

USGS National Hydrography Dataset Newsletter
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The NHD at the 2007 ESRI User Conference

The following sessions at the upcoming ESRI User Conference will be of interest to those involved with the NHD. Take special note of the NHD Users Group Meeting during lunch on Wednesday.

Wednesday, June 20, 10:15 AM–11:30 AM – Stream Network Determination and Characterization – 25C
North Carolina Stream Mapping Project
Creation of the Franklin County, Ohio, Ultra-High Resolution Hydrography Geodatabase
Automating Stream Selection: Global Map Hydro from NHD
Creating the Saskatchewan Canada Stream Network

Wednesday, June 20, 12:00 PM-1:00 PM – NHD Users Group Meeting – 17A
Users of the National Hydrography Dataset are invited to discuss ongoing and new issues concerning the program and provide recommendations to the program leadership on future direction.

Wednesday, June 20, 1:30 PM–2:45 PM – NHD Add-ons and Applications – 25C
This panel discussion will cover the progress made in linking water-related information to the National Hydrography Dataset and extending NHD functionality by integrating it with the National Elevation Dataset and Watershed Boundary Dataset to produce topographic catchments, flow volume and velocity, and other value-added attributes.

Wednesday, June 20, 3:15 PM-4:30 PM – Stewardship of the NHD – 25C
This panel discussion will cover the progress made in the stewardship of the National Hydrography Dataset by the nation's hydrography community. Each member will describe technology, administration, process, problems, successes, and recommendations. Attendees will better understand how to participate in and implement hydrography stewardship for their own NHD data.

Thursday, June 21, 8:30 AM-9:45 AM – Introduction to NHDPlus – 26A
The National Hydrography Dataset (NHD) analyses performed to date have been predominantly based upon spatial coincidence – identifying whether certain features exist or don't exist at the same location on the drainage network. With the 2006 completion of NHDPlus, up/downstream analysis, dilution modeling and landscape analysis are now possible. NHDPlus is a suite of geospatial products that build upon and extend the capabilities of the NHD by integrating it with the National Elevation Dataset and the Watershed Boundary Dataset. NHDPlus includes improved NHD names and networking, value-added attributes (including stream order), catchments, catchment attributes (including land cover), stream flow volume and velocity estimates, and associated flow direction and accumulation grids. This presentation will provide an overview of the content and inherent functionality provided by NHDPlus.

Thursday, June 21, 10:15 AM-11:30AM – Advanced NHDPlus Applications – 26A
The National Hydrography Dataset (NHD) analyses performed to date have been predominantly based upon spatial coincidence – identifying whether certain features exist or don't exist at the same location on the drainage network. With the 2006 completion of NHDPlus, up/downstream analysis, dilution modeling and landscape analysis are now possible. NHDPlus is a suite of geospatial products that build upon and extend the capabilities of the NHD by integrating it with

the National Elevation Dataset and the Watershed Boundary Dataset. NHDPlus includes improved NHD names and networking, value-added attributes (including stream order), catchments, catchment attributes (including land cover), stream flow volume and velocity estimates, and associated flow direction and accumulation grids. This presentation will provide detailed examples of how to leverage the capabilities in NHDPlus for advanced applications. Prerequisite: 8:30am - 9:45am Introduction to NHDPlus.

Tuesday, June 19, 3:15 PM – 4:30 PM – All about Streamstats – 25A
Status Update on the USGS StreamStats Web Application
StreamStats ArcGIS Server Application: A More Efficient Web Solution
Network Functionality in StreamStats

Feedback from the National Hydrography Dataset Stewardship Conference

A caucus was formed by many of the state representatives attending the NHD Stewardship Conference held in Denver, CO April 24-26, 2007, to advise the USGS on issues of concern to the states. The following is a list submitted by the caucus paraphrasing points from the discussion.

