USGS National Hydrography Dataset Newsletter
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NHD Data Download Backlog

The number one problem affecting NHD users is the occasional long turnaround time for data download. Current cycle time is anywhere from one hour to one week depending on the makeup of the queue. This is true for NHDinGEO and NHDGEOinARC downloads. At any one time, up to 26 download processes are running in parallel, but the sheer volume of downloads can still overwhelm the system. Each download request spawns a customized download transaction. The situation will improve once the rush is over to download old data and through the implementation of pre-staged data. The personal geodatabase format typically extract much quicker than the NHDGEOinARC workspace extracts. The shapefile extracts are the quickest since they happen in real time, but they are also very limited in content and extent.

Pre-staged NHD Data on the Horizon

Efforts are underway to prepackage the NHD in readily available files. These files should be about 500 MB is size with a goal to cover a subregion hydrologic unit. A subregion is a four-digit hydrologic unit, typically 35,000 square miles in size, and consisting of about 10 subbasins. There are 222 subregions in the U.S. Packaging the data in subregions generally provides a unified hydrologic flow over a large enough area so that navigation can be performed with minimum interruption. The data will be in a personal geodatabase. If an entire subregion cannot fit within the 500 MB goal, a smaller geographic unit may be used.

Geodatabase Download Statistics

Since the availability of the NHD in the Geodatabase model in late April, there have been 3,096 downloads of NHD datasets as of mid-June. The non-USGS federal sector has received 796 downloads while the USGS has received 243. 752 downloads have been received by state and local agencies, with 546 going to educational institutions. 516 downloads have gone to .com addresses, 153 to .org addresses, 61 to .net addresses, and 8 to .coop addresses. The military has received 21 downloads. These numbers exclude shapefile downloads.

Problems with NHD Status

A number of users have noted that the high resolution NHD status is sometimes not synchronous with actual availability. In some cases a status code is given to indicate data availability but, when the user tries to download the data, none exists. You can double-check data availability by attempting to view the NHD in the NHD or *The National Map* viewer. This problem will be corrected.

NHD at the ESRI User's Conference

A number of papers on the NHD will be presented at the ESRI User Conference in San Diego on Wednesday, August 11, at 8:30 a.m. in room 25-A of the San Diego Convention Center. There will also be a NHD User's Group Meeting at 12:15 p.m. on Wednesday in room 29-A.
http://www.esri.com/events/uc/index.html

Download NHD Shapefiles

It is now possible to download shapefiles from the NHD Viewer on the NHD website http://nhd.usgs.gov. To do this, zoom in to your area of interest and select Shapefile Extract on the left margin of the screen. The process works by capturing the viewed data and creating the shapefile with the standard set of feature classes. The shapefile you receive will consist of all features in the viewed extent. Be sure that you are zoomed in far enough so that you can actually see the NHD data of interest. Note that the use of these shapefiles does not provide full NHD functionality.

NHD Toolkit Update
In April it was reported that the new NHD Toolkit would be available in late May. This new version, designed for the new NHDGEOinARC data model, is now expected to be ready in early August. This will include NHDGEOLoad/Unload, NHDGEOArc2Shape, NHDGEONavigate, a new Reach Indexing Tool, and updated on-line help.

Joining Two NHD Geodatabases
If you need to use more than one subbasin in ArcMap, it is best to request all the needed subbasins in one download .mdb file. If you add separate .mdb files to composite your area of interest in ArcMap, you will loose some functionality. One problem is the inability to navigate from one file to another. This is because the flow network is generated at the time of the download, resulting in a unique NHD_Net_Junctions feature class. If you add a second file, you now have two network files, yet the Network Utility Analyst can only use one of the two, preventing navigation between the two. You can drop and rebuild the network. Note that this requires the proper setting of flow direction. The second problem is the overlap of features. If a feature exists in both files, such as a lake straddling two subbasins, the feature will be duplicated when adding the second file in ArcMap. It may be necessary to delete one of the two duplicate features depending on your application. An effort is underway to provide a tool to correctly join two NHDGEOinARC datasets.

