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A fresh angle on GIS and mapping news from Vermont…and the rest of the world

VGIS NEWS

Happenings At VCGI

Vermont Hydrography Dataset Update

Mike Brouillette, VCGI

VCGI is pleased to announce a long awaited update to the Vermont Hydrography Dataset (VHD). The older coverage-based VHD data, tiled by subbasin, has been replaced with an attribute enriched, statewide shapefile version of the NHD data model called "NHDGEOinSHP". The two attribution enrichment efforts; 1) Hydrographic Category, i.e., "intermittent" vs. "perennial"; and 2) Value Added Attributes have been fully integrated within the data in the "NHDLineEventFC" feature class and NHDFlowLineVAA.dbf table, respectively. The statewide file is approx. 160Mb. With apologies to those who can't download such files, it is a benefit to those who find themselves needing numerous subbasin datasets to cover their area of interest and it is easier to manage and maintain on our end.

The science behind the derivation of "Hydro Category" is detailed in a USGS Scientific Investigation Report - http://pubs.usgs.gov/sir/2006/5217/pdf/SIR2006-5217_report.pdf.

A detailed overview of the Value Added Attributes can be found at ftp://ftp.horizon-systems.com/NHDPlus/documentation/metadata.xml.

Also noteworthy is that the NHDFlowline theme is provided as a route with m-values using the PolylineZM shape. This makes it possible to use ArcMap linear referencing with the NHDGEOinSHP format.

With regards to using the data you can use the stock ArcView 9.x linear referencing tools, or alternately, the Hydro Event Management (HEM) Tools are a useful set of ArcView 9.x tools for managing event data created by the PNW Hydrography Framework (PNWHF) Partners. These tools are designed to support the creation, management, and refresh of event data that is referenced to stream data in the NHD format. For more information try the following sites:

- HEM main website - o http://hydro.reo.gov/redesign.html.
- Tools Overview - o http://hydro.reo.gov/documentation/HEM_Overview.pdf
- User Guide - o http://hydro.reo.gov/documentation/HEM_User_Guide_MSWord.zip

Note: It is still possible to use the ArcView 3.x NHDGEOSHP ArcView Toolkit available from http://nhd.usgs.gov/tools.html
Please call with any questions, ideas or general feedback: Mike Brouillette, 882-3008, mikeb@vcgi.org.

But Wait...There's More VHD News!

Mike Brouillette, VCGI

VCGI has created and made available a web-based tool that will help you, the user, provide VCGI (the Vermont NHD Steward) with corrections and updates to the local resolution Vermont Hydrography Dataset (VHD) in order to continually improve it. This tool, coined the **S**urface **Wa**ter **M**aintenance **T**ool (SWaMT), is located at http://maps.vcgi.org/swamt. (All of the source code and documentation is available to other states and interested individuals, free of charge, via a hyper-text link menu item on the home page. ~54Mb).

This effort is a United States Geological Survey (USGS) sponsored pilot project of the National Hydrography Dataset (NHD) Data Stewardship program(http://webhosts.cr.usgs.gov/steward/st2process.html) to improve, maintain and enrich the positional and attribute accuracy of the NHD.

VCGI would like to thank USGS for its financial support, as well as, participation from the Vermont Regional Planning Commissions, the Vermont Agency of Natural Resources, the USFS Green Mountain National Forest, USFWS and a number of state NHD stewards across the country for their generosity of time invested in reviewing the beta versions of the tool and providing valuable feedback.

It is with high hopes that this pilot website will provide a firm first step towards creating a sustainable state NHD stewardship foundation.

Please note that at this time the tool only addresses feedback for the local resolution VHD and only contains statewide imagery, e.g., Vermont Mapping Program 1:5k black and white orthos, i.e., “VMP orthos” and the USDA National Agricultural Imagery Program (NAIP). At some future point functionality may be added to also provide updates on the “high resolution” NHD, i.e., 1:24k NHD.

The Vemont Enterprise GIS Strategic Plan

Why have Vermont State Agencies developed an Enterprise GIS Strategy? The purpose of Enterprise Geographic Information System (GIS) Strategy is to define a common vision and establish a formal alliance among state agencies to efficiently and effectively expand and improve the state's use of GIS technology and to improve outreach and coordination with stakeholders outside state government. Ultimately the strategy is designed to provide faster and higher quality services, streamlined processes, and a less costly government.

