site Assessment (LESA), and other open space protection policies.**

Develop or review land evaluation groupings (LE) and works with local, regional, and state government officials in the development of site assessment (SA) scoring categories.

### **RSS Conduct, assist, and provide leadership with special projects and committees while maintaining partnerships in support of NRCS Mission**

Collect soil samples for laboratory characterization. Conducts and assists with field studies dealing with specific soil properties to improve interpretations. Serves as soil survey liaison by maintaining relationships with MLRA offices, soil survey user groups and federal, state and local agencies to help coordinate and integrate agency programs related to use and application of soil survey information. **A growing number of these items are on the endangered list.**

- High intensity soil surveys (Order1)
- Natural resource inventories
- Soil Health initiatives
- Multi-discipline natural resource studies
- Soil Sampling and data collection for Conservation Innovation Grant on cover crops
- TIERRA project Target Investigation of Earth Resources Related to Agriculture
- Select sites and soil map units with grassland specialists to collect forage yield data for ESDs and Forage Suitability Groups
- Coordinate with the State Archeologist in conducting site/soil investigations for cultural resource reviews
- VERIS and EM field studies locally and regionally National Soil Survey Center personnel
- **MLRA field studies, such as measuring of saturated hydraulic conductivity (Ksat) on several sites using the Amoozometer and investigation of parent materials and correlation (Making a comeback)**
- Rapid Carbon Assessment
- Evaluate SSURGO certified projects (spatial data, attribute data) for maintenance needs and recertification
- Review of mining permits related to coal mine reclamation
- Map reclaimed mine land in older surveys for CRP and other requests
- Prescribed Burn assistance
- EWP Coordinator
- Serve on the State of Illinois Department of Public Health Advisory Commission on Private Sewage Disposal
- Serve on the NRCS State Technical Committee and Area Training Committee
- Revised and update the soils portion of the Kane County Subdivision Ordinance
- Provide on-site technical assistance to agency personnel, units of government, and individuals on the interpretation and application of soil survey information related to specific soil, water, air, plant, and animal resource concerns.

- Evaluate soil properties and predict response to conservation practices, wetland restorations, and other land management uses. Provide Soils/Engineering investigations to support the design and installation of conservation structures and structural engineering practices as required in NEM policy
- Utilize GIS, EM, and GPS technology and train others in appropriate use in the field. GIS training includes the use of SSURGO digital soil surveys and Soil Data Viewer.
- Advise and serve State Soil Scientist in coordinating NRI, FPPA, LESA, GIS, remote sensing, GPS, slide scanning, and cartography activities in the Area. Make, provide, interpret thematic maps for inventories, special studies, planning, etc.

## **WETLANDS and HEL COMPLIANCE**

Current Wetlands and Compliance Workload analysis indicates support of hiring a State Office Compliance team to perform many of the tasks that are shared across the state. An effort will be made to address compliance needs by hiring a Compliance Coordinator and GIS technicians to make determinations and create maps, interpretations, and documentation for statewide compliance efforts to reduce the burden on area staff. The SSS supervised until the compliance coordinator came on board.

The NRCS in Illinois, like many other states, has been faced with a backlog of Wetland and HEL Compliance determinations. Several states have begun the process of creating state teams to address the backlog. Illinois will hire a Compliance Coordinator to first review off-site determinations and approve those determinations that can be made using off-site methods including digital slides, digital aerial photography, LIDAR, and other techniques that have been approved for off-site determinations. Three technicians will also be hired to provide GIS, photo interpretation, and preparation of materials for off-site and on-site determinations across the state.

A set of GIS tools is being developed to aid in the process of review of digital layers and will automate some of the processing and generation of paperwork through linked databases.

A set of protocols (State Off-site Methods) has been approved for use in Illinois. The team will receive all determination requests for counties that have compliance slides in digital format. For those counties that do not have digital photos, existing area teams will continue to provide off-site determinations until digital materials are available. The team will be trained by State office and area staff on the determination process. The team will be supervised by the Compliance Coordinator with technical input from the State Soil Scientist and the State Resource Conservationist and staffs.

2016 – STATUS Current, Illinois has a Compliance Coordinator Dave Dornbusch, 1 Admin Terri Reifsteck, and 1 Cartographic Technician Mellora Hall. The team is gearing up and is expected to remove as many off-site determinations from the field office as can be done using approved state off-site methods, digitized compliance slides, summarized WETS table data, GIS layers and tools. It is expected that the team will also take on HEL reviews for compliance as well.

2017 – STATUS: Illinois has a compliance coordinator Dave Dornbusch, and 1 Admin Terri Reifsteck. The Cartographic Technician (Hall) took another job in Oregon. For a time, there were two Admin. One took a job with Rural Development. This has put off-site reviews back to the field teams. Hiring Freeze has affected the hiring of additional Cartographic Technicians.

## **Compliance Team**

**Position announcements will be posted to USA JOBS for new employment opportunities.**

**Soil Health** – Roger Windhorn retired. However, Roger is still making presentations. Brett Roberts, NRCS State Agronomist is current Point of Contact for Soil Health. Several meetings are still occurring. Illinois Soil Health Website: <http://www.nrcs.usda.gov/wps/portal/nrcs/main/il/soils/health/>



**The NRCS Road to Soil Health** - Gives NRCS the chance to treat the systemic cause of resource degradation on the vast majority of America's cropland cost-effectively, while increasing productivity of our nation's working lands. NRCS can help America's farmers and ranchers save energy, address climate change, and help meet the needs of the world's growing population. Goals are meant to: Integrate Soil Health Management Systems planning and implementation into NRCS' conservation program and service delivery; Increase the number of producers operating with Soil Health Systems (at the NRCS criteria level); Increase employee, customer and stakeholder awareness; Increase understanding of healthy soil ecosystems and biology; and emphasize healthy soil's role in natural resource protection and agricultural production.

**Status:** HOT Topic. Several Soil Health workshops have been held statewide and there are more planned (Reminiscent of "Illinois Farmer's Institute" meetings of the early 1900's, where farmers and academics come together to talk about what works). Workshops include presentations on Cover Crops and conservation systems as well as University studies and sampling of areas known to have been following soil health initiative management plans. Presentations are by University Professors, State and Federal Personnel, and very importantly, Successful Farmers using these practices.

**Soil Technical Notes: Soil HEALTH**

Document	Description
<a href="#">Soil Tech Note 1A</a>	Soil Health Guiding Principles
<a href="#">Soil Tech Note 2A</a>	Soil Assessment
<a href="#">Soil Tech Note 3A</a>	Surface Layer
<a href="#">Soil Tech Note 4A</a>	Soil Structure
<a href="#">Soil Tech Note 5A</a>	What the Bugs Do
<a href="#">Soil Tech Note 6A</a>	Bacteria
<a href="#">Soil Tech Note 7A</a>	Fungi
<a href="#">Soil Tech Note 8A</a>	Actinomycetes
<a href="#">Soil Tech Note 9A</a>	Large Microbes
<a href="#">Soil Tech Note 10A</a>	Earthworms
<a href="#">Soil Tech Note 11A</a>	Biological Underground Community
<a href="#">Soil Tech Note 12A</a>	Soil Organic Matter (SOM)
<a href="#">Soil Tech Note 13A</a>	Types of Organic Matter (SOM)
<a href="#">Soil Tech Note 14A</a>	Residue Accumulation
<a href="#">Soil Tech Note 15A</a>	Cation Exchange Capacity
<a href="#">Soil Tech Note 16A</a>	Compacted Zone In Soil
<a href="#">Soil Tech Note 17A</a>	Soil Respiration
<a href="#">Soil Tech Note 18A</a>	Crop Diversity
<a href="#">Soil Tech Note 19A</a>	Baby Steps
<a href="#">Soil Tech Note 20A</a>	"So how do we mess it up??"
<a href="#">Soil Tech Note 21A</a>	"If you get the chance..."

Conservation Discussions

[Illinois Soil Health Producer profiles](#)

**Soil Health & Cover Crop Events**  
[Illinois Department of Agriculture Cover Crop Network](#)

[Midwest Cover Crop Council](#)

[National Soil Health information](#)

**Cover Crop Economics**  
 The Cover Crop Economics Tool is a user-friendly economic assessment tool to assess the costs and benefits of incorporating cover crops into a crop rotation. The tool assesses both the short term and long term expected costs and benefits. If you have any problems accessing the tool from this site, using the tool, or if you are interested in being added to an email list to be notified when updated versions of the tool are released, please contact Illinois NRCS's [Bryon Kirwan](#).

**TSS needs**

Develop plan of action to maintain the quality of services available to internal and external customers including a request for GS 7/9/11 soil scientists to train in Illinois and be mentored by those with several years' experience to maintain the continuity and integrity of services provided and to assist in addressing the current compliance backlog. Includes proposal for 1 GIS specialist per area, Maintenance of two GIS positions at the State Office, and addition of an Assistant State Soil Scientist responsible for data delivery, analysis, and Soil Health.

**TSS/RSS Plan** [http://efotg.sc.egov.usda.gov/references/public/IL/Technical\\_Soil\\_Services\\_RSS\\_Plan.docx](http://efotg.sc.egov.usda.gov/references/public/IL/Technical_Soil_Services_RSS_Plan.docx)

Plan Summary [http://efotg.sc.egov.usda.gov/references/public/IL/Technical\\_Soil\\_Services\\_RSS\\_Plan\\_Executive\\_Summary.docx](http://efotg.sc.egov.usda.gov/references/public/IL/Technical_Soil_Services_RSS_Plan_Executive_Summary.docx)



## **Discussion on attrition and maintaining the Soils knowledge base in Agencies and at Universities. Collaboration and ideas. What is needed? What is available? Education and Expertise.**

Significant voids have been left in recent years for technical support. State Soils Staff/GIS staff is less than half of what it was 4 years ago. State MLRA staff is now at 10 from 28 five years ago. Area soils staff is down to 4 from 5. Currently, we do not have personnel to provide special project support or study. Much of the high-tech equipment will be idle for some time and will need to be transferred to offices that can use them. We cannot continue to provide all the services that have been standard practice in the past.

### **Staffing Needs**

Tasks that I would like to focus on are related to Soil Health, Data Development and Interpretation, Data Delivery, and GIS. Technical Soils Information is the foundation of this agency. To accomplish these tasks and head off the loss of tacit knowledge, we have to look towards another GIS specialist and the luxury of an assistant state soil scientist who is versed in soil health, data gathering, processing, interpretation and delivery. One or two RSS trainees would be good to fill gaps behind future retirements.

## **Current State Projects and Activities**

### **GRANTS and AGREEMENTS**

**Active: ACES, Currently two retirees have been hired through the ACES program. Stan Sipp and Dr. Sam Indorante.**

Stan's job is specific to NRI for approximately 4 months of the year, while the remaining parts of the year are spent reviewing ESD information, providing forestry and vegetation technical support for ESD development and to the soils staff, scanning slides, and reviewing and developing soil data spreadsheets for soils technical support and compliance. Stan has also been reviewing frozen lists and preparing data spreadsheets for HEL compliance tools.

Sam's Jobs have included document archival and planning and organization of the speakers and presentations for the Regional Soil Planning Conference. Additional duties include technical review and input for publications and technical documents.

**Working towards potential additional ACES hires.**

### **Captain Mine sampling NRES, U of I, PRI, and NRCS KSSL**

**Captain Mine Plots U of I:** These are some of the longest term prime farmland plots in the US and this information would be a valuable contribution to reclamation science to evaluate soil development changes over 30 plus years. In addition to pit descriptions we would take soil samples to process.

**Agreement to revisit Captain Mine. The first Prime Farmland restoration site to compare 40 year old base line data to soil change. Soil descriptions, property data collection, KSSL lab characterization, and KSAT measurement are included in the proposal.**

This CESU agreement involves University of Illinois Students in the collection of data relative to the Captain Mine Plots which is at the location of one of the Nation's first Mine Reclamation - Prime Farmland studies. With baseline data collected 40 years ago, it is hoped that measuring soil properties at this site will reveal changes that occur over time that can be related back to restoration and resiliency of soils over time. It will also identify dynamic soil properties and the effects of different restoration types to the productivity of soils.

**Status:** Sampling took place last summer. Three pits were sampled for full characterization of the reclaimed soils. Dr. Kevin McSweeney (U of I), Dr. Sam Indorante, Stan Sipp (U of I), Bob Dunker (U of I), and Ron Collman. KSSL is doing the lab work.

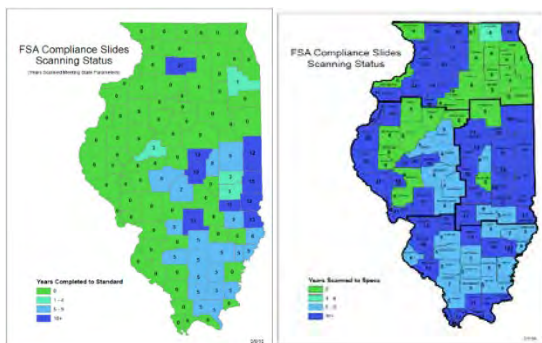
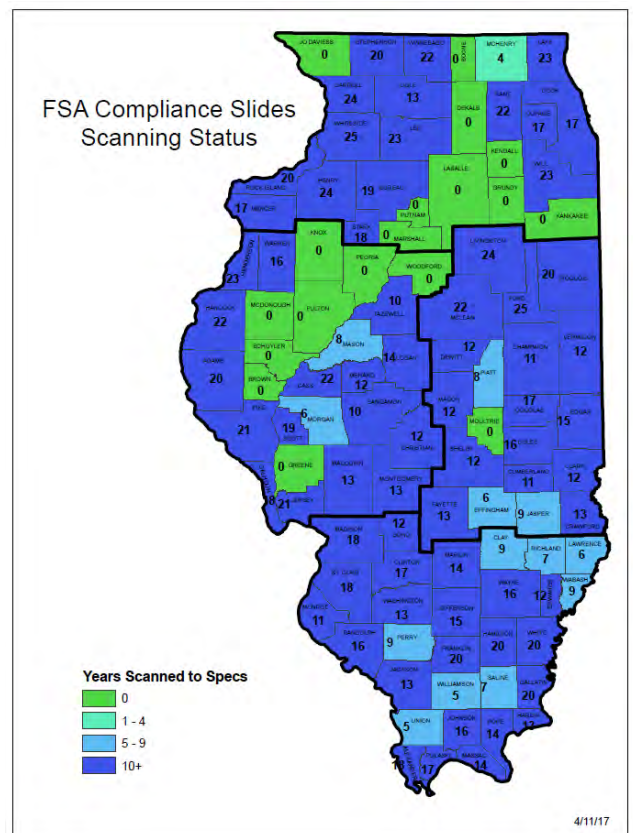
**Slide Scanning and GIS student development NRES, U of I, PRI**

This CESU agreement involves University of Illinois students in the development of their GIS and technical skills using software and equipment. The students will be involved with scanning photographic slides and indexing using GIS.

**STATUS:** Students from NRES: One Word: EXCEPTIONAL! Finally on board near the end of January, Five University students and one Illinois Natural History Survey 'volunteer' have scanned 75 years of slides in 3 months! A few are graduating, but we expect to use the agreement to keep up at least 5 scanning stations at the state office.

