

Federal Interagency Committee

Wednesday, May 6, 2015 9:30 AM – 12:00 PM

US Army Corps of Engineers, Wilmington District Office
69 Darlington Ave, Wilmington NC 28403, Lobby Conference Room

Doug Newcomb (USFWS), Liz Porter (USACE), Holly Hixson Stratton (USFS), Dave Shaffer (USACE), Denise Smith (USMC), Erik Hund (NOAA), Scott Maners (USACE), Spencer Roylance (USACE), Trevor Lancaster (USACE), Hope Morgan (NC Department of Public Safety), Jeff Brown (CGIA) and on the phone David Wyatt (Eastern Band of Cherokee Indians), Mike Doherty (USACE), William Beatty (Federal Highway Administration), Charles Ferguson (NRCS)

1. Presentation: New NC LiDAR Data, Hope Morgan, NC Department of Public Safety

USGS and Hurricane Sandy recovery funding; NC coastal area was priority 1; needed better accuracy than the 2001-2005 statewide LiDAR, particularly along the coast.

Also collected: Topo-Bathymetry that will be on Digital Coast this month

Phase 2 (20 counties west of the USGS Phase 1 area) is complete for LAS files, all available online for download. <http://www.ncfloodmaps.com/lidar.htm>

The LiDAR in Phases 2 and 3 are consistent with State of North Carolina LiDAR specifications. USGS will add NC data to Earth Explorer.

Military bases have LiDAR data (acquired ground points only) not for public release.

LiDAR will be useful in extracting building footprints.

Note: Many roads are not classified as roads if not included as a State road (classified as ground).

Products from NCDPS:

- LAS classified

- Terrain on request

- DEM – working on download function

Hope will be happy to send out a video (not displayed today) to the group.

Phase 2 – this month. DEMs 5-ft., 10, 20, and 50 have been developed.

Phase 1 – processing classes for consistency with Phase 2 classes

Phase 3 -- \$3.53 million was received from NC General Assembly. Expectations for funding phases 4 and 5 next year; NCDOT is contributing partial funding.

For application of Orthoimagery and LiDAR in parallel; users need to know the acquisition year of imagery and LiDAR.

Technical notes: apparent structures under 800 square feet in area are not included as buildings. There are a few data voids, but not many.

Utility participation? Utility profiles are visible where there are not a lot of trees.

Download tool is in beta. Please try it. Users may download one tile or up to 4 tiles to get what is in their polygon area of interest. The goal is 20 tiles for download at a time. NCDPS is lacking a heavy duty network. For large data requests, consumers need to furnish a portable drive.

NCID is required for authenticated access, at no charge.

Legacy LiDAR data is available on FRIS for now (<http://fris.nc.gov/fris/>) and later the new location.

User may experience errors on some machines depending on security.

Data are organized by tile and by county. LAS points require 300 MB of disk storage space per tile. For example, Brunswick County contains 10 billion points. There are 14,000 tiles in Phase 2. Denise Smith appreciates the work done for the USACE base. It opened a door for collaboration with the State. Hope added that examples of success and following rules should help.

NCDPS has had 150 LiDAR data requests since February. Authentication enables NCDPS to see where LiDAR tiles are being used. 7-zip compression is applied, a free open source software.

3-DEP emphasizes the business value of LiDAR, including flood hazard analysis; forecasting damage, sending recovery and damage assessment staff in areas of highest risk. Analysis includes raster analysis around stream gage sites, looking at half-foot increments and impact. Also, transportation asset management. Photogrammetry is looking at analysis for design and planning. Also, vegetation areas, volume of vegetation, forest fire fuel loads. Plus stream determination for floodplain mapping.

Other uses include wetland identification, aviation obstruction using heights of buildings, and structure delineation. Building footprints will be downloadable. NCDPS is updating footprints via change detection and extracting from LiDAR. Also, stream delineation could be done efficiently. For wetlands, Hope described a need for color infrared imagery. CIR could be processed from statewide orthoimagery but NC needs to collectively figure out how to pay for it. NAIP is available in CIR but with leaf-on, 1-meter resolution. Also, LiDAR point intensity returns help target areas for site analysis.

Liz added that NCDOT studies rights of way and uses USACE definition of wetlands, for targeting purposes only. Ground teams do wetland jurisdictions. Leilani Paugh is using the USACE definition of wetlands and learning algorithms similar to USACE work; topography, soils, CIR. Different from NWI (stereo photogrammetry).

Hope added that NCDPS is also looking at manmade hazards, e.g., chemicals and rail lines that carry them. NCDPS is estimating day and night population for exposure analysis. And LiDAR is useful for floodplain map amendments. See <http://www.ncfloodmaps.com/lidar.htm>

2. Digital Coast, Erik Hund, NOAA

Erik presented the latest information on the Digital Coast – portal, tools, training, stories, and topics <http://coast.noaa.gov/digitalcoast/>. Digital Coast audiences are primarily state and local coastal managers. NOAA is partnering with the American Planning Association and others to further develop the Digital Coast. Erik described the components of the Digital Coast.