1. Need more coordination between state stewards on subbasins crossing state boundaries.
2. Need infra-structure improvement at USGS.
3. Need five day turn around on a transactional load, plus notification when loaded.
4. Need new edit tools within six months of new releases of ArcGIS (such as 9.2).
5. A major issue that federal agencies are not on current release of ArcGIS 9.2.
6. Concern that NHD may not be adequately supported at high levels within Federal Agencies.
7. States need information on grant/assistance opportunities
8. May not be necessary to upgrade tools to 9.2. Money could be used to improve NHD data.
9. Tools need to be backwards in compatibility with old versions of ArcGIS.
10. All stewards should be on the most current edit tools. Stewards should be notified when new tools are ready to be used.
11. Geo-conflation tool needs to be completed.
12. Leverage GIS/hydrologic organizations for more support of NHD.
13. Need better communications between stewards and USGS and within USGS.
14. Federal agencies need to make it easier to apply for grants and funding assistance.
15. Need USGS to provide feedback on these issues.
16. Need specific information about grants for NHD maintenance or completion.
17. Need list-serve for stewards & POCs. Two month deadline to get this done.
18. Recommend bi-annual NHD Stewardship Conference.
19. Recommend multiple concurrent track sessions or workshops at the stewardship conferences.
20. Need FTP site to make available local or revised shared tools.
21. Need knowledge-based website for more information on editing and use of NHD.
22. Funding concerns: (1) Guarantee the USGS is going to fund NHD and not let dataset become stagnant; (2) Does USGS believe NHD is a viable data layer to keep funding?; and (3) Will USGS continue to fund the NHD tools development, data integration, data support, web availability, POC support?
23. Develop a more user friendly sub-basin FTP site.
24. During extraction, notify extractor if maintenance is being done on that sub-basin.
25. Need a survey to gather information on steward needs.
26. Need development of NHD Network tool and NHD Network Reproduction tool.
- Comments received after meeting -----
27. Will this state NHD Advisory Council address tools and data management issues?

28. Florida. Is funding available through the USGS and other Federal agencies to support initiatives of the USEPA for which the NHD is well-suited?
29. West Virginia. Would recommend that State Stewards collectively craft a resolution that supports the nationwide development and maintenance of the NHD. States could then have the coordinating GIS office and the state stewardship agency adopt the resolution. Send a letter to the USGS NGPO office, NSGIC, elected officials, etc. to show support of the initiative. NSGIC should adopt the resolution at the September annual meeting. Also the NHD stewardship should be added to the NSGIC conference agenda.
30. West Virginia. Develop an online survey using a “survey monkey” to capture the State’s business needs for NHD, and then forward the survey information to USGS. This could be done before the resolution would be created.
31. North Carolina. From a programmatic perspective, a detailed explanation of what the role of USGS NHD staff will be relative to the NGTOC statement of work if an outside contractor is selected.
32. North Carolina. Need assurance that the stewardship community will have some role in the technical direction-setting details (data model upgrades, tool development, etc.) If the support for stewardship is going to be tied to business cases at the state and local level, the technical details need to be in alignment with this concept in practice.
33. North Carolina. There is a need to retain a degree of flexibility in the agreement between states and NHD.
34. North Carolina. As states tailor their stewardship agreements there has not been a baseline or minimum requirements set to ensure that NHD is maintained as a whole to prevent the NHD from devolving into fifty separate datasets.

Projecting the NHDinGeo in ArcGIS 9.2 and High Precision Data

Previous NHD Newsletters (December, 2005) have explained why it may be necessary to project the geographic coordinate-based NHDinGeo data using the U.S. Forest Service Reprojection Tool found on the NHD website at <http://nhd.usgs.gov/applications.html> . When projecting NHD data using the Reprojection Tool a new geodatabase is created. When using the Tool in ArcGIS 9.2, that new geodatabase creates a new high precision feature that is not compatible with the precision used when the NHDinGeo was created at the USGS based on ArcGIS 9.1. Users therefore need to migrate their 9.1-based NHDinGeo data to a high precision geodatabase. There is a two step process to achieve an upgraded personal geodatabase: (1) In ArcCatalog, right click the personal geodatabase, and go to Properties. Click Upgrade Personal Geodatabase button, then Click OK button to dismiss the dialog. (2) In ArcMap, go to ArcToolbox→Data Management Tools→Database→Upgrade Spatial Reference. Do this step to each dataset or to each stand alone feature class. See more about ESRI’s high precision data: http://webhelp.esri.com/arcgisdesktop/9.2/index.cfm?id=1895&pid=1893&topicname=Migrating_to_high_precision.

Reprojection Tool and .NET

As of April, 2007, two versions of the U.S. Forest Service Reprojection Tool are now available to serve those with Microsoft .NET Framework version 1.1 or 2.0. There are 2 versions because some PC owners are not ready to upgrade their computers to the inevitable Microsoft .NET Framework 2.0. Some older applications still rely on .NET 1.1, so some users haven’t been ready to move ahead with more recent Microsoft operating system components. The tool currently runs not only on ArcGIS 9.1, but also on ArcGIS 9.2 and on Windows XP. To get what you need: (1) Check your Settings→Control Panel→Add/Remove Programs to find the Microsoft .NET Framework you currently have installed on your PC. Determine if your computer uses Microsoft .NET Framework version 1.1 or 2.0. (2) Go to <http://nhd.usgs.gov/applications.html> to download the appropriate version of the Reprojection Tool.