FY 2017 Agreement through CESU agreement with the University of Illinois and NRES to involve students in the slide scanning and geo-location of slides for compliance.

Compliance slide scanning has been on the list of things to do to help centralize and simplify the process of conducting off-site wetland determinations and to quickly determine if a field visit is necessary for the determination. Scanning has been accomplished with SWCD, Temporary (WAE) employees, Earth Team Volunteers, and we hope to include students through an agreement with the U of I. An estimate of 250,000 slides have been scanned with a minimum needed of 27,500 and maximum of slides left to scan completing all available to scan at about 400,000.



**Figures:** Left to Right: Compliance Slide Scanning Status and progress over the past 2 years. Slides scanned meeting State Standard, 2015; Slides scanned meeting state standard, 2016, and Slides scanned meeting state standard 2017.

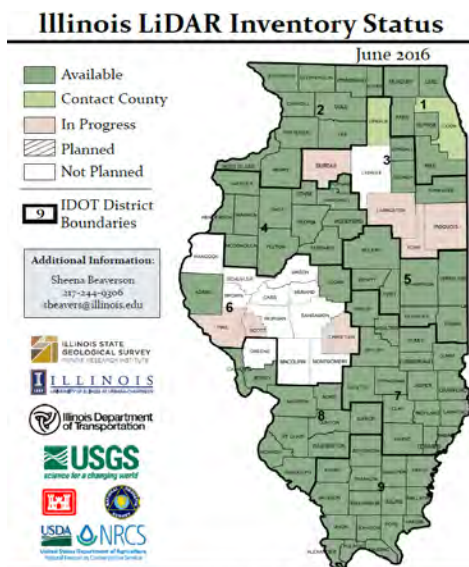
# LIDAR Acquisition, Storage, Derivative Development, Tools and Distribution

**LIDAR** - We have begun loading LiDAR data and products to the new storage space in the SO. We have also set up storage space for compliance slides. Due to upgrades to the IT infrastructure, we were forced to utilize this new space to house all “geodata” used for GIS maps and analysis to this storage space. Due to this, and the efficiency of LIDAR acquisition, it is anticipated that we will need another local storage server sooner than anticipated.

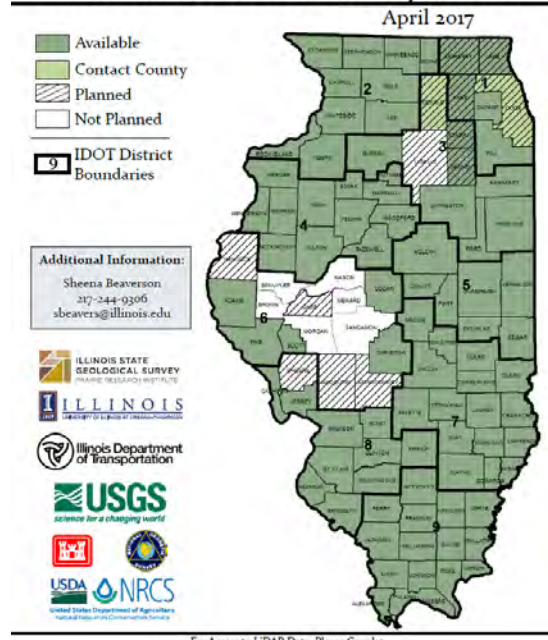
Illinois NRCS has entered into agreements with USGS and the National Center for Geospatial Excellence (NCGS) to leverage funds to acquire LIDAR.

- NRCS (IL and SSRAD) paid for about 90% of the \$260,000 acquisition cost for Logan County. Products will be used to develop elevation, slope and contour maps to support planning for drainage water management and other conservation practices (FY2013).
- Last year (FY2014), Illinois NRCS committed \$100,000 towards Christian County Lidar acquisition.
- Illinois NRCS is proposing \$50,000 towards the acquisition of LIDAR in LaSalle and Bureau Counties this year in FY 15
- Pike and Scott Counties acquisition in FY 2016 was awarded for \$284,831.57.
- Prescott helped broker the deal to acquire LaSalle County in FY 2017.
- **Illinois NRCS expects to contribute \$300,000 for acquisition of Sangamon and one other County.**
- Illinois NRCS is seeking to acquire LiDAR data at a minimum nominal pulse spacing of 4 points per square meter, to develop high resolution digital elevation models and 1-2 foot contours for Bureau County. The effort will promote the Agricultural Water Management initiative, improve support for Soil Health management systems, enhance conservation planning and practice implementation, and support soil survey activities. Bureau County is entirely within the Mississippi River Basin Healthy Watersheds Initiative area, offering NRCS leverage for using LiDAR to promote conservation practices in watersheds with impairments where federal investments can make a difference in improving water quality.
- **Proposed for FY2017: LaSalle wet 2017 Spring has postponed acquisition. Sangamon and at least one other county with NRCS funding. In addition, Illinois Height Mod and Illinois IDNR propose to acquire some counties as well. Hopefully, the LIDAR should be complete for the entire state in three years, with potential for some early acquisitions to be updated to better resolution.**

## 2016, 2017 LIDAR Acquisition and Availability Status



## Illinois LiDAR Inventory Status



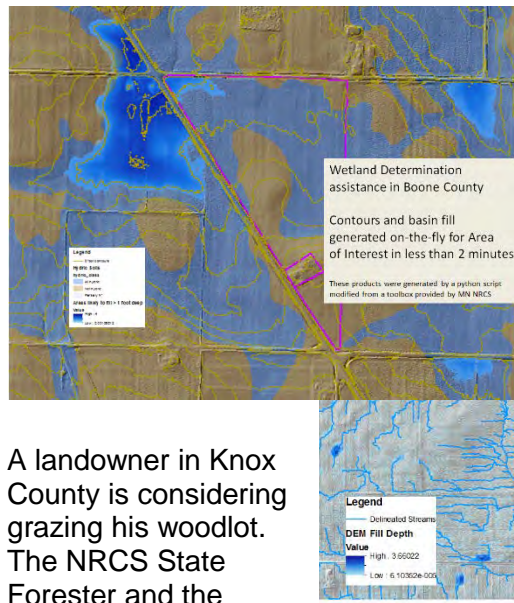




# GOT LIDAR? Double-Click on the image to the left to bring up this embedded document that describes LIDAR in Illinois.

## From Engineering Tools to Wetland Conservation Compliance

**Watershed Boundary Edits - 12 digit watershed boundary edits.** With LiDAR, we can considerably refine watershed boundaries. But the hands-on editing work and QA/QC required will need considerable time commitments. I need to explore the possibilities of using student help with ISWS and USGS. It may be possible to arrange internships and/or cooperative projects to make this happen.

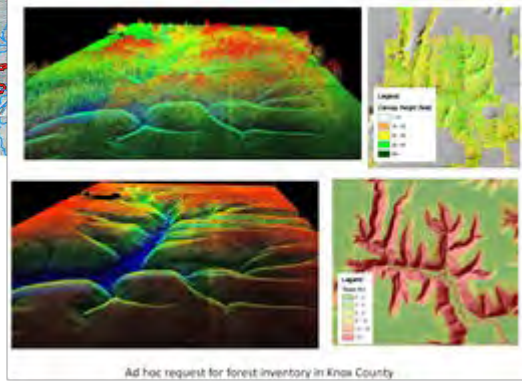


Wetland conservation compliance coordinators need simple tools to locate a field, check its compliance status, assess its hydrology, then digitize and store their determinations.

In planning for a grassed waterway, planners need to consider the contributing watershed, its average slope, its soils and its drainage patterns. MN NRCS developed a toolset that uses LiDAR elevation derivatives to generate contours, calculate drainage and ponding characteristics, and determine parameters for waterway design.

A landowner in Knox County is considering grazing his woodlot. The NRCS State Forester and the District Conservationist for Knox County used LiDAR point cloud data and derived DEMs to assess tree canopy height and composition, and analyze slopes to assist the client in making prudent management decisions for his land.

Runoff Curve Number Calculation in Macon County



Wetland Determinations for compliance with Food Security Act of 1985

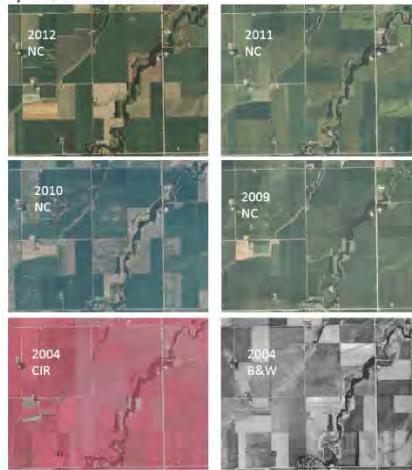
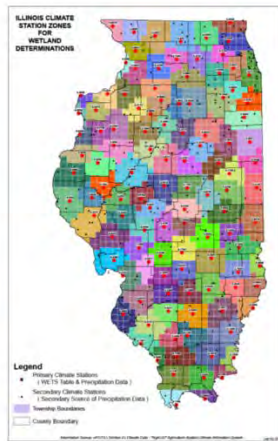
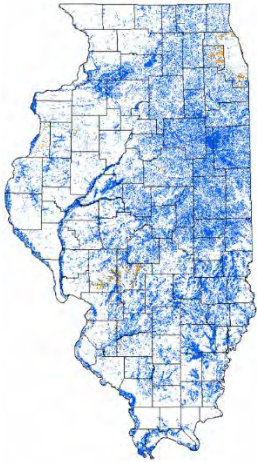
Three factors:

- Hydric soils
- Hydrophytic Vegetation
- Wetland Hydrology

*Hydrophytic vegetation*

Determined by aerial imagery signatures for at least 5 "normal" precipitation years for a 30 year period between 1970 and now, as determined from nearby NOAA weather stations

*Hydric soils (SSURGO)*

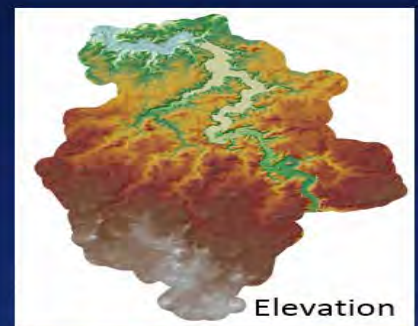
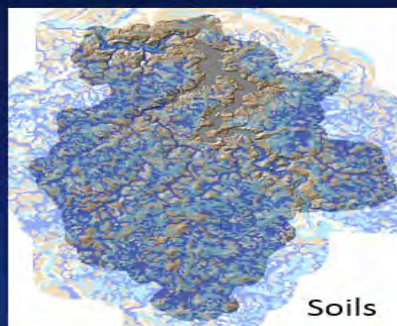
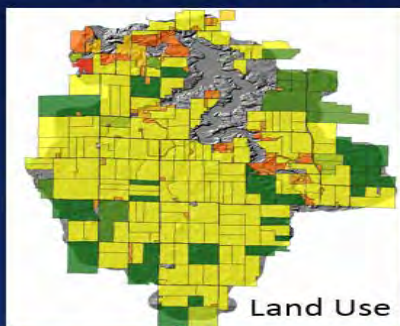


**The Agricultural Conservation Planning Framework (ACPF) PRESENTATION**

- Customized planning resource for HUC12 watersheds
- Input data are available for most IL watersheds
- Considers tile drainage and runoff pathways
- Stresses the importance of soil health for conservation success
- Suggests possible beneficial locations for different types of practices including drainage water management, grassed waterways, contour buffer strips, denitrifying bio-reactors, nutrient removal wetlands, and saturated buffers.
- Develops Planning alternatives, Leverages lidar investments
- Does **NOT** replace field observation

**The Agricultural Conservation Planning Framework**

Lake Bloomington Watershed Inputs:



FB071300040202

GenLU

- C/S with Continuous Corn
- C/S with Continuous Soybeans
- C/S/Perennial Rotation
- Continuous Corn
- Corn/Soybeans
- Forest
- LT 15 ac
- Pasture
- Wheat/Soybeans/Corn Rotation

gSSURGO

Drainage Class

- Moderately well drained
- Poorly drained
- Somewhat poorly drained
- Very poorly drained
- Well drained

dem\_utm16\_zcm

Value

High : 24625

Low : 20037



## BIG DATA – CYBER GIS

**Supercomputing solutions for high resolution elevation data (SSHRED)** Tim Prescott<sup>1</sup>, Jon Bonjean<sup>1</sup>, Jonathan Rush<sup>2</sup>, Aiman Soltani<sup>2</sup>, Don Keefer<sup>3</sup>

Increasing volumes of high resolution elevation data derived from lidar present unique challenges for landscape modelers. Average GIS users desiring analytic surfaces like wetness index, slope length, slope shape, flow accumulation have little recourse for generating and storing these complex products. Even power users must allot large amounts of storage, processing power and time for generating elevation derivatives. Practical means of distributing derivatives to users, including network based solutions and portable storage media, present further operational challenges.

This paper demonstrates the application of massively parallel supercomputing to propose a solution to the aggravations of storing, processing and distributing large elevation datasets. The CyberGIS Center for Advanced Digital and Spatial Studies in the National Center for Supercomputer Applications at the University of Illinois, is working with partners, including the USDA Natural Resources Conservation Service to identify important analytic surfaces, develop algorithms and code to process those surfaces in a cluster environment, perform benchmark studies to demonstrate efficiencies, and establish distribution mechanisms for users.

<sup>1</sup> USDA Natural Resources Conservation Service, Champaign IL

<sup>2</sup> CyberGIS Center for Advanced Digital and Spatial Studies, National Center for Supercomputing Applications, University of Illinois

<sup>3</sup> Illinois State Geological Survey, Prairie Research Institute, University of Illinois

### Landform classification using LIDAR and CyberGIS ISGS, U of I, PRI, CyberGIS, & KSSL

This CESU agreement involves University of Illinois staff and students, Illinois Geological Survey Staff and students to perform programming and development of tools to produce landform maps using existing formulas and technology. The programs will be incorporated into the CyberGIS systems to perform watershed sized scalable LIDAR derivatives. The importance of this study ties into the disaggregation soil mapping initiatives, the ESD mapping initiatives, which will improve the ability to provide more site specific interpretations based on landform, soils, and vegetation. The supercomputer can calculate derivatives in hours or days what takes weeks or cannot be done with the current NRCS workstations of IT infrastructure.

**STATUS:** The work is promising! There is still considerable programming to do and there are additional challenges including defining landforms, landscapes, and size and scale limits for named landforms. All LiDAR is not created equal.

### Machine-Assisted Landform Classification

Andrew C. Phillips <sup>1</sup>, Nathan P. Casler <sup>2</sup>, and Donald A. Keefer <sup>1</sup>; <sup>1</sup> Illinois State Geological Survey, Prairie Research Institute; <sup>2</sup> CyberGIS Center for Advanced Digital and Spatial Studies; University of Illinois at Urbana-Champaign.

Identifying landscape elements is integral to soil survey. We recognize that there are landforms important to soil characteristics at scales finer than standard soil survey of 1:12,000. These have been long recognized in the field, but high resolution elevation data from lidar permits landform identification at these fine scales. The data pose two challenges, however: how can the very large data sets be made accessible to field workers, and how can the landscape elements be identified efficiently? We have begun a 2-year project to develop methods (a) to construct, visualize, and deliver digital elevation models of arbitrary boundary and scale to end users directly from point cloud data; (b) to delineate ridges and gullies by supervised computer classification. These two landforms were selected as first steps towards developing a comprehensive system for digital landform classification.

