National Geospatial Management Center .... Moving into the Future

2011 National Cooperative Soil Survey Conference  (Asheville NC)

May 23, 2011

Sam Brown, Soil Scientist

“Web Services to support Soil Survey Program ”

National Geospatial Management Center (NGMC)
National Geospatial Management Center (NMGC)

Mission

To provide consumers with accessible, always available, up-to-date, authoritative, and trusted geospatial data and value-added cartography and geospatial services:

Key Services

• Mapping sciences (cartography, GIS, remote sensing, PNT technology)
• Aerial photography, elevation data, imagery, remote sensing, global positioning systems, training, and **Web Services** (**ArcMap and URL Internet access**)  
• Natural resources data, geospatial technology, National Resources Inventory
• **Provide support for Soil Survey**, Engineering, Conservation Planning (CDSI), and Other agency programs
• Geospatial Data Warehousing & Distribution
In 2007, NGMC (former NCGC) began to inventory our data themes and expand the availability for increased NRCS programs use.
http://ncgcweb.ftw.nrcs.usda.gov/

"GeoPortal"

The GeoPortal provides access to NRCS Web Services
Access to more than 50 Web Services

Step One, Log on to:

http://ncgcweb.ftw.nrcs.usda.gov/

Step Two,
In the Search GeoPortal window enter a data theme, Example: “Elevation,” and Click the Go Button!
Step Three

On the menu bar
Click on “Live Data”
Registry of Web Services - USDA GeoPortal

Step Three

On the menu bar
Click on “Live Data”
NGMC Image Server Web Services

Add Image Server Connection

Server Name: imageserver1.ftw.nrcs.usda.gov:10010

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Only show services available in the current view's extent
Title:

Selected Services:
### Current Image Service Connections (ArcMap)

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<td>Landsat and...</td>
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</table>
NGMC (former NCGC) began to serve NAIP imagery in 2007 as part of our discovery business in order to provide an authoritative image base to assist NRCS program areas with visualization and area-wide assessments.
NAIP 2010, Northeast Minnesota
What ground features can you identify easier with CIR Imagery?

Ground Feature Type

1) Hydric Soil with Vegetation
2) Hydric Soil with Submerged Vegetation
3) Mixed Hardwood/Coniferous Forests
4) Hardwood Forest
5) Coniferous Forest
Some states only had black and white imagery on the WSS.

NCGC partnered with the SSD and ITC to use NAIP as the official background imagery for the Web Soil Survey.
Web Services (Arc Map) to Support NRCS Imagery for Programs Use
Alaska Web Service

May 2011
USGS, State of Hawaii and USDA have contracted for complete coverage of all 8 major Hawaiian Islands with DigitalGlobe/WorldView-2 Satellite Orthoimagery.

Hawaii will be first state with complete collection with DigitalGlobe – WorldView-2 (.5 Meter GSD), 8 Band Multi-Spectral Imagery!
Please Note: Extra coastal water areas are acquired when possible.

Oahu, Hawaii
DG-WorldView2
Image Dates:
January 2011 (+ 95%)
Oahu, East Coast
DG-WV2
January 2011
Satellite Imagery:

- Always collected at same everyday (10:30 Local Time).

- NADIR was fairly good on some/most of Oahu.
Hawaii
DG-QB2
2003-2008

- Data delivered by DOQQ without radiometric balancing.
Please Note:
All data from 2/5/2011

GUAM
2/07/2011

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Please Note:
All data from 2/5/2011
Pacific Basin Status

- USDA has collected approximately ~ 98% of all land mass within the jurisdiction of the United States:
  - Guam
  - Commonwealth of the Northern Mariana Islands
  - Northwestern Hawaiian Islands
  - Palau
  - American Samoa
  - Federated States of Micronesia
  - Marshall Islands
  - US Trusts (Palmyra, Wake, etc.)

- Most islands acquired also contain any visible shallow water reef areas.
- All data is Satellite 1 Meter or higher resolution (DG-QB2, DG-WV2, GeoEye-1)
- USDA upgraded most but not all DG-QB2 data to Enterprise Premium License in Fall 2009.
- Funding would not allow complete Enterprise Premium Licenses in Pacific Basin.
- Enterprise Premium (100% DG-QB2, DG-WV2) for: Guam, CNMI, Palau, American Samoa, NWHI (except 1)
- The following have a mixture Enterprise Premium and NGA NextView/Civil Government: Marshall Islands, Federated States of Micronesia and US Trusts.
WorldView-2
True Color
0.6 meter, 8 band
to expand field
remote activities
WorldView-2 uses reflectance returns to provide an array of soil and plant condition indicators.
10 Meter Hillshade (Shaded Relief) dataset
NGMC worked with the Gateway Team to add the State Geology Layer on the Gateway in 2010 to support the soil survey MLRA update Inventory.