- Tools – About 50 tools provide a variety of functions and are applicable nationwide. Historic hurricane tracks are popular. The Sea Level Rise Viewer displays, for example, a 6-foot rise by confidence level. The Coastal Flood Exposure Mapper is another example of a thematic tool to inform users. <http://coast.noaa.gov/digitalcoast/tools/flood-exposure>
- Training – about 30 modules are available, for example “Deriving Shorelines from LiDAR” that “demonstrates how to convert lidar points to a tidal datum using the VDatum tool and extract a shoreline contour using ArcGIS.”
- Stories – examples that highlight coastal issues and accomplishments in the field, e.g., “Building Technical Capacity in Coastal Maine.”
- Topics – information organized and presented for topics including “Climate Adaptation.”
- Data Registry – 1,443 datasets are organized in 93 collections. Users may search by keyword or draw and area of interest on a map. Datasets include LiDAR, imagery, land cover, and marine planning. Users may access downloadable data, web services, and metadata. The site points to other portals, too. There is a Data Access Viewer for download (draw box and clip and ship; or FTP for tiles). Post-Sandy imagery is now available; Post-Sandy LiDAR will be the next addition to the registry. Storage is in geographic projection, including raster, point, and polygon datasets. Contour datasets up to 2 GB in disk storage space, are available for small areas at a time. Data customers including many engineering firms and other .com consumers, and many users from educational institutions (.edu).

A technical discussion included the convention that contours should be depicted at a minimum 3 times the vertical accuracy of the dataset. QL2 data can support 1-foot contours. The old (2001-2005) LiDAR from NC can support a 5-foot contour, but not a 2-foot contour with validity.

Also, Doug Newcomb intends to test different new sensors. USGS and companies are testing sensors. Hope Morgan offered independent QC by NC Geodetic Survey.

3. Roundtable Update from FIC Members

David Wyatt, Eastern Band of Cherokee Indians, continues to serve on the National Geospatial Advisory Committee (NGAC) and its cadastral subcommittee with Nancy von Meyer, parcel data expert. David is still working on modernizing tribal land records. He is also working on analysis of forestry related to logging.

Chad Ferguson, Natural Resources Conservation Service, is working on a tool within Esri that does soil data access and returns interpretations. It is well suited to use with gridded SURGO. It will be faster. Interpretation for NC takes 10 minutes for one variable. The tool will take a matter of hours for all interpretations. Chad is now working on soil properties. This is at the beta stage, and Chad is willing to share.

Holly Hixson Stratton reported that US Forest Service is going through a plan revision for national forests that is a large effort.

David Shaffer, USACE, reported that there is a flex based web mapping application for which he is collecting data layers for the application to support decisions. Under a contract with the USACE Mobile District, spatial staff are looking to collect all map services in the Southeast. Data layers from state sources and some municipal sources will be useful in the collection. David heavily uses NC OneMap and is happy with the parcel data progress. The parcel dataset is very important to the work of the Corps, and a statewide compilation updated twice a year will be valuable. David would like to see LiDAR 2-foot contours online. He is also working with NOAA in Asheville on climate data that is useful in wetland determination.

Mike Doherty (USACE, Rock Island District) is with the enterprise GIS group. A water resources initiative includes a map viewer to analyze cumulative effects of projects. Stressors for Corps projects are summarized by hydrologic unit. He is using NC data. This is part of a national program, but there is a regional approach. He is working with Liz. The effort is summarizing water stressors by watershed. There is not public web access.

Doug noted: Web access across agencies and by the public may be a good topic for a future FIC meeting. Mike added that USACE will publish a report for review. Doug noted that a mussel biologist would benefit from this information.

William Beatty, Federal Highway Administration, reported on the Highway Bill that includes a new rule making process, contains 7 national goals and measures, and has targets to meet goals. He is involved in efforts to push data out to entities like Metropolitan Planning Organizations. Road condition datasets are expanding to 100 percent. The All Roads Network Linear Referencing System is planned to achieve the goal for one national dataset. NCDOT's Rome Project (all statewide road centerlines) is a modification of Esri roads and highways. William is working with GO!NC (<http://ncdot.maps.arcgis.com>) as a way to distribute transportation data. The "Every Day Counts" initiative is to push out technology (safety edge). Geospatial Data Collaboration is another priority initiative. Operating agreements are not all in place, but NC is doing what is recommended.

Denise Smith, US Marine Corps, reported that USMC is consolidating data centers to a hub in Kansas City. Also, USMC is coordinating with other military branches to create the military mission footprint for the state to use for public release to support cooperative agreements regarding development. Denise is working on LiDAR acquired over the military installation. USMC is also doing real addressing on base for 911 response purposes. Current reliance on building numbers is not adequate for emergency response.

Erik Hund, NOAA, added that NOAA serves LiDAR and imagery and is redoing the interface for data consumers. Erik would like LAS points and breaklines from NC. He recommended contact with NOAA's Kirk Waters about other LiDAR products.