For DEM construction, we grid DEMs from Ground (Class 2) and Model Keypoint (Class 8) points pre-classified in point cloud data sets. In the Embarras watershed, east-central Illinois, initial results

include unexpected noise from misclassified points and large blank areas. We are developing methods to reduce the noise and interpolate over the voids. For landform classification, we are testing the Geomorphon concept (Stepinski and Jasiewicz 2011). Initial efforts of ridge classification on lidar-based 1 m DTM produced considerable noise even with parameter tuning. Experiments using stepped classifications from 30 m and 10 m DEM as filtering masks for classification of 1 m DEM reduced the noise but at the expense of excluding ridges not associated with the overall grain of the landscape. An alternative method is to generate Laplacian Pyramids to extract landscape variation at a hierarchy of scales. The Laplacian Pyramids are generated by incrementally blurring and downsampling the 1 m raster, then subtracting successive layers from their predecessors into difference rasters. The method successfully extracted a valley network over a wide range of scales. We are investigating the potential for detection of large scale ridges by extending the pyramids to yet coarser resolutions. Future work will include testing the digital results against traditional heads-up digitization and field-based landform classifications.

Gauch, J., and S. Pizer. 1993. Multiresolution analysis of ridges and valleys in grey-scale images. *IEEE Transactions on Pattern Analysis and Machine Intelligence* 15: 635-646.

Stepinski, T., and J. Jasiewicz. 2011. Geomorphons - a new approach to classification of landforms: in Hengl, T., I.S. Evans, J.P. Wilson, and M. Gould, *Proceedings of Geomorphometry 2011*, Redlands, 109-112.

## **EXPECTED ACCOMPLISHMENTS AND DELIVERABLES**

- i. Research, identify and utilize landform classification algorithms and code for identification of landforms and landscape features in the selected watersheds
  - ii. Research the delineation and relevance of landform assemblages within the contexts of both the use of landscape/geomorphic features by NRCS, and improve the accuracy of landscape classification algorithms
  - iii. Develop code for automatically identifying ridges and gullies as identified and described by Shoenenberger and Wysocki (2012). Training and testing of this landform classification code will be conducted on LiDAR-based elevation data within the selected watersheds
  - iv. Develop code for automatically identifying the catchments to identified gullies within the target watersheds
  - v. In cooperation with NRCS, field check a selected subset of landforms identified by the algorithms. These field checks will be used to evaluate algorithm accuracy and to provide feedback for algorithm improvement
  - vi. Report on all accomplishments and deliverables for this project in NRCS-approved project status reports and in the project final report (dates listed below)
  - vii. Deliver products in ESRI-compatible grid or vector formats, and include metadata, workflow provenance, and documentation developed in the derivation of these products
  - viii. Work with ISWS to provide the means for accessing any project deliverables through web-based services to serve data to NRCS field offices
- i. Deliver the following elevation derivatives: 1. Topographic wetness index 2. RUSLE L factor 3. RUSLE S factor
  - ii. Deliver elevation derivatives in ESRI grid format, and include metadata, workflow provenance, and documentation developed in the derivation of these products



# Landform Classification

Schmidt, Geoderma, 2002

scalepar\_edited.aml

```
/* this program calculates curvature measures and slope
/* according to different interpolation algorithms
/* for a second order polynomial interpolation function
/* on different window sizes
/* according to Wood 1996
```

felementf.aml

```
/* Algorithm for derivation of form elements according to
/* slope, maximum curvature, minimum curvature,
/* profile curvature, tangential curvature
/* based on linear semantic import model for slope and curvature
/* and a fuzzy classification
```

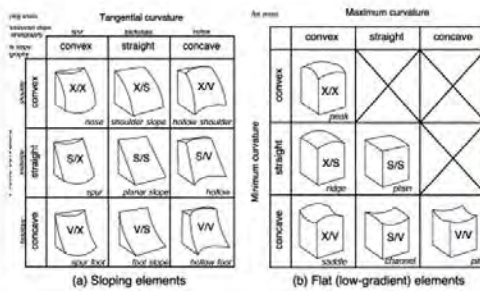


Backslope class membership

Table 2. Modelling land elements by topological rules

Terrain	Form (Fig. 3)	Element
Hill	peak or plain or ridge or spur or saddle	ridge
Hill	shoulder or hollow shoulder or spur shoulder	shoulder
Hillslope	backslope	backslope
Hillslope	hollow or channel or hollow shoulder or hollow foot	hollow
Hillslope	spur or ridge or spur shoulder or spur foot	spur
Hillslope	plain or footslope or shoulder	terrace
Valley	footslope or hollow foot or spur foot	footslope
Valley	pit or plain or channel or hollow or saddle	valley/ bottom

Some examples for rules used. Inputs are the two terrain classifications: the form element classification (form) and the valley/fill classification (terrain). The output is a land element classification (element). The rules are implemented as a fuzzy classification (compare Table 1).



Plain class membership

<http://www.ai-relief.org/wiki/index.php?n=Main.HomePage>

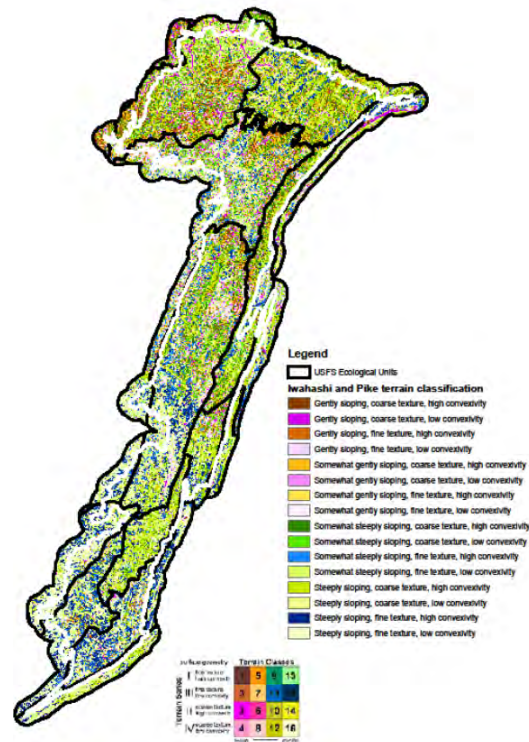
<http://eusoils.jrc.ec.europa.eu/projects/landform/>

# Landform Classification

Iwahashi and Pike, Geomorphology, 2007

ACT.aml

```
/* AML program for automated classification of topography
/* by Junko IWAHASHI, Geographical Survey Institute of Japan
/* October, 2005
/* usage
/* Arc: &r ACT.aml
/* data needed:
/* dem: DEM image (Arc/INFO GRID format); NODATA area must be defined
/* for waterbodies
/* laplacian: kernel file (ASCII text) for 3*3 laplacian filter
/* classnumber: ASCII number (8, 12 or 16)
```

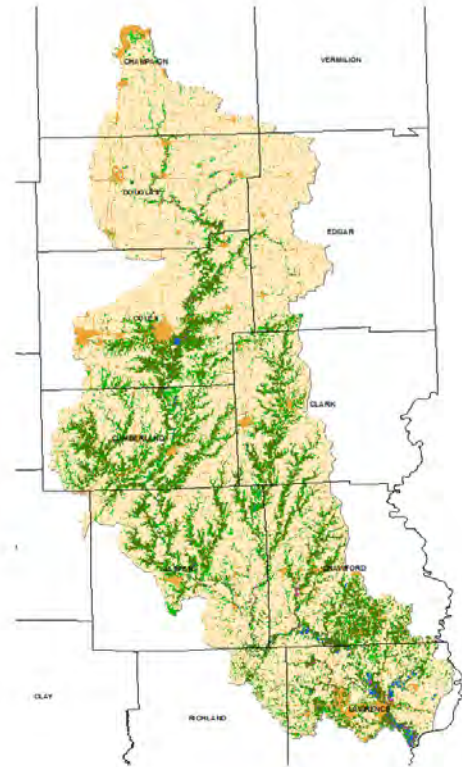




**Embarras River Watershed**

**Drains 1,558,907 Acres  
In 12 Counties**

Land Cover	Acreege	Percent
Row Crops	1,072,198	69
Forest	213,149	14
Hay, Pasture or Alfalfa	136,889	9
Developed	123,585	8
Water	9,165	1
Wetlands	3,179	0
Barren	739	0
Fruit Production	10	0
Shrub/Scrub	1	0



USDA National Agricultural Statistics Service Cropland Data Layer. 2013.  
Published crop-specific data layer [Online].  
Available at <http://nassgeodata.gmu.edu/CropScape/> (accessed 8/2014; verified 8/2014. USDA-NASS, Washington, DC.

**Agreement through Illinois State Water Survey and CYBER GIS to develop RUSLE 2 derivatives based on LIDAR in two watersheds.**

The purpose of this agreement is to utilize the expertise of the Illinois State Geological Survey (ISGS) and the Illinois State Water Survey (ISWS), students and staff; along with the computing resources of the CyberGIS Center for Advanced Digital and Spatial Studies (CyberGIS), of the National Center for Supercomputing Applications, at the University of Illinois at Urbana-Champaign to process large volumes of detailed elevation data to generate products useful for NRCS conservation planning, soil survey, and agricultural management operations.

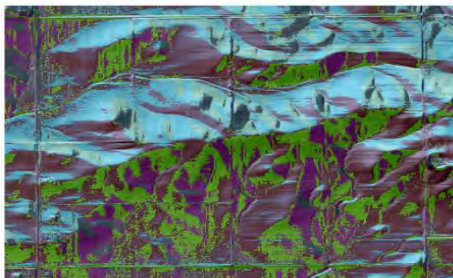
Wetland Determinations for compliance with Food Security Act of 1985

Three factors:

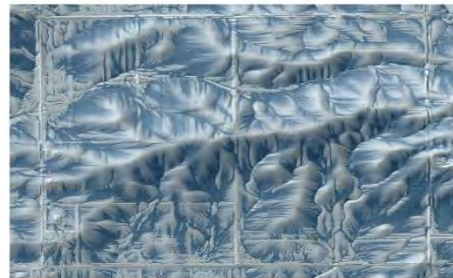
- Hydric soils
- Hydrophytic Vegetation
- Wetland Hydrology



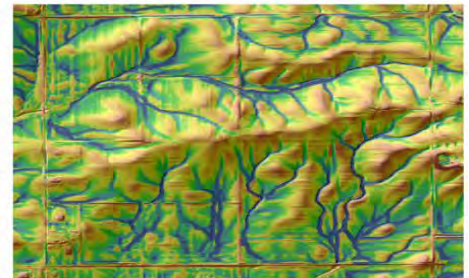
*D $\infty$  flow direction*



*D $\infty$  flow accumulation*



*D $\infty$  Wetness index*





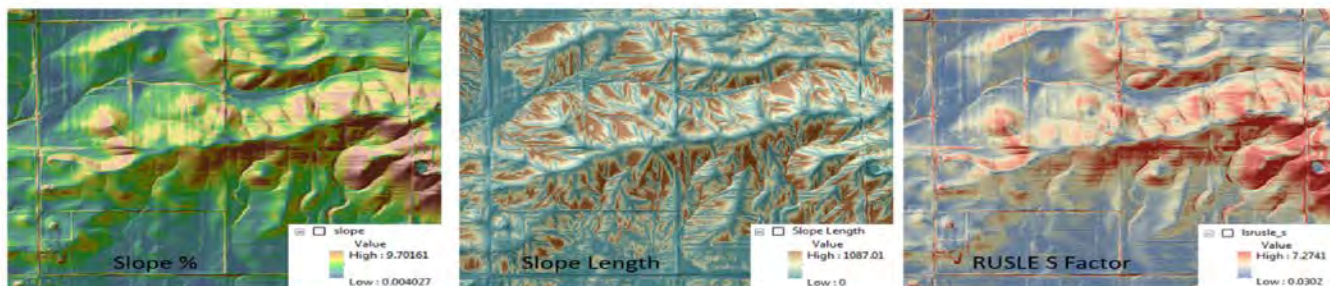
# USDA-NRCS Programmatic and Data Needs

Conservation Planning	<p><b>Revised Universal Soil Loss Equation (RUSLE)</b>  <math>R * K * L * S / T</math> (Erosion index (EI)) &gt; 8</p> <p>R = Rainfall factor          K = Saturated soil hydraulic conductivity          L = Slope length factor          S = Slope factor          T = Tolerable soil loss</p>	<p><math>Sfactor = [0.065 + 0.0456 (slope) + 0.006541(slope)^2]</math></p> <p><math>Lfactor = [flow\ length / 72.5]^{MN}</math>          &lt;1 % slopes MN=0.2; 1-3 % slopes MN=0.3; 3-5 % slopes MN=0.4; &gt;5 % slopes MN=0.5</p> <p><i>e.g. Van Remortel, et al, Computers and Geosciences, 2007</i></p>
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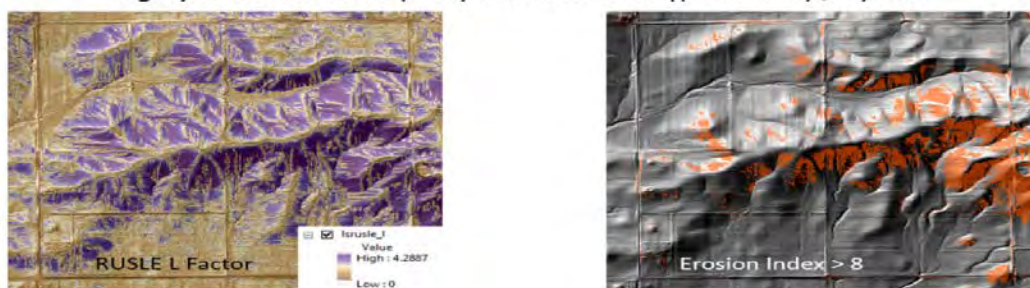
Conservation Compliance	<p><b>Wetland Determinations</b>          Areas that pond          Areas that accumulate flow          Upland and lowland areas          Climatological data</p> <p><b>Highly Erodible Land (HEL) Determinations</b>          Frozen list of soils that are Highly erodible          Erosion Index (RKLS/T &gt; 8)</p>	<p><math>(Filled\ DEM - DEM) &gt; 1\ foot</math>  <i>Flow accumulation (<math>D^\infty</math>, e.g. Tarboton or Shi)</i>  <i>Wetness Index (<math>D^\infty</math>, e.g. Tarboton or Shi)</i></p> <p><math>Sfactor = [0.065 + 0.0456 (slope) + 0.006541(slope)^2]</math></p> <p><math>Lfactor = [flow\ length / 72.5]^{MN}</math>          &lt;1 % slopes MN=0.2; 1-3 % slopes MN=0.3; 3-5 % slopes MN=0.4; &gt;5 % slopes MN=0.5</p>
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Soil Survey	<p><b>Ecological Site Descriptions</b>          Physiography          Climate          Soil          Hydrology</p>	<p><i>Landform Classification (e.g. Iwahashi (2007), Schmidt (2004) )</i>  <i>Wetness Index (<math>D^\infty</math>, e.g. Tarboton or Shi)</i></p>
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## Slope, Slope Length, RUSLE “S” Factor, RUSLE “L” Factor, Erosion Index Greater than 8. Sample RUSLE grids, Champaign County, Section 36, Township 18 North, Range 9 East



*Highly Erodible Land (HEL) calculated as  $((R * K * L * S) / T) > 8$*



## Climate Summaries

Climate data is summarized in WETS tables developed by The Midwest Regional Climate Center in conjunction with the NRCS National Water and Climate Center and the National Oceanic and Atmospheric Administration (NOAA). GIS has been used in Illinois to geo-locate the climate stations and assign specific complete data sets to specific Township, Range, and Sections using proximity analysis.