Implementation of the strategic plan has led to the creation of an Enterprise GIS Business Plan and an Enterprise GIS Consortium (whose members must sign an MOU). Although voting membership is limited to state entities, non-voting "liasion members" are also encouraged to participate.

For more information: http://www.vcgi.org/about_vcgi/default.cfm?page=./projects/egis/default_content.cfm or contact Steve Sharp at 882-3006 or steves@vcgi.org

And just when you thought there couldn't possible be more VHD News...

Mike Brouillette, VCGI

The VGIS Surface Waters Data Standard has been updated and we invite your review over the next month. If anyone would like the original Word document in order to do edit tracking please let me know and I can forward you a copy.

The document can be viewed at http://www.vcgi.org/techres/standards/partii_section_f_update.pdf.

This updated Standard (Section F: Surface Waters Data Standard), now also includes the previous drainage basin standard (K: Drainage Basins Data Standard - Draft). With the advent of two national standards relating to surface waters, i.e., the National Hydrography Dataset (NHD) and the Watershed Boundary Dataset (WBD), having a single Vermont standard that essentially adopts both national standards seemed prudent.

New and Updated Data Available from VCGI

From the VCGI Data Warehouse Web Page

New:

- BoundaryTile_USNGVT, U.S. National Grid Index - Vermont
- EmergencyFlood_DFIRMC, FEMA Digital Flood Insurance Rate Map data (county-based)
- EmergencyFlood_DFIRMT, FEMA Digital Flood Insurance Rate Map data (town-based)
- LandLandcov_IMPERV2001, 2001 National Land Cover Dataset - Imperviousness - Vermont
- LandLandcov_LCLULCB01, Generalized Landcover/use for Champlain Basin - SAL 2001
- LandLandcov_LCLULCB92, Generalized Landcover/use for Champlain Basin - SAL 1992
- LandLandcov_NLCD2001, 2001 National Land Cover Dataset - Vermont
- TransRoad_HMSARCHIVE, VTrans Town Highway Map Archive (PDF and TIFF)

Updated:

- GeologicSoils_ONSITE, Onsite sewage disposal ratings for Vermont soils

- LandLandcov_LCA19962006, Landcover Change Analysis (LCA) - 1996-2006 (NOAA)
- TransRoad_RDS, VTrans Road centerlines from 1:5000 orthos and GPS
- TransRoad_RDSMAJ1, Major road centerlines extracted from TransRoad_RDS
- TransRoad_RDSMAJ2, Major road centerlines extracted from TransRoad_RDS
- TransStructures_TRANSTRUC, VT Bridges and Culverts - transportation structures
- WaterHydro_VHD, Vermont Hydrography Dataset (1:5000) - surface waters
- WaterHydro_VHDCARTO, Vermont Hydrography Dataset - Cartographic version

Products

New:
- GEOCODE_ESITE, VCGI's Batch Geocoding Web Service (built on E911 ESITE points)

Updated:
- SOILATTR, NRCS soils attributes in DBF-format tables available by county

Book Review: Ambient Findability by Peter Morville

David Brotzman, VCGI

A few months ago I saw a book on Leslie Pelch's desk that had an interesting title and I asked her if I could read it. The book was called "Ambient Findability" and Leslie said sure, go ahead. Ambient Findability was written by Peter Morville and published by O'Reilly Media Inc. The author is the president of a company that provides information architecture and 'findability' consultancy.

Ultimately, Ambient Findability was about effectively navigating through and searching for information in an increasingly interactive and complex world. The discussion is web centric and the author discusses information search and retrieval in a way that is more philosophical than practical for those looking for implementation solutions. However, for those of us that are trying to understand the problems of information retrieval from a strategic point of view his book presents some interesting concepts. He discusses the utility of spatial information and even touches on the use of metadata in a broader context. The discussion moves through various types of information, how they interact and how they are impacted by that interaction. He also presents the concept of 'findability' and how it is fundamental to today's information marketing strategies.

Ambient Findability is a quick read that doesn't always follow a clear path, but generally leaves the reader with an increased awareness of the mechanisms that support information interaction with and within the developing digital world. That awareness should inform anyone that is working to develop stategies to make their own resources more 'findable'. I have an inceased awareness of many things through reading Ambient Findability, not the least of which is that if you borrow a book from Leslie she might ask you for a quick review for the Newsletter.