Liz Porter, USACE, has a project to do detective work. Laws USACE regulates – Clean Water Act and Rivers and Harbors Act, refer to navigable waters. The challenge is that navigable waters

are designated administrative ways, not mapped. Liz is finding navigability reports, searching historic collections, and working on a probability map of navigable waters. The Mobile District is collaborating on the effort. There will be a map interface for historic documents.

Scott Maners, USACE, database administrator for geospatial data in the Wilmington District, supports a variety of projects.

Trevor Lancaster, USACE, is working on hurricane evaluation studies for Pitt and Lenoir Counties. He uses web services from NC OneMap. Topographic surveying is part of his work.

Doug Newcomb, US Fish & Wildlife Service, is working with 4-band NAIP 2014 and 2012 imagery to do normalized difference vegetation index (NDVI) analysis by tile for each year and doing a change product at 1-meter resolution. On the coastline he might be able to pull out vegetation change along the coast as an erosion indicator. Doug is doing analysis of LiDAR, aggregating LAS files by county, and processing for canopy heights. Analysis down to 10 feet gives 25 points per raster cell. Might be able to get parts of trees, valuable in wildlife tracking and habitat analysis. Doug will do a 60-foot analysis to compare to old data and assess differences due to density of LiDAR points. Also, Doug is working with 1978 aerial photo data from USACE (1:9,600). He did scans and georeferenced, producing 2.5-foot pixels. Doug is working with East Carolina University and is seeking funding to geo-reference shoreline for change analysis. He has a 2-foot contour map done by NCDOT in 1960 with NAD 27 grid. USACE and NOAA expressed interest, and Doug has a scanner that handles up to E-size source maps.

4. Updates on NC OneMap, Statewide Orthoimagery, and NC Parcels

Jeff Brown, CGIA, presented current information on NC OneMap and the Geospatial Portal <http://data.nconemap.gov>. He reminded members that the URL for web services now ends in “.gov” not “.com” and to check for links in their applications. As a refresher, he demonstrated how to connect to web services for parcels as an example, and urged ArcGIS users to connect to the entire collection of services (add ArcGIS Server in ArcCatalog) via <http://services.nconemap.gov/arcgis/rest/services>. He also pointed out ways to consume WMS and WFS services from NC OneMap.

Imagery services and downloadable imagery are available in various formats from NC OneMap. 2014 orthoimagery was published in early 2015. Likewise, the 4th of 4 regions in the cycle of imagery updates was acquired by April 2015 and will be published early in 2016. The NC 911 Board approved a proposal to refresh orthoimagery in another 4-year cycle starting with acquisition for 27 coastal plain counties in 2016. The 6-inch ground resolution orthoimagery, consistent with state specifications, is subject to extensive visual quality control by the State project team and local governments as well as horizontal quality control managed by NC Geodetic Survey. USGS provided some cost-share funding related to the Greensboro-Winston-Salem urban area (2014) and also reviewed the imagery and found no quality issues. The availability of imagery services in WMS and REST formats, cached versions, and services with the latest available imagery is supporting a wide range of public and private business processes.

He also pointed out the availability of a seamlines shapefile that includes the date of acquisition for each image that is stitched into the orthoimagery.

The NC Parcels Project is nearing a complete statewide compilation of parcel data translated to a standardized set of fields. More than 80 counties are now included in web map services and web feature services. The workflow is for a county (assisted by the project team) to upload a shapefile of parcel boundaries with attributes from its tax database, use the cloud hosted Parcel Transformer (developed and maintained by the Carbon Project, Inc.) to set up a translation model that converts source field names to standard field names, and run a transformation that populates the new fields with values from the source with geometry as is. Results are organized by county for download from NC OneMap and published as a statewide map service and feature service via NC OneMap and from the cloud (<https://nc.carboncloud.net/wfs>). The statewide compilation is planned for completion by the end of June, including updates to the original 25 pilot counties.

5. Discussion

Erik Hund added that USACE LiDAR datasets are served by NOAA.

Doug is looking forward to a comparison of bathymetric LiDAR datasets. USACE expects to collect more in the future.

Jeff posed the question: do federal agencies have sufficient need for color infrared imagery that could be generated from the NC orthoimagery source data (collected as 4-band but delivered as 3-band to the client NC 911 Board and emergency communications centers) to fund and acquire color infrared products?

FIC members explained that business needs are numerous, but funding mechanisms are challenging. It is not typical for a federal agency to let a contract and transfer money for imagery products. USMC does not have a business need for CIR, so a funding mechanism is not applicable in that case. USACE does not have a business need; its wetlands determination work relies on field work.

Hope Morgan explained that it was far easier for USGS and North Carolina to individually pay for LiDAR acquisition in separate regions than to combine funds.

NOAA and the Farm Service Agency have indefinite delivery/indefinite quantity (IDIQ) contracts for services that may be applicable.

Erik suggested that CGIA do a presentation to the National Digital Orthoimagery Program at its upcoming meeting as a way to start a discussion. Federal agencies do collaborate and NDOP is a good forum for sharing technical information and discussing opportunities.

6. Next Meetings

The Executive Committee plans to meet in June. The agenda will include setting a date for a FIC meeting in late August or early September. The Executive Committee will solicit presentation ideas.