The WETS tables give a month by month summary and probability analysis of temperature and precipitation. The table also provides average length of growing season using three index temperatures (32, 28, and 24 degrees Fahrenheit) at 50 and 70% probabilities.

Growing Degree Days (GDD) has two indexes that are related to general crop type:

50 degree base - corn, maize, soybeans etc.

40 degree base - cereal grains and other grass type - general use.

Wet, Dry, and Normal years are determined using this comparison and national guidance. The Food Security Act allows the use of Normal Years for compliance slide review as a tool for off-site wetland determinations.

### Land Evaluation and Site Assessment (LESA)

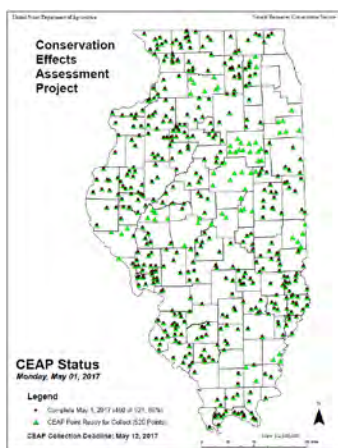
**Farmland Protection Policy Act (FPPA)** – Tim Prescott, Resource Inventory Specialist, completes the Farmland Conversion Impact Rating (AD 1006 and CPA 106) forms submitted to NRCS. Illinois has 37 counties that have LESA systems approved by the State Conservationist.

### Annual LESA Report

No LESAs updated or reviewed this year

List Counties with LESAs

**Natural Resources Inventory (NRI)** <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/nra/nri/>



### Conservation Effects Assessment Project (CEAP).

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/nra/ceap/>

Associated with NRI the CEAP uses existing NRI sample points for collection of additional data. CEAP is a multi-agency effort to quantify the environmental effects of conservation practices and programs and develop the science base for managing the agricultural landscape for environmental quality. Project findings will be used to guide USDA conservation policy and program development and help conservationists, farmers and ranchers make more informed conservation decisions.

### National Soil Monitoring Network

Soil Monitoring Network is a long term study sampling current NRI points to detect changes in terrestrial carbon stocks across the country.

Status: Some assistance was provided in 2016 by MLRA staff. This has been additional workload for NRI data collectors that include Resource Soils Scientists, Field Office staff, Prescott, and Sipp.

**Rapid Carbon Assessment** – Final Reports available at:

[http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/?cid=nrcs142p2\\_054164](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/?cid=nrcs142p2_054164)

**SOIL EXPLORER (FORMERLY ISEE)**— <http://soilexplorer.net/> Development of educational maps through University of Illinois. Illinois NRCS has agreed to provide assistance to University of Illinois Dr. Robert Darmody (Pedology) and Dr. Jennifer M. Fraterrigo (GIS).

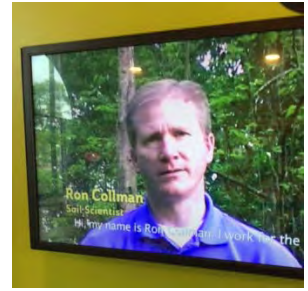
Illinois NRCS has provided several interpretive geospatial data sets to the project including: General Soil Surface Color, General Soils, Soil Drainage Class, General Parent Material, Loess Thickness, Quaternary Geology (modified from ISGS), Bedrock (modified form ISGS). Other interpretive maps are planned.

**Status:** Purdue has updated. The name has changed to SOIL EXPLORER and the app now works in your web browser! Excellent educational tool and “GIS-Lite” Select your state at the right from the drop down and select the layers.

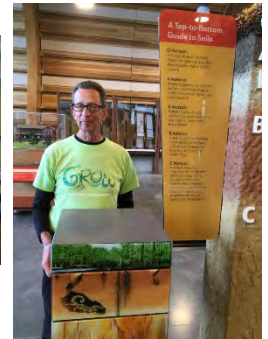


**ST. Louis Science Center GROW exhibition.** Farm Bureau was one of the major financial contributors to the Center's exhibition featuring Agriculture in Missouri and Illinois. Missouri and Illinois NRCS soils contributed technical soil information and soil information. The exhibit is planned to be expanded to include a part that focuses specifically on soil.

Currently, Ron Collman has a brief introduction with soil health, soil conservation, and sustainability on a touchscreen kiosk in the exhibit.



**DIG-IT!** Exhibit finds a home at the St. Louis Science Center! Formerly located at the Smithsonian, The DIG-IT exhibit has moved to the St. Louis Science Center Grow Center. Images of unpacking, repairing for display, and the unveiling on Earth Day. Missouri and Illinois NRCS contributed. Images of unpacking and preparation of the soils display, parts of the Grow exhibit, and Ross Braun, a former NRCS employee and volunteer at the Science Center. He also was a volunteer at the Smithsonian at the exhibit in D.C.



More individuals at the preparation and the unveiling on Earth Day included The State Conservationist of Missouri, J. R. Flores; MO State Soil Scientist and Asst SSS, Jorge Lugo and Mark Abney; MO soil scientists Ralph Tucker, David Skaer, and Grant Butler; MO dc Renee Cook; Illinois State Soil Scientist, Ron Collman, and Illinois soil scientist Dr. Sam Indorante. Maxine Levin was representing the Soil Science Society of America. Missouri's Menfro Man (MO soil scientist Bill Pals) even made an appearance.





**SOIL Judging**

Northern Illinois University hosts. Illinois NRCS, Region 11 MLRA and Illinois Soil Classifiers will contribute or assist when Northern Illinois Hosts the Regional National Soil Judging Tournament Fall 2016 and national Soil Judging in Spring of 2017.

Dr. Mike Konen, Northern Illinois University and Sarah Smith, USDA-NRCS, MLRA soil scientist put in long hours to prepare for the contest and with volunteers from NRCS, ISCA, and NIU working together, a very excellent contest was had by all. Twenty-four teams from across the nation saw how awesome Illinois soils are.

Good weather for practice turned to rainy, wet, and cold weather for the day of the contest.

**Link to pictures:**

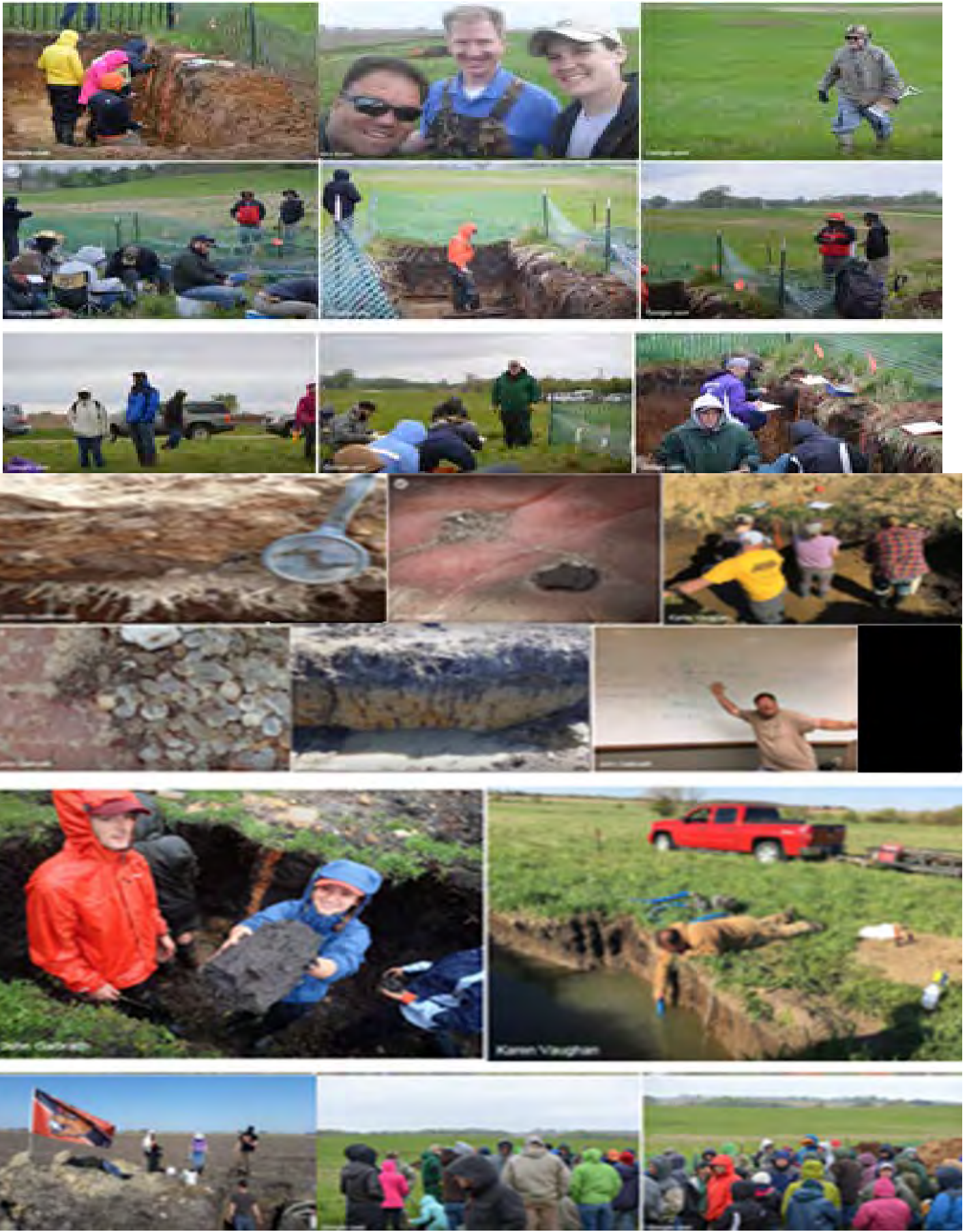
<https://goo.gl/photos/sPLzLRSrZwdrHIXX7>



Maryland 3074 1st  
Kansas State 3051 2nd  
Wisconsin-Platteville 2973 3rd  
Purdue 2941 4th









## GPR and EM Investigations

The ground-penetrating radar tells us where the soil is different or where there are anomalies in the ground, and then we have to dig to ground-truth our findings. Soil conditions play a big role in its success and failure; the radar can detect things, but can't identify them; and results depend largely on the soil scientist's interpretation.

**Ground Penetrating Radar - Jim Doolittle, USDA-NRCS, National Soil Survey Center**

<https://www.youtube.com/watch?v=-pSbZv2Afso>

**Use of GPR in Soil Surveys - Jim Doolittle, USDA-NRCS** <https://www.youtube.com/watch?v=u6TDyQAntmo>  
**Geophysical Methods within NRCS: Applications**

### Benchmark Soils: Classification/Correlation

- Update OSD's (describe to 80", GPS, historical folder, classification data, determine data needs)
- Collect "fundamental data" for OSD's
- Develop representative DMU's using fundamental data
- Update representative pedons DMU identification spreadsheets
- Review Correlation Documents
- Revised Soil Properties "Hit List"
- Spatial Distribution analysis of benchmark soil series and DMU's (spatial inconsistencies/discontinuities)
- Develop Block Diagrams for important/representative suites of soils
- Characterization Data collections, update location information, organize, and

**VERIS**-More than 10 years ago, Illinois became a pilot for use of the VERIS. The technology is becoming mainstream more mainstream in attempts to focus on very detailed differences of conductivity which can identify why there are productivity differences in fields. The VERIS is a tool that resembles a six foot wide farm implement like a disc. The individual discs are attached to electronics that allow the measurement of soil conductivity at two subsurface elevations. The VERIS attaches to a data logger and is pulled by a truck or ATV. This allows the rapid measurement of thousands of conductivity readings over an entire field that can then be used to refine soil maps and correlate to specific differences in soil. The data is fed into a software program called surfer that allows a detailed map to be made from the data.

Differences in conductivity are related to moisture, physical properties of the soil, and chemistry. The VERIS has been used in Illinois to determine depths to lacustrine materials in Douglas County, density changes in fields that have been reclaimed, and extensively in Southern Illinois in refining maps of soils that have high sodium contents.

**Transfer:** In 2016, I transferred the VERIS to MO6 and the MLRA in Owensboro Kentucky. Matt McCauley, the MLRA project leader used the VERIS when he was a RSS in Illinois. He has already used it extensively in Kentucky and has field projects that include soils in other states affected by sodium. Owensboro MLRA office extends across MLRA 120 and includes the Shawnee Hills of Illinois. The VERIS won't be far away if we need it.

## Interpretations

### General Soil Map Project

Description: Illinois NRCS is in the process of updating the Soils of Illinois map that has been used for a number of years. Since the state has now been completely re-mapped and maps digitized, we now have the opportunity to use GIS to sort features, such as parent materials, and to correlate soils across county lines.

**Status:** This map set will be considered a “draft” and will be available for review and comment. Once the “draft” has been finalized, a completed Soils of Illinois map will be produced. It will be posted on our web site and hard copies might be available, depending on funding. Also intend to Develop/publish general soil maps (with block diagrams) for MLRA and field office display.

### **Conservation Tree and Shrub Groups (CTSG)**

A guide related to soil properties and trees and shrubs to plant. Used as a guide for the establishment of plants listed for certain soil groups. Plan to update the statewide list by June 30, 2012.

**Status:** A guide is developed, but knowledge gained through the ESD process indicates that CTSG interpretations and productivity information related to specific species needs to be adjusted for landform\landscape relationships for some soils.

### **Soil Groups for Plants**

Based on soil properties known to affect the growth of most plants. Places soils into plant groups with subgroups similar to CTSG and pasture suitability groups for all plants. This interpretation is under development as part of the development of CTSG groups and ESDs.

**Status:** This interpretation is similar to forage suitability groups (FSG) and CTSGs in that it looks at properties of the soils, but also incorporates estimated plant available water in an attempt to identify the ecological types of the soils in addition. Specific to Illinois and perhaps adjacent Midwest states. Currently only in Excel.

### **Plant Groups for Soils**

Based on plant properties and limitations populated in the USDA plants database with other data added from other sources. Places plants into like ‘PLANT’ Groups similar to soil groups for plants. Based on plant properties and limitations populated in the USDA plants database with other data added from other sources. Stan Sipp has reviewed information in the plants database for Illinois species of trees and shrubs and made edits based on current knowledge and sources.

**Status:** This database needs reviewed and also coordinated with the ILPIN listing. I have some narratives for each of the plants listed for Illinois IF they have sufficient soils information in the database. Plants database may have some issues and definitely could use some more soil related columns to link back to NASIS, soil characterization, or PEDON.