Map Your Waters
EPA's Office of Water has just released a new version of EnviroMapper for Water (http://www.epa.gov/waters/enviromapper). EnviroMapper for Water provides a Web-based mapping connection to a wealth of water data. You can use it to view and map data, such as the uses assigned to local waters by your state (fishing, swimming, etc), waters that are impaired and do not support their assigned uses, the reasons why waters are impaired, water quality monitoring information, closures of swimming beaches, and the location of dischargers. Maps can be viewed at the national, regional, state or local levels. This latest release of EnviroMapper for Water (Version 3.0) features several new layers of water data including EPA's national water quality database STORET, National Estuary Program study areas, and the location of nonpoint source projects. Other enhancements make it easier to locate and view these data, and instructions are included describing how to incorporate the resulting map into your own Web page. For more information, contact Tommy Dewald at dewald.tommy@epa.gov or 202-566-178.

Synopsis of AWRA Papers Presented – Continued - Following One of Three Tracks in Day 3

- Using ArcObjects to Integrate ArcGIS and Hydrodynamic Models – Tom Heinzer (U.S. Bureau of Reclamation): Produces animated visualizations of floods in ArcGIS utilizing Component Object Model. ArcObjects represents geometry. Each graphic element is treated as on object.
- ArcHydro Groundwater Data Model – Gil Strassberg (CRWR - University of Texas-Austin): This is an extension of the ArcHydro model to deal with 2D surfaces encountered in groundwater modeling. Also produces 3D solid areas. Includes surface water interaction.
- Database Services and the RAD: An NHD Based Water Systems Solution – Ian Stack (INDUS): An overview of EPA's Waters system that gives the public easy-to-use access to a wide range of water and water quality data. Based on the NHD-derived Reach Address Database.
- Development of the Incident Command Information Tool for Drinking Water Protection – William Samuels (SAIC): A GIS to allow incident command analysis of threats to drinking water supply. Based on RF1/NHD network plus a wide range of water related attributes. Can model and display the movement of the toxic plume through the network using time-of-travel analysis. Good results when compared to dye studies. Sponsored by USFS.

- Generating Meaningful Hydrographic Statistics from the NHD – John Christiansen (NPS) – Developing a website to provide hydrographic statistics of NPS lands. Although the NHD is used, peculiarities of spatial data make statistical analysis somewhat complex. Such as multiple adjacency rules, multi-channel paths, classification conflicts, and bisected polygons.
- Using NHD to Estimate Stream Geometry Characteristics for MODFLOW – Alena Bartosova (Illinois State Water Survey): Strong correlation between arbolate sum of stream and stream width. Temporal differences in NHD create analysis problems.
- A Water Quality-Based Integrated Reporting System Using the NHD – Amy Wesley-Snider (RTI): EPA working with state of South Dakota to integrate water management tools and develop a NHD-based water quality GIS to aide with Clean Water Act.
- The NHD and Surface Water Quality Monitoring in NE Florida – Sandra Fox (St. Johns River Water Management District): Highly active use of NHD in an ArcHydro-based GIS to manage water quality monitoring sites. NHD editing needed to fine-tune database.
- Riparian Forest and Wetland Buffer Inventory and Analysis for Virginia Using a GIS Approach – Raymond Crew (Pennsylvania State University): Use the NHD and National Land Cover Dataset to determine riparian inventory at 300 ft intervals along stream network. Used to determine percent of stream buffered by forested habitat for the Chesapeake Bay Program.
- The Use of the ArcHydro Data Model and Tools in the USGS StreamStats Application – Al Rea (USGS): Use regression equation to estimate streamflow at any point on the stream network based on given conditions. ArcHydro GIS used for Data management/basin delineation with basin characteristics added. DEM-based plus precipitation and land cover datasets.
- Tools and Applications for NHD Watershed – Pete Steeves (USGS): Extension of NHD Toolkit to delineate watershed from any point on stream network and create watershed characteristics. Applied to SPARROW, Vermont Flood Frequency, and Perennial/Intermittent analysis studies.

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