Is there a business requirement to make the State Geology Layer available in a Web Service?
# State Geology Layer

## WHAT

Here are the available map layers for your selected area of interest.

<table>
<thead>
<tr>
<th>Layer Type</th>
<th>Description</th>
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AOI in Colorado
Connecting to Services

• Connect to services through ArcCatalog or ArcMap by adding an ArcGIS connection to:
  
  http://ncgcws.ftw.nrcs.usda.gov/arcgis/services

  When connected, click on folder to view data.

• When using Image Server Plug-in (fast connection) to access the imagery, the connection can be in ArcMap. Click the “Add Image Server Connection” button and enter:
  
  http://ncgcimg01.ftw.nrcs.usda.gov:10010/

• Note: The Image Server Plug-in is standard in ArcGIS 9.3. In ArcGIS 9.2, NRCS users must request ITS installation.
NRCS CDSI EQIP (FA) Ranking Pilot - Eight States

The purpose of the pilot is to demonstrate a GIS solution to automate financial assistance (FA) using a ranking tool and provision priority national, state and local data layers in a scientific manner based on resource concerns to support area-wide assessments and conservation planning.

Objectives includes:
- Test the applicability of NRCS’ new resource concerns and planning criteria list
- Evaluate the concept of automated ranking for financial assistance using state and local criteria in a geospatial environment
- Capture and evaluate time savings for the ranking of EQIP applications
- Test and evaluate geospatial data provisioning options, methodologies, and services to support automated FA ranking and conservation planning functions

More than 50 priority data layers, including the SSURGO Layer (Attributes) were integrated into the CDSI EQIP FA Ranking Tool.
CDSI Services Description

- NGMC received a file geodatabase with 24 pre-processed soils interps for 8 pilot states based on requests from the states (as needed for the ranking pilot).

- The data was loaded into SQL Server 2008 / ArcSDE.

- NGMC created a service for each of the eight CDSI EQIP Ranking Tool Pilot states (AL, CA, CO, IN, KS, KY, NE, OR, UT) in ArcGIS Server 10.

- The service contains 24 web service layers, each representing one of the soil interps.

- Each Interp can be viewed as a separate sublayer in the service.
4. Accessing the Data - via the NRCS Ranking Mart or Internet Map Service

Accessing the Data

Access via the NRCS Ranking Mart
Start Internet Explorer and go to http://web1.ftw.nrcs.usda.gov/nrcsrankingmart

Or

Access via the Internet Map Service Using a GIS such as ArcCatalog or ArcMap
There are web services available using this method.

Each service contains different data to allow advanced users to recombine and use the data as necessary to accomplish their work.

Data can be accessed through ArcCatalog 9.3 or ArcMap 9.3 by adding an ArcGIS Server connection.

In ArcCatalog, click on GIS Servers>Add ArcGIS Server in the catalog tree. Select “Use GIS Services” and click “Next”.
Choose “Internet” as the type of ArcGIS Server connection and enter http://gisapps1.ftw.nrcs.usda.gov/arcgis/services
Click “Finish”.

4. Accessing the Data -

NRCS Ranking Mart http://web1.ftw nrcs.usda.gov/nrcsrankingmart2/
4. Accessing the Data

Web Map Service - Data Available using a GIS such as ArcMap

Data in nrcsranking is specific to the FA Ranking Pilot
4. Accessing the Data

Data in nrcsranking is specific to the FA Ranking Pilot

Contents of nrcsranking:

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NRCS CDSI EQIP Ranking Mart Soil Attributes
Farmland Class
NRCS CDSI EQIP Ranking Mart Soil Attribute Salinity EC_Class
Mississippi River Flooding
NGMC Web Services

Slides
NGMC Cache Tile Service

Slides
NGMC Cache Tile Layers

http://web1.ftw.nrcs.usda.gov/cachetiles/
Eastern Oklahoma

NAIP Imagery

NGMC Cache Tile Layers
2011 Asheville NC National Soil Survey Conference
Questions?

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817-509-3401