### **Ecological Site Inventory**

Soils and ecological site data provide information and interpretations for management and restoration for conservation planning, deployment of Conservation Delivery Streamline Initiative and Farm Bill Implementation. ESDs include identification of sites relative to the Plant\Animal\Climate\Soil interaction. Naming and definition is based on terms of Soil\Landform\Plant Community

### **Illinois Natural History Survey Contract Study**

Illinois Natural History Survey developed draft Ecological Site information as data for inclusion into ESDs in Illinois. Primary focus was on MLRAs 108A, 108B, 110, 113, 114B and 115C for development of selected Ecological Site Descriptions from field-tested legends

These ecological types are based on soils data and ecological site type definitions from the Illinois Natural History Survey and other sources. The data within these documents represents this analysis supported by over ecological data collection in Illinois since 1858. The assignment of Ecological site types to soils is based on groupings of soil properties. Illinois Natural History Survey Heritage sites were overlain on Illinois soil map units. Where there was significant agreement between soil properties and site types, these sites were isolated for analysis. Data available was not complete for each ecological site type or for each MLRA. Data by site type from the entire state was used to derive plant lists. Climatic and geographic separations will affect some species and population densities.

Issues exist between sample methodology and different data scales. Some sites are identified on what would be inclusions in typical soil map units. Some ecological sites were sampled crossing more than one map unit, landform, or landscape position, affecting species identified for the 'site'. Soil map units do not always follow the landform breaks as completely as vegetation due to original mapping scales and original interpretive intent of the soil maps.

**Status:** 18 Ecological Community Types associated with soil groups were described that could be additionally split by MLRA and include State and transition models for each.

Dry Mesic Prairie	Loess Hill Prairie
Dry Mesic Sand Savanna	Mesic Floodplain Forest
Dry Mesic Upland Forest	Mesic Prairie
Dry Mesic Woodland	Mesic Savanna
Dry to Dry Mesic Sand Prairie	Mesic Upland Forest
Dry Woodland	Sedge Meadow
Freshwater Marsh	Southern Flatwoods
Glacial Drift Hill Prairie	Wet Mesic Floodplain Forest
Graminoid Fen	Wet Mesic Prairie

These Ecological types are based on soils data and ecological site type definitions from the Illinois Natural History Survey (INHS) and other sources. The data within these documents represents this analysis supported by over ecological data collection in Illinois spanning nearly 100 years. Ecological site types are assigned to soils based on groupings of soil properties. INHS Heritage sites were overlain on Illinois soil map units. Where there was significant agreement between soil properties and site types, these sites were isolated for analysis. Data available was not complete for each ecological site type or for each MLRA. Data by site type from the entire state was used to derive plant lists.

Issues exist with methodology and different data scales. Some sites are identified on what would be inclusions in typical soil map units. Some ecological sites were sampled crossing more than one map unit, landform, or landscape position, affecting species identified for the 'site'. Soil map units do not always follow the landform breaks as completely as vegetation due to original mapping scales and original interpretive intent of the soil maps. Soil map units need some disaggregation in respect to specific landform types and vegetation differences.

**Status:** Draft legends and soil sorts have been developed. We are refining concepts of ESDs and the scale that is needed to capture all the information that is required to provide a useful tool. Several data sets from several sources and several source materials have been reviewed. INHS contract with several ecological site types have been developed and need to be tied to the soils and landforms.

Landform analysis needs to be done with LIDAR to better separate map unit phases that clearly support different vegetative (biological) associations. Climate data needs to be summarized and delivered in a consistent way.

Stan Sipp and others have reviewed the data and sites from the INHS contract, making comments, and preparing for field visits to verify soils, plant community, and landform/landscape relationships. There are very few areas that have not been manipulated in some way in Illinois.

**Status:** Technical team is reviewing soil sorts and preliminary legends. Stan Sipp has reviewed approved ESDs from Missouri and we are attempting to cross walk to soils and species in Illinois. **Stan has reviewed ESD descriptions and species from MLRA 97, 98, 115B and made comments.**

### **Title 306 – National Instruction (430-306-NI, April 2015) 306-2**

5-year initiative, to be completed in fiscal year 2020, intended to result in complete conterminous coverage of ecological site information via provisional ecological site development principles and tools for each major land resource area (MLRA).

## Soil Productivity Index and Crop Yield Indices

Current productivity index values are developed by the University of Illinois.

<http://soilproductivity.nres.uiuc.edu/>; SDJR was removing yield data from NASIS database to facilitate seamless joins with other states. The National Commodity Crop Productivity Index (NCCPI, version 2) for agricultural crops, including organic farming systems is being evaluated and a comparison was made back to the University of Illinois indices.

**Status:** Soil productivity index and crop yield indices have been adjusted for slope, erosion and mapped flooding frequency. National crop commodity index has been mapped for comparison. Adjusted PI based on U of I has been put on the same scale as NCCPI for comparison maps. Comparison is similar to Model used by University of Illinois. Some soil groups ie. Sandy, gravelly and soils with bedrock in the profile in particular, are not handled the same way in the different models.

U of I Base PI and Yield indices and NRCS Adjusted PI and Yield indices have been posted on the Illinois eFOTG, section 2. Additionally, Base indices and the adjusted indices have been coded into NASIS for an internal NASIS Report. <http://efotg.sc.egov.usda.gov/>

[http://efotg.sc.egov.usda.gov/references/public/IL/Calculating\\_productivity\\_and\\_yield\\_indices\\_in\\_Illinois\\_with\\_adjustment\\_factors\\_for\\_crop\\_productivity.pdf](http://efotg.sc.egov.usda.gov/references/public/IL/Calculating_productivity_and_yield_indices_in_Illinois_with_adjustment_factors_for_crop_productivity.pdf) This link directs you to download the documentation and maps of the Productivity adjustments based on University of Illinois base values and Illinois NRCS slope, erosion, and flooding adjustments.

[http://efotg.sc.egov.usda.gov/references/public/IL/NRCSEstimated\\_MapUnit\\_ProductivityIndex\\_and\\_Yield\\_Spreadsheet\\_by\\_MapUnit\\_2013.xlsx](http://efotg.sc.egov.usda.gov/references/public/IL/NRCSEstimated_MapUnit_ProductivityIndex_and_Yield_Spreadsheet_by_MapUnit_2013.xlsx) This link directs you to a spreadsheet for download that has all NRCS adjusted yield indices in one worksheet and all base indices from the latest University of Illinois revision.

**Status:** It is important to Illinois that data served to the public is relative to the U of I base values in ranking from series to series. It is further important that if this data is available through WSS reports, that documentation is provided on how the data was derived and how it relates to U of I data. Links to the U of I data on the U of I site as well as on eFOTG should also be provided through WSS to meet the needs of users. Currently, U of I Base data is tied to state law for tax assessment and is the base for land appraisal.

Data linked to U of I Base data is available from a NASIS report, is posted in tabular form in eFOTG, and data is available through WSS "Soil Reports" for Row Crops, Hay and Pasture. Productivity Index should be available soon from a WSS "Soil Report". Data is available for component and Map Unit.

**WSS REPORTS**—Jason Nemecek provided coding to allow posting of the U of I index values in Web Soil Survey Interpretation format.

## Soil Forest Site Index

Using a similar coding process, U of I Bulletin 810 site index values are coded for NASIS reports and eventually WSS reports.

Stan Sipp has reviewed site index point data from several sources. He has compared University of Illinois bulletin 810 data and the formulas used to derive the data. We are attempting to update the site index information that is provided and will be working with University of Illinois and others to update the out of date site index information in our interpretation tables in the NASIS database.

**Status:** Soil site index for White oak, Northern red oak, White ash, Eastern White pine, Eastern Cotton, Pin oak, and Tulip poplar have site index values have been included in a WSS "Soil Report". Data is available for Component and Map Unit.

**WSS REPORTS**—Jason Nemecek provided coding to allow posting of the U of I index values in Web Soil Survey Interpretation format.



**Prime Farmland** -- Planning to update the Illinois Prime and Important Farmlands publication

**Urban Interpretations** – The National Soil Survey Center is developing urban interpretations such as storm water runoff, geothermal heat pumps, fiber optic cables, pipelines, rain gardens, etc. that could be used in Cook County and other urban areas.

## **MLRA SOIL SURVEY PROJECTS**

**Aurora MLRA Soil Survey Office Report (MO11)**  
**Springfield MLRA Soil Survey Office Report (MO11)**  
**Union MLRA Soil Survey Office Report (MO11)**  
**Marion MLRA Soil Survey Office Report (MO11)**  
**Owensboro MLRA Soil Survey Office Report (MO6)**  
**Onalaska MLRA Soil Survey Office Report (MO10)**  
**Juneau MLRA Soil Survey Office Report (MO11)**  
**Milan, TN MLRA Soil Survey Office Report (MO7)**

### **Grand Rapids MLRA (MO12):**

Our main focus this year and next is a large-scale update project on the somewhat poorly drained Capac and Conover series located on the till plain landscape in central Michigan. It does not affect Illinois. With our workload including MLRA recorrelation (SDJR) projects in the winter months, we will have an occasional project that affects Illinois like the Morocco project this past winter. As you know, provisional ESDs for our two MLRAs that extend into Illinois are now complete.

### **Springfield MLRA Soil Survey Office Report (MO11)**

The Springfield Major Land Resource Area (MLRA) office is responsible for MLRA 108B, Illinois and Iowa Deep Loess and Drift, East-Central Part, which includes about 6.3 million acres. MLRA 108B is located entirely in Illinois. The Springfield MLRA office is also responsible for MLRA 115C, Central Mississippi Valley Wooded Slopes, Northern Part, which includes about 6.3 million acres. This MLRA is located mainly in Illinois, but also includes part of northwestern Missouri and eastern Iowa.

### **Ongoing projects:**

Geosol Project – continuing to collect seasonal high water table data via pressure transducers and IRIS tubes from 7 sites. Project is in the sixth year of data collection.

Soil Data Join Re-correlation Project – continuing to review selected soil series and map units, but on a smaller scale.

Provisional Ecological Site Descriptions – we are in the process of developing Ecological Site Keys for MLRAs 108B and 115C, that will be used for grouping similar soils found in the MLRAs.

Provisional Ecological Site Descriptions will be prepared for each group identified in the Keys. These descriptions will contain soil and climate information along with vegetation state and transition models.

### **MLRA Projects – in fiscal year 2017**

Assumption Official Series Description evaluation. Field transects will be conducted, and archive data reviewed to insure correct taxonomic classification of the series.

Hickory Range in Characteristics in Illinois. Existing archive data will be reviewed, field transects conducted, and amoozemeter data collected to determine if/where the Hickory map units can be separated on a state wide basis.

**MLRA Projects identified in the long range plan:**

Project Name	Scheduled Completion Date
MLRA 108B - Assumption Official Series Description evaluation	9/30/2018
MLRA 115C - Hickory range in characteristics in Illinois	9/30/2018
MLRA 115C - Hickory surface texture and degree of erosion for moderately eroded units	9/30/2019
MLRA 115C - Hickory surface texture and degree of erosion for severely eroded units	9/30/2019
MLRA 108B - Osco Official Series Description evaluation	9/30/2020
MLRA 115C - Rozetta Official Series Description evaluation	9/30/2020
MLRA 108B - Osco eroded map units evaluation	9/30/2021
MLRA 115C – Rozetta eroded map units evaluation	9/30/2021

**Technical Soil Services provided by MLRA staff**

Currently, MLRA staffs follow the same standard that Illinois has had for more than 20 years. MLRA staffs are to provide up to 15% of their time (about 270 hrs. each) to TSS as requested by State, Area Staff, or the State Soil Scientist. The following tables outline the reported TSS delivered for FY 2013 and 2014.

**Digital Soil Mapping techniques Pilot study:** Selected landforms in Wabash, Lawrence, Richland, and Edwards counties in Illinois. **Status: On Hold**

**Shawnee Hills Loess Catenas Project**

Description: Watershed-based soil landscape studies are on-going in Illinois, Indiana, and Kentucky. The area of study is the Shawnee Hills region, located within MLRA 120 (Kentucky and Indiana Sandstone and Shale Hills and Valleys) and a small portion of MLRA115B (Central Mississippi Valley Wooded Hillslopes). These studies are linked by similar parent materials, land use characteristics, and common objectives. Together, they represent a mechanism for the examination of soil landscapes, water movement, and the nature of pedogenesis in a landscape setting. The emphases of these three studies include the documentation of key soil landscape relationships within the MLRA's.

Objectives of the Illinois, Indiana, and Kentucky studies are:

- Develop a model of soil distribution on selected benchmark landscapes;
- Assess major factors controlling soil development, soil change and spatial variability;
- Determine variables that serve as markers of soil type, pedogenesis, metapedogenesis, and water movement such as clay distribution, soil color/redox features, and geochemistry.

Cooperators include: USDA-NRCS (Illinois, Indiana, Kentucky and NSSL), Southern Illinois University, Purdue University, University of Kentucky, Illinois State Geological Survey, United States Geological Survey, Kentucky Geological Survey, and the US Forest Service. All participants are part of the National Cooperative Soil Survey and have a common interest in the future of soil science and the future of soil survey.

**Status:** Installation of equipment is completed and data is being collected. More than 50 individuals have received hands on soil landscape training as part of the project. University of Kentucky is continuing monitoring.

**Status:** Study completed: One Thesis presented at the Regional Conference in 2016 by Trinity Baker "Soil Hydraulic Property Estimation under Major Land-Uses in the Shawnee Hills"; with other papers planned.



TJB\_THESIS.pdf

Embedded Document

### Sangamon Paleosol/Geosol Project

Description: This project will evaluate existing lab data and water table data on six soil series underlain by the Sangamon Geosol. Collect additional data where existing data is minimal. Resulting data will be used to refine selected soil properties in data mapunits in the NASIS database.

This project will continue into a second project with monitoring water table depths via data loggers at selected sites. Resulting data will be used to refine soil water properties where needed in the NASIS database.

**Status:** 5-2014 Continue to monitor water table depths via piezometers and IRIS tubes. Received lab data results for sample sites.

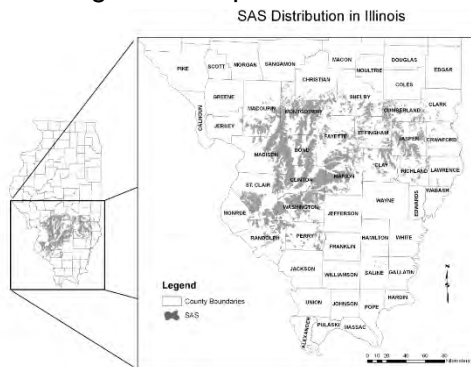
5-2017 Continue to collect piezometer and IRIS tube data. Added an IRIS tube site in Henry Co. in a map unit of Elco. Also collecting data with pressure transducers.

### Sodium Affected Soils Project (SAS)

Description: Determine possible impact of periglacial features on sodium affected soil distribution in south central Illinois **Status:** On Hold through MLRAs in Illinois, however SIU-C and Northern Illinois Professors Dr. Sam Indorante and Dr. Michael Konen are still collaborating. In addition, Dr. Brad Lee, from Kentucky and MLRA project leader Matt McCauley are looking at sodium affected soils on terraces in Kentucky and Indiana and making comparisons to the original study.

