

2014 AWRA Spring Specialty Conference GIS and Water Resources VIII – Data to Decisions

Geographic Information Systems (GIS) are an indispensable tool in providing timely and accurate information necessary for making excellent water resources decisions. Emerging technologies in data collection, information management, web and cloud services, and visualization have opened up significant new avenues for sharing solutions across local, state, federal, and international levels. Come and discover new solutions for your organization. Abstract Submission: Abstracts are being sought for oral presentations, panels and posters covering a wide range of topics. To be considered for placement in the program, please go to the link given below to connect to the abstract submittal form. Abstracts must be received via the web site on or before November 18, 2013. Membership in AWRA is encouraged but is not a requirement for presentation. A processing fee of \$25 will be charged for each abstract submitted payable upon submission of the abstract. The conference is May 12-14, 2014 at the Snowbird Resort in Snowbird, UT. See <http://www.awra.org/meetings/SnowBird2014/>

Network Improvement Project Status by David Kraemer

This past week Network Improvement edits were started in Alaska within Sub-Region 1903; the Kuskokwim River drainage. A few sub-basins are still in work in the lower 48, but the outstanding sub-basins of Regions 1 (Canadian border), 3 (Florida & Alabama), 4 (Canadian border), 5 (Indiana), and 8 (Louisiana & Mississippi) are on hold until the states complete their edits and the border harmonization is finished.

Advancing LiDAR Topography

The U.S. Geological Survey's John Wesley Powell Center for Analysis and Synthesis has announced that one of six 2014 Working Groups will be awarded to "Exploiting high resolution topography for advancing the understanding of mass and energy transfer across landscapes: opportunities, challenges, and needs." This project will improve the NHD and WBD by developing best practices for hydrography extraction using LiDAR. The project research is planned to be completed in two years with a report release date of September 2016.

Project Summary: One of the grand challenges of Earth Surface Science and Natural Resource Management lies in the prediction of mass and energy transfer for large watersheds and landscapes. High resolution topography (LiDAR) datasets show potential to significantly advance our understanding of hydrologic and geomorphic processes controlling mass and energy transfer because they represent features at the appropriate fine scale on which surface processes operate. While LiDAR datasets have become readily available across the United States, challenges remain in extracting accurate and objective information relevant for hydrologic and geomorphic research, modeling, and prediction, as well as watershed management. We primarily focus our efforts on river channel networks and near-channel environments (floodplains and riparian zones), as they often represent the most critical 1% of the landscape for mass and energy transfer. The goals of the proposed project are to (i) evaluate state-of-the-art feature extraction algorithms by testing them on landscapes of different characteristics; (ii) develop guidelines directed to LiDAR practitioners for filtering and feature extraction as a function of dominant landscape processes; (iii) improve scalability and usability of feature extraction tools to allow their distribution as more user-friendly, national-scale, production-grade tools.

Principal investigators: Paola Passalacqua, Department of Civil, Architectural, and Environmental Engineering and Center for Research in Water Resources, The University of Texas at Austin, TX; Patrick Belmont, Department of Watershed Sciences and the Ecology Center, Utah State University, UT; Dennis Staley, Geological Hazards Science Center, Landslide Hazards Program, U.S. Geological Survey, CO; Jeff Simley, National Geospatial Program, U.S. Geological Survey, CO

The John Wesley Powell Center for Analysis and Synthesis serves as a catalyst for innovative thinking in Earth system science research. Initiated as one means of implementing the USGS Science Strategy, the Powell Center supports scientist-driven interdisciplinary analysis and synthesis of complex natural science problems. USGS scientists are encouraged to propose Working Groups reflecting a mix of USGS scientists and their colleagues from government and academia focused on major Earth science issues.

Replacing NHD Coastline with the NOAA's Continuously Updated Shoreline Product by Mike Tinker

The U.S. Geological Survey is creating USTopo maps for Alaska in order to produce a new generation of topographic maps at 1:25,000-scale. As part of this effort, the existing 1:63,360-scale National Hydrography Dataset is being reviewed to correct errors. Some of the NHD coastline features in the existing 1:63,360-scale NHD are being updated with newer shoreline data from the National Oceanic and Atmospheric Administration's Continuously Updated Shoreline Product (NOAA CUSP). NOAA has performed the science, cartographic review, and validation to delineate mean-high water shoreline for much of the conterminous U.S. and parts of Alaska. As part of the NHD coastline update process, the USGS performed an assessment of the existing NHD coastline features as they compare to the NOAA CUSP to answer two questions: First, at 1:25,000-scale, how much of the current NHD coastline falls within a 40-foot buffer of the NOAA CUSP? Secondly, for all NHD Coastline that intersects the NOAA CUSP, how close is the NHD to the NOAA CUSP? U.S. National Map Accuracy Standard for horizontal accuracy state that for maps on publication scales of 1:20,000 or smaller, not more than 10 percent of the points tested shall be in error by more than 1/50 inch--about 40 feet at 1:25,000-scale. To perform this analysis, a 40-foot buffer was created around the entire NOAA CUSP in Alaska. Then, the percentage of NHD coastline reaches falling outside and inside the NOAA buffer was determined.