Choose either `Reprojection_Tool_USFS_version_1.2.1.zip` if your PC uses .NET 1.1, or `Reprojection_Tool_USFS_version_1.3.1.zip` if your PC uses .NET 2.0. You will be able to automatically download or extract (unzip) the files to your personal computer. Keep all files together in the same folder anywhere on your computer. (3) Double-click on the .msi file to install the tool. Depending on your local environment and operating system, administrative privileges may be needed to install this on your PC. A Wizard will guide you through the process. The intention of the Reprojection Tool is to reproject full personal geodatabases in a single operation, as opposed to ESRI's method of doing it feature class by feature class. Enhancements allow the user to tweak or retain extent and precision, as well as thorough automated metadata updates at all three levels: database, dataset, and feature class.

Processing Performance of the NHD

As noted in previous NHD Newsletters, production processing at the USGS has been impacted the past several months resulting in a decreased rate of throughput. One of the measures put in place to improve the situation has been to segregate new subbasin processing from other processes and create a stand-alone operation. There are now 101 subbasins remaining to be completed out of a nationwide total of 2,259. Most of these 101 have now been processed in the stand-alone operation and will soon be moved to the distribution server to be made available to the public. The completion of the high resolution NHD is still slated for late June/early July.

Dropping the NHDGEOinArc Format?

The USGS is considering dropping the NHDGEOinArc distribution format that makes the NHD available in an ArcInfo Coverage model. The resources to support this format are becoming more difficult to maintain and as the USGS economizes its operations it is now necessary to question whether this format should be retained. If you are in favor of keeping the NHDGEOinArc distribution format, send an email to jdsimley@usgs.gov and put NHDGEOinArc in the subject line.

NHD Documentation

Look for a new and revised set of NHD documentation in draft form available for your review and comments. The documents: (1) [Standards for National Hydrography Dataset – High Resolution](#), (2) [Best Practices for the Revision of the National Hydrography Dataset](#), (3) [The National Hydrography Dataset Concepts and Contents](#), (4) [Introducing the NHDinGeo](#), and (5) [Stewardship of The National Hydrography Dataset](#) can be found at <ftp://nhdftp.usgs.gov/Docs>.

RTI Spatial Tools (RTIst) Site Web Services

The private firm RTI International (RTI) has developed a set of new hydrographic spatial analysis tools based on NHDPlus. RTI Spatial Tools (RTIst) provide four Web-based services: (1) A raindrop service, (2) an area of interest (AOI) service, (3) - A corridor service, (4) A download/upload shapefile service. The raindrop service takes an input point location to create a linear path using the flow direction grid packaged with the NHDPlus. The AOI service returns the upstream and downstream NHDPlus reaches and catchments relative to a user-defined starting point and based on a distance or time of travel value entered by the user. The corridor service allows users to choose a geographic feature and use it as the selection set to conduct multiple AOI service calls. The download/upload shapefile service will allow users to add shapefiles to the Oracle Spatial database, to add shapefiles to the geographic information system interfaces or to download shapefiles from the analytical web services. Users may utilize uploaded shapefiles as starting points for the raindrop, AOI, or corridor services. The download service functions in the RTIst demo application; however, the upload service is still in development. A demonstration of the RTIst site can be found at <http://rtidemo.rti.org/rtist> which provides background information on these

tools and includes a basic web interface to the services as a proof of concept. The underlying tools supporting the RTIst Web site could easily be generalized as batch-processing services or can be called by custom applications. For more information, please contact Bill Cooter (sid@rti.org) or James Rineer (jrin@rti.org).

May Hydrography Quiz

This month's hydrography quiz can be found at <ftp://nhdftp.usgs.gov/Quiz/Hydrography23.pdf>. This is one subbasin. Can you identify which subbasin it is? Look at the drainage pattern. The dark blue lines are perennial streams, the light blue lines are intermittent streams, and the orange lines are canal/ditch features. The green polygon is swamp/marsh while the blue polygons are lake/pond. This is located in one of two states where all water drains out of the state, but no water drains into the state.

Upcoming NHD Geo Edit Tool Training

Anchorage, AK - Contact Paul Kimsey or Carl Markon markon@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.

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

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