### Image processing for Sodium Affected Soils SAS

Jon Bathgate's computer has ERDAS Imagine 9.3. He will be doing image analysis and LIDAR analysis of the SAS areas with Tim Prescott. **Status:** On Hold



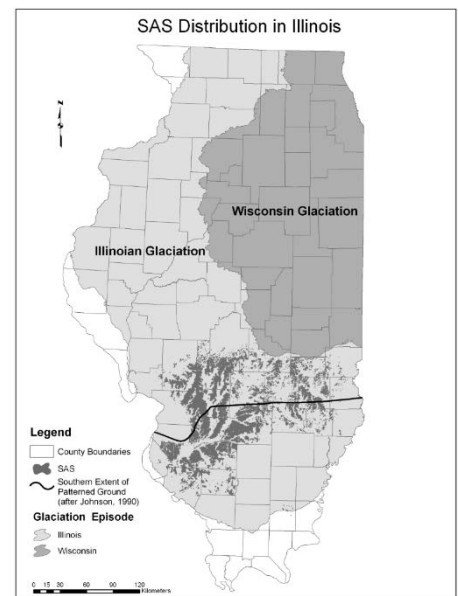
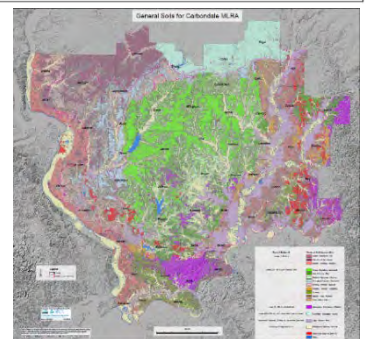
**Darmstadt/Loess Thickness Study** Description: This study is being led by Zach Webber. This is now included in the Sodium Affected Soils Project. **Status:** On Hold

**Compilation of Loess studies in Illinois on CD** Carbondale MLRA Office compiled and organized all of the significant loess studies that have been conducted in Illinois and the midwest. This is available on CD to anyone requesting the information.

### Photo mosaic of 1938 Imagery



**General Soils Map Development for Carbondale Multi-State and MLRA Map-Bathgate.** Has analysis of association map units by acreage and percent.



### **Sodium Distribution Project**

Description: This project will investigate mapunits that currently do not reflect a sodium influence, but are adjacent to sodium affected mapunits. The investigation will determine if sodium is in fact present in these units, if so how far the sodium influence extends from the current sodium affected mapunits. **Status:** 5-2014 5-

### **LiDAR Projects slope analysis and maps**

Description: This project will employ a slope model and LiDAR data to produce a slope map for a test area of approximately 1000 acres in Peoria Co., MLRA 115C. The slope map will be compared to the SSURGO data for the area. Edits will be made where needed, creating a new soil map of the test area. Additional mapunits will be added where needed, field investigations will be used to determine composition of new mapunits. Map units delineated based on the slope model will also be evaluated for slope range and slope rv for each polygon. This composition will be compared to the slope composition of the mapunits in the SSURGO data. This project will be used to develop standards and procedures for upgrading SSURGO data by using LiDAR data. **Status:** 5-2014 Collected GPS locations of areas showing recent ponding in Peoria Co. Continuing to fine tune GIS analysis tools to predict ponded areas.

### **Hickory Distribution Project**

Description: This project includes review of existing Hickory map units, pedon descriptions, and lab data to determine potential soil property trends in the MLRA (115C and parts of 108B). Determine need for different DMUs based on soil property trends. Approximately 135 Hickory pedon descriptions from the Rock Falls MLRA Office have been entered into Pedon PC. Also, approximately 130 pedon descriptions from the Springfield MLRA Office have been entered. **Status:** 5-2014 Collected Amoozemeter data from a site in Fulton Co. and a site in Sangamon Co. Finalizing Amoozemeter sites in Fulton, Macoupin, and Pike Counties for sampling this spring. Plan to locate additional sites in Morgan Co, in spring of 2014

### **Tazewell Co. Loess Terrace Project**

Description: This project deals with areas of deep loess soils, mainly Tama, Plano and adjacent Edgington soils, on high stream terraces in Mason and Tazewell Counties. The depth to outwash will be investigated. **Status:** On HOLD

## **MLRA FUTURE PROJECTS**



# DATA DELIVERY AND ACQUISITION

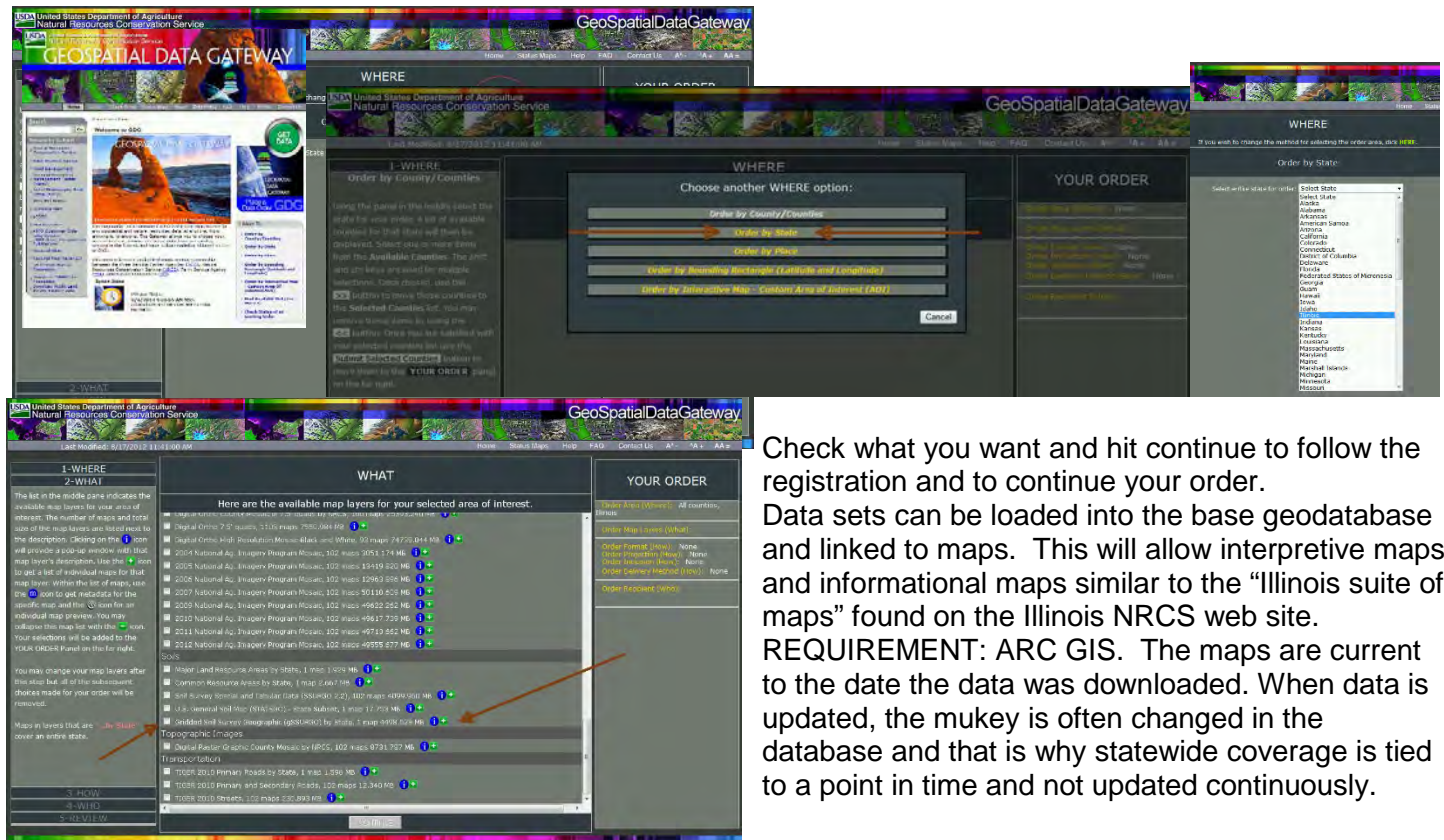
National Bulletins <http://directives.sc.egov.usda.gov/Default.aspx>

**gSSURGO** A statewide seamless coverage was developed and is available upon request to the Illinois State Office. Old school. OR downloaded from the

**Geospatial Data Gateway**. New School. <http://datagateway.nrcs.usda.gov/>

Data sets can be loaded into the base geodatabase and linked to maps. This will allow interpretive maps and informational maps similar to the "Illinois suite of maps" found on the Illinois NRCS web site. REQUIREMENT: ARC GIS. The maps are current to the date the data was downloaded.

From the "Get Data", click on the green to change the type of data. This will allow you to select data for the entire state at one time. Select the where option, Select the state, choose the data.

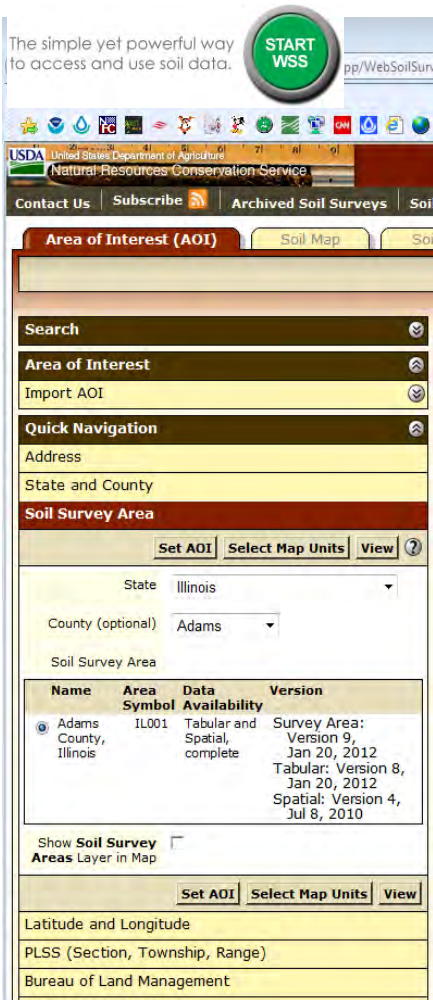


Check what you want and hit continue to follow the registration and to continue your order. Data sets can be loaded into the base geodatabase and linked to maps. This will allow interpretive maps and informational maps similar to the "Illinois suite of maps" found on the Illinois NRCS web site. REQUIREMENT: ARC GIS. The maps are current to the date the data was downloaded. When data is updated, the mukey is often changed in the database and that is why statewide coverage is tied to a point in time and not updated continuously.

By linking aggregated data to the spatial data by mukey or musym, or component, several maps can be produced. The link below is to the Illinois Suite of Maps on the Soils Web Page: [http://www.il.nrcs.usda.gov/technical/soils/Suite\\_Maps.html](http://www.il.nrcs.usda.gov/technical/soils/Suite_Maps.html)

## Directions for obtaining tabular data reports similar to Soil Data Mart from Web Soil Survey (WSS)

Downloads from the **Soil Data Mart** and the Web Soil Survey are relative to the version and date at which they were submitted to the Soil Data Warehouse. Soil Data Mart is no longer available. Data sets in similar format are available through the Geospatial Data Gateway and the Web Soil Survey.



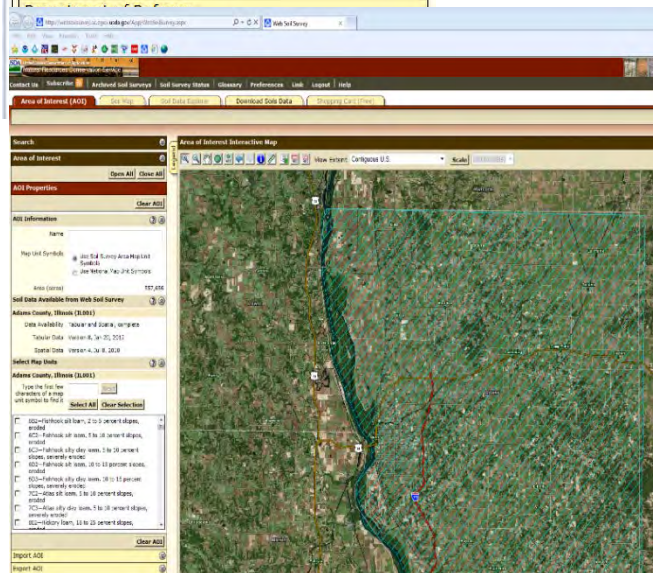
Click on the Green Button “Start WSS”

<http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>

There are several ways to select data by location in WSS. To get specific tabular data, click on the row on the left of the screen titled “Soil Survey Area”. From the drop down menus, select state “Illinois” and the County. Your choice list of available surveys for that county will come up and you will select the one you want by clicking on the small circle to the left of the county name. (It will turn blue when selected).

From here, you have the 3 choices:

1. **“Set AOI”** (Area of interest) of the entire county. This will allow you to use tabs at the top of WSS to produce interpretive maps based on the reports you select –this option also loads the soil map for viewing which is not available if you choose to select only the tabular data using “Select Map Units”.
2. **“Select Map Units”** will bring up a list of map units for the entire county. This option allows you to select one, some, or all map units and produce tabular reports similar to those that were available on the soil data mart. The tabs for “Soil Data Explorer” at the top of WSS and “Download Soils Data” are now active and you can run tabular reports on any or all soils.
3. If download of data and template is preferred, after starting WSS, the **“Download Soils Data”** tab is already active. Selecting the row “Soil Survey Area (SSURGO)” allows the navigation similar to county downloads in Soil Data Mart.



In the interim of this phase of soil survey, new future projects are identified and several changes have occurred for the delivery of some soil information. Some statewide lists, like productivity and yield indices, were populated in eFOTG [http://efotg.sc.egov.usda.gov/efotg\\_locator.aspx](http://efotg.sc.egov.usda.gov/efotg_locator.aspx) for access by users.

**A shortcut to bring up a single Illinois County's soil layer area of interest: Double-click icon**



Illinois\_FOTG\_Coun  
ty.html

Double-click the icon (Thanks Jason)





**National Soils Website Updated:** <http://www.nrcs.usda.gov/wps/portal/nrcs/site/soils/home/>

**Illinois Soils Website Updated:** <http://www.il.nrcs.usda.gov/technical/soils/index.html> [More to come](#)

**Links Page Updated** [http://efotg.sc.egov.usda.gov/references/public/IL/Links\\_1\\_2017\\_02February\\_15.docm](http://efotg.sc.egov.usda.gov/references/public/IL/Links_1_2017_02February_15.docm)

**Report Tools** These examples and other URL style reports are or will become available as development continues. Additional HTML style reports will focus on quick data retrieval.

### Reports Available for Use

[https://nasis.sc.egov.usda.gov/NasisReportsWebSite/lmsreport.aspx?report\\_name=WEB-Masterlist](https://nasis.sc.egov.usda.gov/NasisReportsWebSite/lmsreport.aspx?report_name=WEB-Masterlist)

#### Masterlist for Management Reports

12-GRR Grand Rapids, Michigan: 11-AUR, 11-SPR, 11-MAN (formerly 11-CAR) Aurora, Springfield, Marion; Illinois: 11-UNI, Union, Missouri: 11-JUE Juneau, Wisconsin: 10-ONA Onalaska, Wisconsin: 7-MIL Milan, Tennessee: 6-OWN Owensboro, Kentucky

#### Project reports

[Project Summary Report](#) This is the best report for managers to use in monitoring projects. The report prompts for office or region, using % as a wildcard, and provides nine summary reports.