For all 82,148 NHD coastline reaches in Alaska--

- 96% (78,809 reaches) of all NHD coastline reaches are partially or fully outside the NOAA CUSP 40 foot buffer.

A more detailed breakout of the statistics shows that--

- 61% (49,700 reaches) are fully outside the buffer
- 35% (29,109 reaches) are partially outside in the buffer
- 4% (3,339 reaches) are fully inside the buffer

For all reaches outside the buffer, the mean percent of reach outside the buffer is 48%.

- 91% (75,250 reaches) are more than 20% outside the buffer
- 82% (67,674 reaches) are more than 50% outside the buffer
- 80% (59,962 reaches) are more than 80% outside the buffer

Ultimately, all NHD coastline reaches will be entirely replaced wherever NOAA CUSP data is available. The process also requires the existing NHD coastline to be edge matched or blended to the new NOAA shoreline. Finally, existing NHD flowlines must be reconnected to the new coastline to maintain the NHD flow network. Flowlines are only re-connected to the coastline if a channel is visible on 2011 SPOT color infrared imagery.

NHD Viewer Cartographic Updates – Available! by Kathy Yoder

The NHD Viewer services have recently gone through a series of cartographic updates in order to improve the value of both the basemap and overlay services. These services are now live in the NHD Viewer. <http://viewer.nationalmap.gov/viewer/nhd.html?p=nhd>

The main enhancements made to the viewer services include:

- HUC boundary symbology was changed from red to a purple so that HUC boundaries are more distinguishable from transportation features.
- Major Rivers are labeled at small scales.
- Hydro feature labels are italicized.
- Point features turn on at a larger scale.
- Label colors and some feature symbologies have been changed.

Please email feedback and suggestions to kyoder@usgs.gov

Streamer: The first three months by Florence Thompson

In July of this year, the National Atlas of the United States® launched Streamer, a dynamic map for tracing US streams and generating reports about the streams and the places they pass through. Since its release, Streamer has had more than 100,000 visitors from 144 countries and almost 300,000 stream traces covering 2.4 billion river miles. The most common trace, not surprisingly, is the upstream trace from the mouth of the Mississippi.

Judging by social media activity, blogs, and articles from online magazines, the audience is wide and varied. We've seen posts from government agencies, educational institutions, conservation groups, outdoors enthusiasts, paddlers, anglers, scientists, and many more. The overarching theme of many of the user comments is how America's waterways connect us. A line from a recent blog from the [Theodore Roosevelt Conservation Partnership](#) sums it up, "With maps like this, you can start to appreciate the interconnectedness of water. You can see that what happens to water in western Pennsylvania or eastern Colorado matters to what the water will be like in Louisiana."

Usage tends to vary. We have found that when there is a blog entry or an article in an online magazine or news site, usage spikes for a few days and then drops again. We're also seeing a spike in usage in areas where there is flooding. In mid-September the number of traces around Boulder, Colorado, increased dramatically and a few days later we started seeing more traces along the South Platte and Platte Rivers and much higher than normal usage by people in Nebraska.

Feedback has been overwhelmingly positive but there have been a few complaints about misnamed streams and some comments about the routes streams follow in areas that contain canals, locks, and control structures. There have also been requests for larger scale data, the ability to trace streams across international borders, and better tracing capabilities from coastal waters. We hope to address some of these issues in the coming year in addition to adding new features such as live weather radar and WaterWatch-styled symbology for displaying gaging stations with real-time streamflow conditions.

Twitter Updates by Kathy Yoder

@USGSNHD has reached over 1,000 followers on Twitter! Please stay updated on NHD important news and information by following us on Twitter. The NHD Twitter feed is also on our homepage, nhd.usgs.gov.

Colorado Flood Cleanup Efforts by Kathy Yoder

During the October government shutdown, Kathy Yoder spent a furlough day doing flood relief cleanup work in Coal Creek Canyon, Colorado. Nearly one month had passed since the flooding occurred, and the devastating impact was still fresh. Roads were closed so that construction workers could put in new Culverts and repair the road. Security blocked the highway and redirected those trying to get through to alternative routes. At the job site, there was a group of about ten volunteers that worked to dig out a house whose backyard had been completely filled with rock and sediment. Coal Creek, essentially in their backyard, had completely changed course during the flood event, and buried their newly constructed creek side patio about six feet deep in sediment. This patio was not recoverable in the cleanup efforts however within just a few hours, the group had dug out the rest of their backyard. Flooding events such as this one are great reminders the power of water, and its ability to displace boulders, cars, houses, and lives.