Calendar

VT Society of Land Surveyors Annual Meeting, Stoweflake hotel, Stowe, VT, September 11 - September 12, 2008, http://www.vsls.org

Northeast Arc Users Conference, Hyannis, MA, September 21 - September 24, 2008, http://www.northeastarc.org

VLCT Town Fair, Killington, VT, October 2, 2008, http://www.vlct.org

URISA - Annual Conference & Exposition, New Orleans, LA,October 7-10, 2008, ***Spatially Enabling the Enterprise***

VT-Fest: A Conference for Teachers Using Technology, Killington, VT, November 5 - November 7, 2008, http://homepage.vita-learn.org/Pages/index

Voices From All Sectors

Notes from VTrans

Sara Moulton, VTrans

NOTE 1 - SUMMARY OF CHANGES
The July 2008 release of TransRoad_RDS has been posted at VCGI. It includes the changes prompted by the 2008 Certificates of Highway Mileage. A summary of these changes is available at:
http://www.aot.state.vt.us/Planning/Documents/HighResearch/Publications/2008_AllChanges.pdf

NOTE 2 - CERTYEAR
We've added a new field called CERTYEAR. It contains the most recent year an arc was altered due to a change reflected on the Certificate of Highway Mileage. More information about these certificates is available at:
http://www.aot.state.vt.us/Planning/MapGIS/mapping_certs.htm

Please let us in the Mapping Unit know if you have any questions about Transroad_RDS or the Town Highway Maps.

Also, if you find any inaccuracies or problems with the Transroad_RDS data layer, please contact us so we can make corrections and updates as needed to improve the quality and content of this data layer:
Sara.Moulton@STATE.VT.US

Chittenden DEM Virtual Earth Viewer

Jarlath O'Neil-Dunne, UVM Spatial Analysis Lab

Several weeks ago I posted a link on the VGIS discussion list to a Virtual Earth based viewer I created displaying a high resolution DEM generated from the 2004 Chittenden County LiDAR data. I received a few emails inquiring as to how I generated both the DEM and the viewer. This article outlines my methodology.

1. Data ingest

Nowadays LiDAR data is typically delivered in the LAS format, but back in 2004 when the LiDAR for Chittenden County was acquired there was no industry standard. The contractor delivered the data as point features in CAD format. Fortunately, the data had been processed such that the bare earth points had been separated from the rest of the surface model. To make the data more manageable I created a Python script that batched processed the CAD data, importing it into an ArcGIS geodatabase, removing all of the extraneous CAD fields in the process. The script took more than 7 hours to run.

2. Raster DEM generation

The bare earth LiDAR dataset consisted of 256 tiles of point data. Two options I initially explored for generating a raster DEM in ArcGIS proved unworkable. The first was to interpolate each point feature class individually (using the natural neighbor algorithm) and then mosaic the resulting raster tiles. This method resulted in gaps along the edges of the tiles. The second method I explored, merging the tiles into a single point feature class and then performing the interpolation also proved to be unworkable. This time the problem was due to the excessive file size of the merged point feature class. I settled on a two step process to create a raster representation of the bare earth LiDAR data. First, I took advantage of the new "terrain" format introduced in ArcGIS 9.2 to create a virtual TIN mosaic from all 256 feature classes. Once the terrain was created I ran the "terrain to raster" tool to convert the terrain to a raster DEM with a 3.2 meter cells size (equal to the spacing between the bare earth points). The process of creating the terrain and then converting the terrain to raster took a total of 18 hours.

3. Cartographic production

Generating a cartographically rendering of the data in ArcMap was straightforward. I ran the hillshade tool using the 3.2 meter raster DEM as the input. I applied a preset elevation color ramp to the DEM, placed it over the newly created hillshade layer and set the transparency of the DEM to 30%. The entire map layout process, including generating the hillshade layer was accomplished in less than an hour.

Cool Web Sites

http://www.mainstreetmaps.com
A free mapping website showing property lines and other information for much of the state of Massachusetts.

http://www.gearthhacks.com/
Google Earth Hacks provides links to interesting content found or created by users like you and gives you quick access to check things out in Google Earth.

http://www.youtube.com/watch?v=fPgV6-gnQaE
The Googling - Part 1: Haven't you always thought Google Maps/Earth was a bit creepy (especially Streetview)? If so, you have to take a moment and check out this hilarious video about what can happen when you enter - The Google Zone.