#### Ecological Site Projects

[Project Goals and Progress](#) This Ecological Site report prompts for the FY, office, type of project, and approval. It delivers the list of projects by office, SSRO, and summarizes the Total Goal and Total Reported for those projects delivered in the report. It displays the Region, SSO, Approved, Project Name, Goaled User, Goaled Acres, Reported Acres, Reported User. If a Project does not contain reported acres it is due to the Reported User not being populated

#### Pedon reports

[Create Mini Profiles of pedons in NASIS by soil name](#) Run this report, then change the soil name or the choice in the URL to choose another soil (f=fragment percentage and t=texture and r=redoximorphic feature percentage and m1=1 for dry color and m1=2 for moist) If the color is blank then the color is null or the moisture state is null

[plot all KSSL pedons within a county](#) Run this report as is, then change the county fips code in the URL for a different data set

[Pedon Sample Analysis](#) Run this reports, then change the name of the series in the URL.

**Conservation Desktop** - The Soil Survey Division will provide support to the Conservation Desktop, Mobile Planner, and other conservation planner and customer needs. This will include working towards making additional soil interpretations available to Web Soil Survey. We anticipate increased Resource Soil Scientist involvement in the planning process through training and field investigations.

**Status:** This is a big deal! Developing technology for Conservation planning and signing documents and conservation contracts on smartphones, tablets, and computers through a web based application.

**EPA National Wetland Condition Assessment** - EPA and its State, Tribal, and Federal partners are implementing the first-ever national survey on the condition of the Nation's wetlands.

<http://water.epa.gov/type/wetlands/assessment/survey/>

**Climate Change Hubs** [http://www.usda.gov/oce/climate\\_change/regional\\_hubs.htm](http://www.usda.gov/oce/climate_change/regional_hubs.htm) USDA's regional hubs will deliver information to farmers, ranchers and forest landowners to help them adapt to climate change and weather variability. For more information on the Climate Hubs, check out the following resources: [Climate Hubs Webinar Presentation](#); [USDA Regional Hubs for Risk Adaptation and Mitigation to Climate Change Factsheet](#); [Climate Hubs Charter](#)

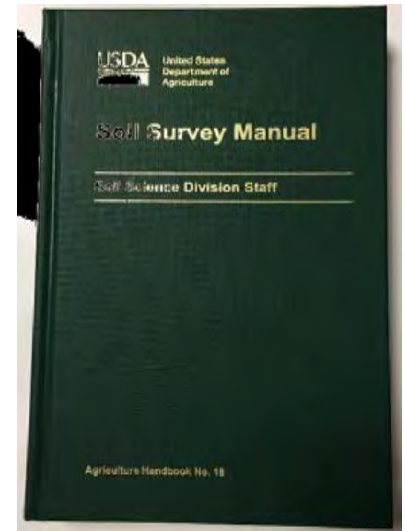
To learn more about USDA's approaches to climate challenges, visit the [USDA Climate Solutions page](#).

**Farmland Classification**, Mine reclaimed lands, Inconsistencies in population

## **Soil Survey Manual, 4<sup>th</sup> Edition, 2017 Now Published**

Introduction By Craig Ditzler, Kenneth Scheffe, and Curtis Monger, USDA–NRCS

The Fourth edition of the *Soil Survey Manual*, 2017 culminates more than 4 years active work involving 45 authors, collaborators, and editors from the NRCS and the NCSS partnership and numerous supporting scientists. The Fourth Edition replaces the 1993 edition, which was written before full integration of computer technologies such as the National Soil Information System (NASIS), SSURGO, and Web Soil Survey. This Fourth Edition follows in the footsteps of the first *Soil Survey Manual* in 1937 by Charles Kellogg, the second edition published in 1951, and the third in 1993.



## **ACTIONS/STRATEGIES**

Annual Illinois Cooperative Soil Survey Work Planning Conference will be held in May or June each year.

**Solicit Reports from MLRA and Regional offices for goals, accomplishments relative to SSD, SDJR, Mapping, and ESD Progress. These sections are better prepared and delivered by those doing the work with respect to Illinois and adjacent MLRAs.**

**Technical Users Conference? Would it be a good idea to host a GIS\Technical user's conference for the high end users and GIS specialists? Topics would include data usage, database structure, LIDAR acquisition, Derivatives, tools, modeling, WSS, etc.?—Tie into ILGISA??**

### **Map Unit Correlation and numbering. Illinois Map Unit Numbering Protocols**

Currently, Illinois has a 3 digit number that identifies the series. There is a letter suffix that corresponds to slope, and if eroded, a number suffix following the slope letter to indicate the degree of erosion. In flooded areas, or on potential flooded landforms within the 100 year floodplain, a numerical prefix is identified to indicate the frequency of flooding\*. Other numerical prefixes are used for landform, undrained areas, and ponded areas.

Correlation and disaggregation of like map units is creating a need to develop additional prefixes for separations relative to landform, geography, geology, and/or vegetation that significantly affects interpretations.

A lowercase prefix is suggested. The consistent application of this is important to maintain the integrity of the numbering system we have. Discussion and input from ICSS partners.

**Landform map based on LIDAR. ---SEE AGREEMENTS**

**Complete at more than one scale: GENERAL SOILS of ILLINOIS MAP**

**Soil Systems of Illinois Digital Publication:** Incorporate Key to Illinois Soils, General Soils Map and several chapters and diagrams of Illinois Soils, Genesis, Morphology, Interpretation, and Guidance.

**Improve interpretations to accommodate increase in site specific soils requests. Allow user input. Provide scaled maps and interpretations. This is being discussed.**

If a new backhoe can be purchased, the old backhoe could be surplus or transferred.



## **OPPORTUNITIES**

### **USAJOBS! Changes in NRCS Hiring Process! Faster turn-a-round. Shorter term postings!**

Re-organization of NRCS Administrative duties has led to National Teams and changes in the hiring processes. Batching of jobs and shortened posting terms are a result. Get resume and materials uploaded into USA JOBS if you are even considering a career with NRCS. The process takes a few hours to complete if all goes well.

The Food and Agriculture Organization (FAO) of the United Nations is heading up efforts along with the [Global Soil Partnership](http://www.fao.org/globalsoilpartnership/en/) <http://www.fao.org/globalsoilpartnership/en/> .

**Symphony of the Soil** <http://www.symphonyofthesoil.com/>

### **Cooperative Ecosystem Study Units (CESUs)**

The Cooperative Ecosystem Studies Units (CESU) Network is a national consortium of federal agencies, tribes, academic institutions, state and local governments, nongovernmental conservation organizations, and other partners working together to support informed public trust resource stewardship. would like for each of you to explore the potential of setting up CESU (Cooperative Ecosystem Study Units) agreements with participating universities and colleges in your Region.

Agreements can be developed for collecting vegetation data for ESD's, developing and implementing a soil systems study (master's thesis), conduct water table monitoring studies, etc. Basically, any project for which there will be deliverables. Info about the CESU program is at the following link:

<http://www.cesu.psu.edu/>

**NEON** <http://www.neoninc.org/> The National Ecological Observatory Network is a continental-scale observation system for examining ecological change over time.

NEON, funded by National Science Foundation (NSF), is a long term research project designed to allow the scientific community to address the major areas in environmental sciences, especially those aspects for which a coordinated national program of standardized observations and experiments is particularly effective.

**Conservation Initiative Grants (CIG)** NRCS provides [funding opportunities](#) for agriculturalists and others through various programs. Conservation Innovation Grants (CIG) is a voluntary program intended to stimulate the development and adoption of innovative conservation approaches and technologies while leveraging Federal investment in environmental enhancement and protection, in conjunction with agricultural production. Under CIG, Environmental Quality Incentives Program funds are used to award competitive grants to non-Federal governmental or nongovernmental organizations, Tribes, or individuals.

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/cig/>

### **RCPP: Regional Conservation Partnership Program**

The Regional Conservation Partnership Program (RCPP) promotes coordination between NRCS and its partners to deliver conservation assistance to producers and landowners. NRCS provides assistance to producers through partnership agreements and through program contracts or easement agreements.

RCPP combines the authorities of four former conservation programs – the Agricultural Water Enhancement Program, the Chesapeake Bay Watershed Program, the Cooperative Conservation Partnership Initiative and the Great Lakes Basin Program. Assistance is delivered in accordance with the rules of EQIP, CSP, ACEP and HFRP; and in certain areas the Watershed Operations and Flood Prevention Program.

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/farmbill/rcpp/>

## USDA Now Accepting 2017 RCPP Proposals

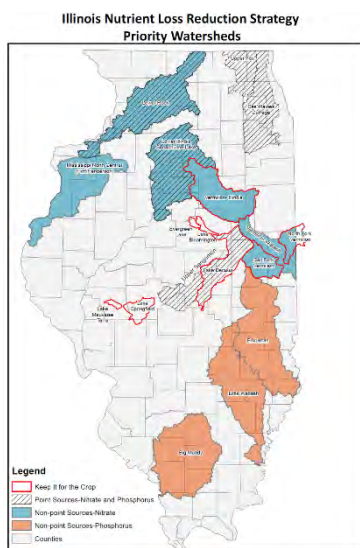
### Area Wide Planning Team

Illinois Soil Classifiers Association: [www.illinoissoils.org](http://www.illinoissoils.org)

**Conservation Client Gateway:** Conservation Client Gateway is a secure online web application that gives landowners and land managers, operating as individuals, the ability to track their payments, report completed practices, request conservation assistance, and electronically sign documents anytime, anywhere. Conservation Client Gateway provides users the flexibility to determine when they want to engage with NRCS online and when they prefer in-person conservation planning assistance. <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/cgate/>

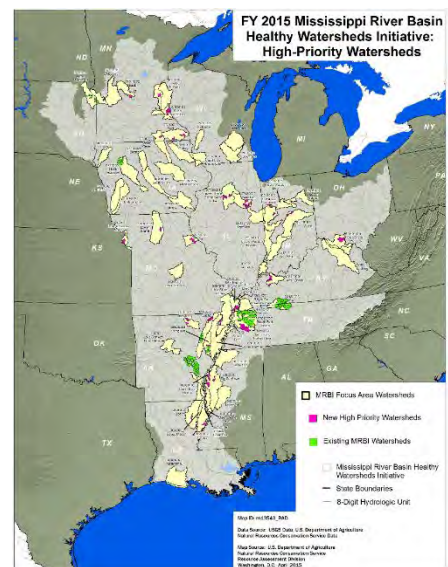
**Volunteers Needed:**  
**Opportunities exist at the NRCS state office.**

- Currently we have archival scanning of documents and slides.
- Potential for presentation of NRCS soil materials to classrooms?
- Assistance with GIS programming (PYTHON, SQL,?)



### Illinois Nutrient Loss Reduction Strategy Priority Watersheds

**Mississippi River Basin Healthy Watersheds Initiative (MRBI): High-Priority Watersheds” Data and Maps:** The revised map can be found in the following link: . RAD GIS Lab staff continue work with Meghan Wilson, the MRBI Initiatives Coordinator, on finalizing the FY2015 MRBI map, showing changes in focus areas and providing background data for these areas.



**Illinois Soil Classifiers Fall Tour: Pyramid State Park. One day meeting and tour. Soil pits and discussion.** <http://www.illinoissoils.org>

**Central States Forest Soils Workshop: Tennessee.** The 37<sup>th</sup> annual **Central States Forest Soils Workshop** will take place this year in the great state of Tennessee! Hold the dates of **October 10 – 12**. We will be visiting the southern Cumberland Plateau and the surrounding area. We are proud to welcome our sponsors [The University of the South](#) and [Tennessee State Parks](#). Traditionally, the 6 hosts states have been Tennessee, Kentucky, Ohio, Illinois, Indiana, and Missouri. This year, I am also inviting Georgia and Alabama since we will be so close.

As the host state, Tennessee will be coordinating the meeting approval process for USDA employees. Look for that information very soon! We will be needing that back by about June 5<sup>th</sup>.

### Actions

May, 2017

- Mark your calendars
- Help spread the word among your forest and soil science communities
- Watch for the meeting approval forms coming soon
- If I have the wrong contact for your state, please send me the correct one!

We look forward to seeing you in Tennessee.

## CONTACT

**David McMillen, LPSS**

*State Soil Scientist*

801 Broadway, Suite 675

Nashville, TN 37203

(615) 277-2550 office

**Farm Progress Show: September 2017. Decatur, IL. See you in the pit!**

**Illinois V. Indiana High school soil judging at the Farm Progress Show.** Illinois/Indiana FFA Soils Judging Contest. Gary Steinhardt from Purdue has been providing the technical expertise, with assistance from Tom Bechmann with Farm Progress. Indiana FFA rules and Illinois FFA are much different.

The actual contest is on the first morning of the Farm Progress Show, Tuesday August 29.

## CONTACT:

N. Dennis Bowman

Extension Educator, Commercial Ag-Field Crops

University of Illinois Extension/Crop Sciences

N307 Turner Hall MC046

Urbana, IL 61801

[ndbowman@illinois.edu](mailto:ndbowman@illinois.edu)

217-244-0851

**Friends of the Pleistocene! 57<sup>th</sup> Midwestern Cell Friends of the Pleistocene field conference in Bloomington on May 20-21, 2017**

Bill Monaghan, Henry Loope, and I invite you to the 57<sup>th</sup> Friends of the Pleistocene field conference in Bloomington, IN on May 20-21, 2017, which is also hosted by the Indiana Geological Survey. The title for the 2017 FOP is: *At the edge of the Laurentide Ice Sheet: Stratigraphy and Chronology of Glacial Deposits in Central Indiana*. We're now ready for registration! More details about the trip can be had at <https://igs.indiana.edu/FOP/>.

As the title implies, we'll focus on the so-called "Terminal Moraine" (mostly as described by Leverett and Taylor, 1915) between Bloomington and Indianapolis areas and discuss the processes and chronology of the Laurentide Ice Sheet (LIS). What does the "Terminal Moraine" look like in central Indiana? When did the LIS arrive? What was the rate of LIS flow? How do new dating methods (AMS and OSL) effect our ability to resolve the dynamics of the LIS? We discuss new chronologies for ice margin events associated with the +/- 3,000 years before and after the "Terminal Moraine", present field evidence for a significant retreat and readvance of the ice sheet ~22,000 years ago and what this event indicated about the dynamics of the LIS as it left its LGM "terminal" position.

While I'd like all of you to attend, we only have ~80 spaces. The costs will be \$115 and the fee include the usual: buses and coffee/donuts on

Conferences: <https://indianauniv.ungerboeck.com/prod/emc00/register.aspx?OrgCode=10&EvtID=7957&AppCode=REG&CC=117031603651>

# “Soil Survey Interpretations — Bringing Soil Survey Users and Producers Together”

## PROGRAM TOPICS

- Soil Survey Interpretations
- Soil Health and Dynamic Soil Properties
- Digital Soil Mapping
- National and Regional Reports
- University Research and Reports

## FIELD TRIP

On Wednesday, July 13, join a field trip looking at soil-geomorphic relationships on ice-walled lake plains and relict periglacial features, soil variability, hydric soils, septic loading rates, dynamic soil properties, and bison at Nachusa Grasslands ending with a tour of a local whiskey distillery and discussions of local agriculture.