Effect of Small Networks on Flood Modeling

“In Boulder, engineering efforts around Boulder Creek lessened the damage that could have been, Gochis said. But irrigation ditches along the Front Range brought water to areas far from rivers and creeks, spreading the flood over a vast area. So far, flooding models don't incorporate these small networks, he said.” - Dave Gochis, National Center for Atmospheric Research's (NCAR) Research Applications Laboratory in Boulder, CO. From Yahoo News, October 27, 2013.

<http://news.yahoo.com/floods-colorado-scientists-improve-forecasts-181248981.html>

EPA Exchange Network Grant Deadline Extended

Due to the Federal government shutdown, EPA has extended the deadline for the FY 2014 Exchange Network grant cycle to November 15, 2013. EPA will accept project proposals for Exchange Network grants in one of two ways: 1) a hardcopy mailed or delivered application, including one original and two copies; or 2) a proposal submitted electronically through the grants.gov website. EPA anticipates that it will announce selection decisions in or around April 2014. EPA plans to issue the awards by July 31, 2014.

The FY 2014 Exchange Network Grant Program Solicitation Notice is available at <http://www.epa.gov/exchangenetwork/grants/>

EPA will conduct an EN Grant Solicitation webinar at 1:00 PM ET on October 22, 2013. To participate in the webinar, dial: 866.299.3188 and enter code 202-566-1984#. Access the online meeting at: <https://epa.connectsolutions.com/engrant1022/>. An Adobe Connect account is not required to enter the webinar, simply log in as a “Guest.”

Downloads of NHD Data from the USGS in September

During September there were 2,757 downloads from The National Map viewer, a 29% increase over August. There were 2,058 rectangle extracts of various sizes and 699 by subbasin or county. Data on FTP downloads is unavailable. Usually a combined total of around 7,000 downloads are made each month.

NHD Photo of the Month

This month's photo is of the Merced River flowing into Yosemite Valley, as seen from the top of Vernal Falls. It was submitted by Daniel Siegel, ESRI. To see the photo of the month go to

ftp://nhdftp.usgs.gov/Hydro_Images/Vernal_Falls.jpg. Submit your photo for the NHD Photo of the Month by sending it to kyoder@usgs.gov. This will allow the program to build a library of real-world photos linked to the NHD.

September Hydrography Quiz / New October Quiz

Travis Scott of FTN Associates, Ltd. was the first to guess the August NHD Quiz as the harbor at Green Bay, Wisconsin on the western shore of Lake Michigan where the Fox River empties into the Green Bay. See <ftp://nhdftp.usgs.gov/Quiz/Hydrography98.jpg>

Travis is employed by FTN Associates, Ltd of Fayetteville, Arkansas. FTN addresses Water Resources, Engineering, Environmental Compliance, and Natural Resource Management. FTN specializes in solving client problems related to the impacts of human activities on the environment. FTN has been involved in landmark and precedent setting environmental projects since the company was incorporated in 1980.

Others with the correct answer (in order received) were: David Asbury, Becca Conklin, Evan Hammer, Ken Koch, Richard Patton, Kitty Kolb, Dan Button, Roger Barlow, Barb Rosenbaum, Dave Straub, Dennis Dempsey, Matt Rehwald, John Kosovich, Dan Siegel, Al Rea, Dane Bailey, Gary Penn, August Froehlich, Jim McDonald, Mike Butler, Ed Carter, Andy LeBaron, Chris Cretini, Steve Shivers, Stephanie Kula, Yvette Paroz, Michael Pipp, and Chris Morse.

This month's hydrography quiz can be found at <ftp://nhdftp.usgs.gov/Quiz/Hydrography99.jpg> . Where is this? The black line is a hydrologic region boundary. The medium blue polygon is a Lake. The light blue polygons are Bays. Note the radial drainage pattern. Send your guess to jdsimley@usgs.gov.

Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Thanks to Mike Tinker, Karen Hanson, David Kraemer, Florence Thompson, Keven Roth, Tommy Dewald, Gary Ott, and Kathy Yoder.

The NHD Newsletter is published monthly. Get on the mailing list by contacting jdsimley@usgs.gov.

You can view past NHD Newsletters at http://nhd.usgs.gov/newsletter_list.html

Jeff Simley, USGS, assumes full responsibility for the content of this newsletter.