RFP Posted

The State of Vermont has released an RFP which may be of interest to GIS contractors. Here is a snippet from the RFP:

"This is a Request for Competitive Sealed Proposals (RFP) to pre-qualify vendors who can perform the services described in Section 3 of this RFP. The services include...and Enterprise Geographic Information Service (GIS) Services.
Proposals are due Sept. 12 - here is a link to the full RFP: http://www.vcgi.org/commres/?page=./rfps/

4. Web-based map

The online mapping tool is based on Microsoft's Virtual Earth; that is the data (roads, imagery) and the user interface tools are pulled from Microsoft's servers. I selected Virtual Earth over Google Maps due to the fact that Virtual Earth has more current imagery for most of Chittenden County (2007 vs. 2004). Aside from some HTML code, the addition of the DEM data is the only modification that was made to the Virtual Earth viewer. Unlike the imagery and roads data, which are streamed in from Microsoft servers, the DEM consists of a series (over 50,000) map tiles that are stored on a server at UVM. The map tiles were created using the Arc2Earth extension for ArcGIS. The map tile generation process in Arc2Earth involves taking an ArcMap document and producing map tiles in an image format (JPEG or PNG) scaled to the appropriate size and extent. It is this scaling of the data that allows map tiles to display relatively rapidly in an online viewer. When the user is zoomed out, map tiles with a degraded resolution (larger extent, smaller file size) are displayed. As the user zooms in on the viewer, higher resolution (smaller extent, larger file size) tiles are displayed, but only those tiles that fall within the current view are loaded into the viewer. It took Arc2Earth more than 14 hours to generate the map tiles for this online viewer.

VSDP News

Roundtable Roundup

The July 17 Roundtable in Randolph provided lots of topics of interest to the 70 participants. Many of the presentations have been posted at the VSDP web page and can bew viewed as PDFs. These are the topics that were presented:

- Using Lidar Data at VELCO
- Bicycle/Pedestrian GIS Projects Panel
- Muni Track: Using GIS for Planning
- Common Pitfalls When Working With Raster Data
- Using the VT Real-Time Geodetic Network for Field Data Collection
- Muni Track: Using GIS for Municipal Utilities
- What's New with ArcGIS 9.3
- Muni Track: Everything You Need to Know About Tax Mapping…in an hour?
- Geoprocessing/Model Builder
- Cartography in ArcGIS
- Muni Track: Does VT's Future Include Statewide Digital Tax/Parcel Data?
- The National Grid
- Enterprise GIS and A General Overview of VT E911
- Muni Track: The ESRI Small Municipal and County Government Enterprise License Agreement Program

If you would like to help put together the next Roundtable (January 2009) - we will start planning this month, so please get in touch! lesliep@vcgi.org or 882-3002.

Mystery Mapper Takes a Break

Last Quarter's mystery map showed mines, extracted fromt the Geonames data layer. Congratulations to Nathan Dansereau of CVPS!

This quarter, the Mystery Mapper would like to challendge your mind with poetry rather than a mystery map. This was posted at the blog called: Surveying-Mapping-GIS.blogspot.com posted by David Smith

> Survey the Whole, nor seek slight faults to find,
> When Nature moves, and Rapture warms the Mind.
> SCIENCE! thou Daughter of the Skies, 'tis thine
> To make Perfection in her Beauties shine;
> Thy darkest Clues endear the anxious Mind,
> When Study labours thy great Worth to find:
> In thy rich Stores our lab'ring Thoughts absorb,
> Measure the Earth, and each celestial Orb.
> Behold yon Gardens, Trees, and shady Bow'rs,
> So often chequer'd with delightful Flow'rs;
> Behold yon Buildings, high ascending Spires,
> Yon Water, Castle, Mountains, stately Tow'rs,
> Yon curing Brook, and cool expanding Shade,
> Whose winding Course surrounds the fragrant Mead;
> All their Dimensions we with Ease impart,
> By GEODASIA, and the Rules of Art.

The above is excerted from "To Arthur Burns, on his New Treatise, entitled, GEODASIA IMPROVED: A Poem", written by Thomas Sadler, Whitechurch, 1771.

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