Geospatial Data, Services, and Products
Federal Programs -- USDA NRCS

National Surveying, mapping and geospatial conference

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NRCS provides America's farmers and ranchers with financial and technical assistance to voluntarily put conservation on the ground, not only helping the environment but agricultural operations, too.
Over the past four years...

- Enrolled more than 115 million acres into conservation
- Applied more than 4 million conservation practices
- Committed more than $9.7 billion in assistance

Helping producers across the country protect our natural resources for the future.
NRCS Applications using Geospatial Products & Services

• Field Office Conservation Planning
• Engineering Field Tools
• Terrain Mapping
• Hydrologic Modeling
• Dam Breech simulation studies
“INTEGRATED”
Topologically correct National Planning Database from existing datasets enhanced with web editing tools

- Common Land Units
- Easements
- Planning Land Units
- Parcel Boundaries
- Public Land Survey
- Watershed Boundaries
- Streams & Ponds

NAIP leaf on 1 meter
Natural Color 1 ft / 6” Elevation (LiDAR/IFSAR/NED)
National Geospatial Center of Excellence

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• Geospatial data leadership:

• Coordinate with partner agencies in the National Agriculture Imagery Program and National Digital Orthoimagery Program
• Geospatial data leadership:

  • Policy on use of geographic information systems (GIS) and global positioning systems (GPS).

  • Digital data support for service centers and programs.

  e.g., NRI imagery
  • Scale: 1 inch = 660 ft.
  • GRD: 2.5 inches
Geospatial Training Courses

- **ArcGIS 4: Sharing Content on the Web**
  - 3 day course to provide State GIS Specialists knowledge to publish State and local geospatial data as web services.

- **Introduction to ArcGIS Pro for GIS Professionals**
  - 3 day course on next gen 64-bit geospatial desktop application to work in 2D and 3D. Can run concurrent with existing Customer Service Toolkit environment.

- **NRCS Elevation Workshop**
  - Data management and analysis.
Remote Sensing Data Mart (RSDM)
- Manage imagery and other remote sensing products used in support of the National Resources Inventory (NRI) and Stewardship Lands Imagery (SLI) programs.

High Resolution Elevation Data Mart (HREDM)
- Manage and maintain Agency investments in IFSAR and LiDAR. An enterprise solution that reduces management and duplication at state and local levels.

GeoObserver for Easements
- A nationally consistent tool for monitoring stewardship lands. Provides Easements Program Division reports without states generating the data.

GeoObserver for Dams
- Provides accurate locations for NRCS dams and ability to manage the dams dataset. Improves consistency and quality by enforcing business rules during data entry or update.
Soil Science Division

- Inventory of the soil and vegetation resources (ecology)
- Make soil maps
- Interpretative soil information
- Provide a form useful to a wide range of customers
- Applied research related to conservation needs
Soil Business Systems

• Data Collection Systems
  • NASIS Soils Database
  • Ecological Site Database
  • Laboratory Information System

• Information Delivery
  • Web Soil Survey
  • Soil Data Access Tools
  • Lab Characterization Data Access
– National Resources Inventory (NRI)

– National Water and Climate Center-Snow Survey and Water Supply forecasting
• The National Resources Inventory (NRI):
  – Statistical survey to assess conditions and trends for soil, water, and related resources on nonfederal, rural lands
  – Supports agricultural and environmental policy development and program implementation
  – Inventory on 5- year intervals from 1982 to 1997 and annually since 2001
  – Conducted by NRCS in cooperation with the Iowa State University.
800,000 sample sites
• NRI data gathering
  – Photo-interpretation, ancillary materials, field visits, historical records
  – Interpretation, classification, and measurement; QA

• 3 Remote Sensing Laboratories
  » East       Greensboro
  » Central    Ft. Worth
  » West       Portland
National Water and Climate Center

Manual snow course

SNOTEL

SCAN

Master stations in Utah, Idaho, Alaska, Ohio, Missouri, Mississippi, and Montana.
SSWSF Program Users and Cooperators

- Agriculture
- Drought and Flood Risk Reduction
- Wildlife management
- Municipal Water Management, Reservoir Management, Power Generation
- Recreation
Conservation Effects Assessment Project (CEAP)

Scope:
- Initially water quality, soil quality, and water conservation on cropland
- Wildlife habitat, grazing lands, and wetlands
Voluntary conservation is working:

Conservation has reduced subsurface Nitrogen losses by 2.1 billion pounds per year.

- Loss reduction achieved, 31%
- Potential future loss reduction, 69%
Conservation Terraces

National Agricultural Image Program

USGS Topo Map

Hillshade from LiDAR
Targeting Within Watersheds for Improved Planning:
Agricultural Conservation Planning Framework

One possible conservation planning scenario for Lime Creek.

Legend
Controlled drainage potential
High
Recommended
Runoff risk
Critical
Very high
Grassed waterways
Water detention impoundments
Nutrient removal wetland
Vegetated buffer
Riparian function
Intensified nutrient uptake
Diversified vegetation
Stream network
Side by Side comparison NED10m and 2m LiDAR

10 Meter NED

2 Meter LiDAR
**Terrain Data**

- LiDAR-derived digital elevation model
- 3m horizontal resolution
- Hydrologically enforced

LiDAR data used in the Agricultural Conservation Planning Framework, a new tool for small watershed planning developed in partnership between USDA ARS, NRCS CEAP and CIG, and the EDF.
Dam Rehabilitation

Hydrologic analysis to generate sub-watersheds, slope, and other 3D spot analysis.

 GeoObserver for Dams
UAS Background

• UAS are classified as aircraft by the FAA

• Three categories of UAS activities
  – Hobbyist
  – Commercial
  – Public Agency
    • Requires Certificate of Authorization (COA)
In House or Contract Out UAS Missions?

• In House
  – Purchase and maintenance of UAS
  – Pilot training
  – Liability

• Contract
  – BPA
    • Sole source to 8(a)?
    • Multiple BPAs?
    • Streamlined process
  – IDIQ
NRCS business leaders:

• David W Smith, Deputy Chief Soil Science and Resource Assessment (SSRA)

• Ron Alvarado, (Acting) Deputy Chief for Science and Technology (S&T)

• Ray Coleman, Chief Information Officer (CIO)

• Darren Hickman, Director, National Geospatial Center of Excellence

• Frank Geter, Enterprise Business Initiative (EBI) Team Leader