## **2016 North Central Regional Cooperative Soil Survey Conf. Agenda**

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All activities at DeKalb County Farm Bureau facility.

### **Tuesday, July 12, 2016**

10:00AM - 12:00PM North Central Extension & Research Committee Meeting (NCERA)

Mickey Ransom, Kansas State Univ.  
Brian Slater, Ohio State Univ.  
Douglas Malo, South Dakota State Univ.  
Curtis Monger, NRCS  
Kevin McSweeney, Univ. of Illinois  
David Lindbo, NRCS  
David Hoover, NRCS  
Lee Burras, Iowa State Univ.  
Cathy Seybold, NRCS  
Henry Ferguson, NRCS

12:00PM - 1:00PM Registration

1:00PM - 1:05 PM Welcome and Housekeeping Ron Collman, SSS, NRCS, Illinois  
Mike Konen, Assoc. Professor, Northern Illinois University

1:05PM - 2:15PM National Cooperative Soil Survey Reports

### **National Office Perspective David Lindbo**

Link to YouTube of this presentation: <https://youtu.be/TFQT3Oac--U>.

**NSSC Perspective Dave Hoover [LINK]**

**National Perspective of Soil Survey Use and Interpretations Cathy Seybold [LINK]**

2:15PM - 2:30PM Break

2:30PM - 3:15PM **Cooperator Updates**



3:15PM - 4:00PM **MLRA Regional Updates**

SSRO5, Salina, KS [LINK]

SSRO6, Morgantown, WV [LINK]

SSRO7, Auburn, AL

SSRO10, Minneapolis, MN [LINK]

SSRO11, Indianapolis, IN [LINK]

SSRO12, Amherst, MA [LINK]

4:00PM - 4:15PM Illinois Soil Survey [LINK]

4:15PM - 5:30PM Breakout Committee Meetings

New Technology

Standards and Technology

Interpretations

Research Needs

**Wednesday, July 13, 2016**

Time Activity

8:00AM - 5:00PM Field Trip: "Pedology, Geomorphology, and Dynamic Soil Properties of Northcentral Illinois"

Field trip looking at soil-geomorphic relationships on ice-walled lake plains and relict periglacial features, soil variability, hydric soils, septic loading rates, and dynamic soil properties and bison at Nachusa Grasslands ending with a tour of a local whiskey distillery and discussions of local agriculture. Lunch at Nachusa Grasslands. LINKS to Pictures





**Thursday Morning, July 14, 2016**

8:00AM - 8:20AM      Mapping and Interpreting Soil Change in Iowa      Lee Burras, ISU



[LINK]

8:20AM - 8:40AM Defining Colluvium and Alluvium: Sorting Through the Results of an International Survey  
Brad Miller, ISU



[LINK]

8:40AM - 9:10AM Mississippi River Could Make Dogtooth Bend Peninsula in Illinois an Island Ken Olson,  
U of I



[LINK]

9:10AM - 9:30AM The Changing Growing Season Hydro-Climatology in the Midwest Dave Chagnon, NIU



[LINK]

9:30AM - 10:20AM Break and Poster Session

10:20AM - 10:40AM Soil Interpretations: Their Application, Role, and Place In Professional Practice Pat  
Kelsey, WBK Engineering, LLC



[LINK]

10:40AM - 11:00AM Soil Magnetic Susceptibility as a Quantitative Proxy for Soil Drainage Dave Grimley,  
ISGS



[LINK]



11:00AM - 11:20AM Soil Systems, Catenas, and Series: A Spatial Hierarchy for DSM and Disaggregation  
Brian Slater, TOSU



[LINK]

11:20AM - 11:40AM Soil Hydraulic Property Estimation in Forest and Grass Catenas of MLRA 120 Trinity Baker, UK; Tanja Williamson, USGS; Brad Lee, UK



[LINK]

11:40AM - 1:00PM Lunch (on own)

Thursday Afternoon, July 14, 2016

1:00PM - 1:20PM

Prioritizing Rectification of Soil Lines for SSURGO

Martin Rosek, NRCS, MI; Adolpho Diaz



[LINK]

1:20PM - 1:40PM Applications of LIDAR in Illinois Tim Prescott, NRCS, IL



1:40PM - 2:00PM Value of Soil Survey for Site Specific Crop Management Dave Rahe, RPM Soils, LLC





[LINK]

2:00PM - 2:20PM Use of Soils Information for Golf Course Turf and Resource Management Dan Dinelli, CGCS, North Shore Country Club, Glenview, IL



[LINK]

2:20PM - 3:00PM Break and Poster Session

3:00PM - 3:20PM Properties and Observations of Patterned Ground Resulting from Permafrost in Illinois Mike Konen, NIU



[LINK]

3:20PM - 3:40PM The History and Use of Soils Information to Determine Loading Rates for Septic Systems Bill Kreznor, William R. Kreznor & Associates, Inc. and Bruce Putman, Putman Soil Testing Inc.



[LINK]

3:40PM - 4:00PM The Future of Soil Survey Information and Interpretation Stephen Roecker, Jason Nemecek, Dylan Beaudette, USDA-NRCS



[LINK]

4:00PM - 4:20PM Future of Soil Science: Role of Soils and Soil Survey Sam Indorante, SIU-C, USDA-NRCS (ACES)



[LINK]

**Poster Presentations at the North Central States Soil Planning Conference:**

1. Surface Topography of DeKalb County, IL: 2009 LIDAR Base Earth Elevation Data: Don Luman (Illinois State Geological Survey)
2. Soil Series as a Central Pedological Concept Dr. Sam Indorante (USDA NRCSP, Eric Brevik, (Dickenson State University)
3. Technical Soil Services and Soil Survey Wisconsin Fact Sheets, Jason Nemecek, (USDA, NRCS)
4. Wisconsin Crop Index, Jason Nemecek, (USDA, NRCS)
5. Drought and Precipitation Climate and Monitoring Tools, Beth Hall and Meichael TImlin, (Midwestern Regionals Climate Center, Prairie Research Institute, University of Illinois UC)
6. The SSSA Fundamental Changes to Soil Taxonomy Task Force, Mark Stolt, Brien Needelman, Dylan Beaudette, Patrick Drohan, John Galbraith, Jonathan Hempel, David Lindbo, Curtis Monger, Anthony O'Green, Marty Rabenhorst, Mickey Ransom, Joey Shaw
7. Agriculture, Soils and Water: Digital Soils Mapping in Honduras, Phillip Owens (Purdue University), Minerva Dorantes (Purdue University), Jenette Ashtekar, Zamir Libohova (USDA, NRCS)
8. General Soil Map for Carbondale (Marion) MLRA, Jon Bathgate
9. Studying Soil Change at the Captain Mine Site in Perry County, IL (MLRA Region 11), Kevin McSweeney (University of Illinois), Bob Dunker (University of Illinois), Ron Collman (USDA, NRCS), Sam Indorante, (USDA, NRCS)
10. A Purposive Sampling Design for Mapping Soil Health, Elaine Jordan, Bradley Miller, Michael Castelano, (Iowa State University)
11. Scalable Solution for High Resolution Elevation Data-CyberGIS, Timothy Prescott (USDA-NRCS)
12. Using Web Soil Survey for Mapping Management Zones on Golf Courses, Landon Baumgartner, Richard Boniak (George Williams College of Aurora University), Sam Indorante (Southern Illinois University-Carbondale), David Rahe (RPM Soils LLC.), Trey Anderson (Certified Golf Course Superintendent), Edward Nagle (Chicago District Golf Association)
13. Soil Landscapes and Soil Systems, John Bathgate, Sam Indorante, Sharon Waltman, Tom D'avello (USDA-NRCS)
14. Soil Hydraulic Property Estimation Under Major Land-uses in the Shawnee Hills, Trinity Baker (University of Kentucky), Tanja Williamson (USGS), Brad Lee (University of Kentucky)
15. Projected Climate Changes at the Shawnee Hills Sites and Incorporation with Simulation of Soil-Water Storage, Tanja Williamson (USGS), Brad Lee (University of Kentucky)

16. 1950's through 1980's Accelerated Soil Survey in Illinois with special guests from neighboring states Earl Voss took most of the slides. Ron Collman scanned the slides and set up the slideshow presentation.
17. Soil Tunnel. Provided by the KSSL, Wade Bott delivered and nearly single handily set the tunnel up for Display.

## 18. Machine-Assisted Landform Classification

Andrew C. Phillips <sup>1</sup>, Nathan P. Casler <sup>2</sup>, and Donald A. Keefer <sup>1</sup>; <sup>1</sup> Illinois State Geological Survey, Prairie Research Institute; <sup>2</sup> CyberGIS Center for Advanced Digital and Spatial Studies; University of Illinois at Urbana-Champaign.

Friday, July 15, 2016

Time Activity Presenter(s)

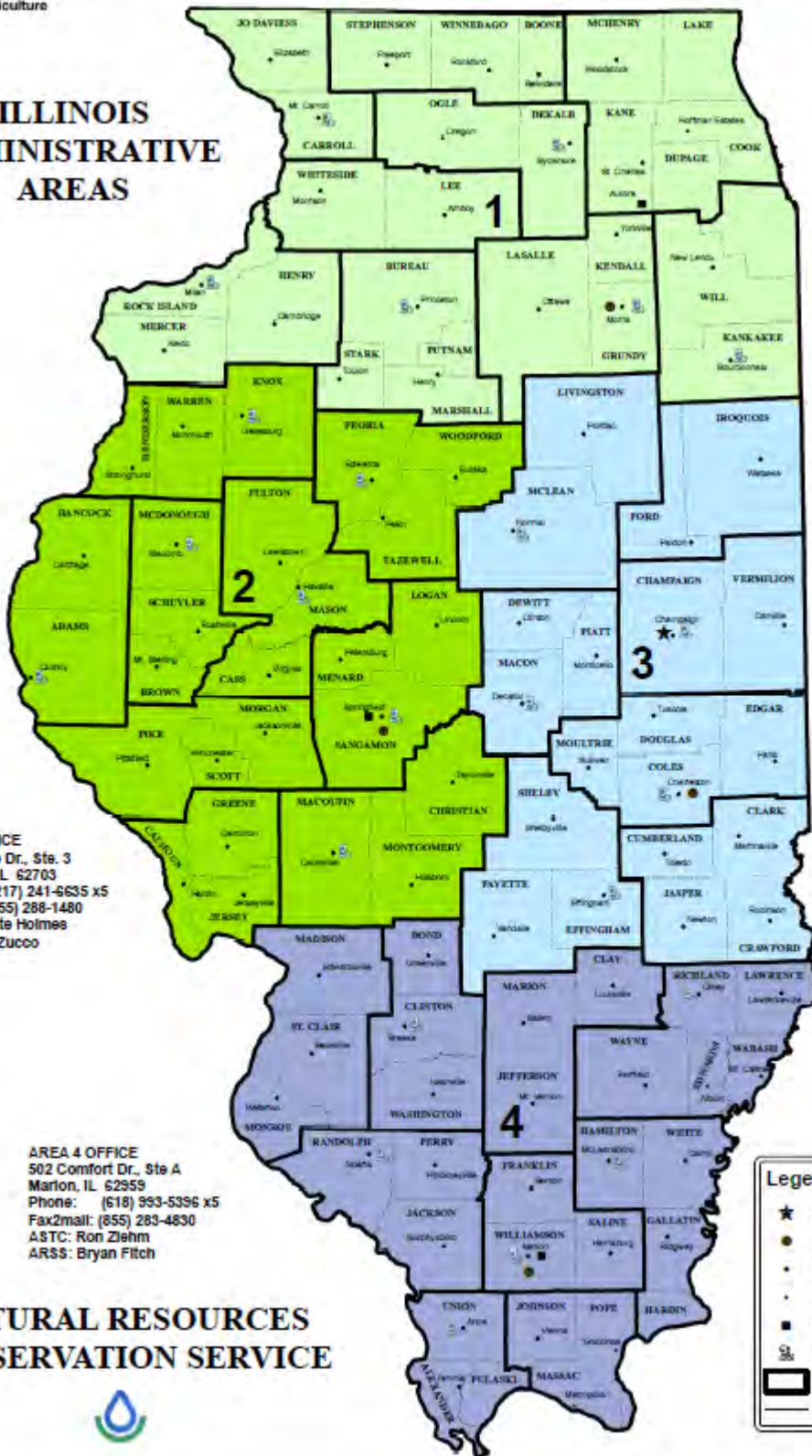
8:00AM - 12:00PM Committee Reports and Wrap Up [LINK]

Original registration List: Highlighted in yellow were in attendance, those in Red were registered but did not attend. Those not highlighted we don't think were there, but were originally registered. In addition to these, there were speakers at each of the field trip locations.

Bradley Miller	Jeffrey Glanville	Tiffany Justus	Clint Bailey
Bruce Putman	Jennie Atkins	Tonie J. Endres	Kevin Godsey
Clayton Heffter	Jenwei Tsai	Trinity J. Baker	Luis A. Hernandez
Landon Baumgartner	John Allen	Wade Bott	Pam Thomas
Mary Malo	john beck	WILLIAM KREZNOR	Steve Baker
Richard Boniak	John S. Lohse	Douglas Malo	Kamara Holmes
Aubrey Dalbec	John Warner	Dr. Alexander Gennadiyev	Abdelmonem Mohamed Amer
Beth Bednarek	Jorge Lugo	Elaine Jordan	Anne Dinges
Beth Hall	Kenneth R. Olson	Frank Heisner	Bryan Hill
Bradley Cate	Kevin McSweeney	George Geatz	Dennis Anthony
Brian Slater	Kevin Norwood	Henry Ferguson	Harvey Thorleifson
Cathy Seybold	Lee Burras	Jason Nemecek	Ian Kenney
Chris Baxter	Mark Bramstedt	Rick Neilson	J. Josiah Parsley
Curtis Monger	Martin Rosek	Ron Collman	James Mulcahy
Dan Dinelli	Michael Timlin	Samuel J. Indorante, Ph.D.	Jeffrey Hellerich
Darrell Schulze	Michael Whited	Sarah Smith	Kristin Brennan
David A. Grimley	Mickey Ransom	Scott Wiesbrook	M. Natalie Irizarry
David Changnon	Mike Konen	Skye Wills	Thomas Elsey
David Hoover	Neil Dominy	Tanja Williamson	Tom Boyd
David Rahe	Patrick Kelsey	Brad Lee	Wes Krug
Diane Lamb	Rick Bednarek	Jay Wise	Willson Missina Faria
		Karla D. Petges	



# ILLINOIS ADMINISTRATIVE AREAS



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 ARSS: Mark Bramstedt

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 SSS: Ron Collman

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 ARSS: Troy Fahrenbacher

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 ARSS: Marc Zucco

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 ASTC: Ron Ziehm  
 ARSS: Bryan Fitch

**Legend**

- ★ STATE OFFICE
- AREA OFFICE
- ◊ FIELD OFFICE
- ◆ SWCD OFFICE
- ◼ MLRA SOIL SURVEY OFFICE
- ⊙ VTC
- ▭ District Groups
- County Boundary

## NATURAL RESOURCES CONSERVATION SERVICE

