American Water Resources Association
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GIS & Water Resources VI
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Wednesday, March 31
10:30 AM – 12:00 Noon
SESSION 29: National Hydrography Dataset II

NHD Tool Development for Local-State Stewardship - Steve McKinney, SICS Consultants, LLC, Florence, AL (co-author: Phillip Henderson)

The NHD Web Edit Tool, or NHD-WET, is a web-based editing tool designed to enhance the functionality that is already provided by the existing NHD Geo Edit tool. The NHD-WET makes it possible to receive input from local partners who have a vast knowledge of their hydrologic network. The NHD-WET has two user levels. The first level is an entry-level web attribute editor tool. This editor flags errors for review by the State Steward. The second level is a vector and attributes editor for submitting corrections to the State Steward. By augmenting the existing NHD Geo Edit tool, more users are able to participate in the process and aid the State Steward in expediting the revision of the NHD datasets for the State of Alabama.

Introduction to the Hydrography Event Management (HEM) Tools - Ariel Bates, U.S. Geological Survey, Denver, CO

The Hydrography Event Management (HEM) Tools are a set of shared components to allow for creation, management, and refresh of scientific data that are referenced to the National Hydrography Dataset (NHD). The HEM tools were initially developed by the U.S. Forest Service and the Bureau of Land Management to help them link biologic and water use data to the NHD. These agencies along with the U.S. Geological Survey and U.S. Environmental Protection Agency are now involved in an ongoing collaboration to provide further development and support to the HEM user community. The tools provide the ability to easily create and update event records using a robust editing functionality. HEM applications such as creating, updating, copying and deleting events, importing features, measuring linear distance, metadata and more are important core functions of the HEM Tools. Real world examples of current HEM tool use, such as dams and stream gage events, highlight the importance of events to hydrologic modeling. A short demonstration of the HEM Tools illustrates the straightforward design of this toolset. The USGS, BLM and the USEPA provide training, documentation, help desk, and future release improvements to users.

What's Happening with the National Hydrography Dataset Plus (NHDPlus)? - Tommy Dewald, U.S. Environmental Protecction Agency - Office of Water, Arlington, VA

The National Hydrograpy Dataset (NHD) provides for mapping hydrologic features, linking water information to the national surface water drainage network, and up/downstream modeling. NHDPlus is the outcome of a joint U.S. Environmental Protection Agency and U.S. Geological Survey effort aimed at developing NHD stream flow volume and velocity estimates to support pollution fate-and-transport models. NHDPlus extends the NHD by integrating it with the National Elevation Dataset and the Watershed Boundary Dataset to develop a suite of geospatial data products, including a stream network with improved networking, naming, and "value-added attributes", such as stream order. NHDPlus also includes elevation-derived catchments (drainage areas) for each NHD reach, catchment attributes (such as temperature, precipitation, land cover), flow direction grid and accumulation grids, and the streamflow volume and velocity estimates. This presentation will provide an overview of NHDPlus status and plans as well as a selection of noteworthy NHDPlus applications.

Improving Stream Flow Estimates in NHDPlus - Tim Bondelid, Independent Consultant, Woodville, VA (co-authors: Kernell Ries, Richard Moore)

NHDPlus Version 1 (V01) included mean annual stream flow estimates for every networked Flowline using the Unit Runoff Method (UROM). There are proposals to improve the stream flow estimates in the NHDPlus Version 02 (V02). These improvements are based on the lessons learned from the UROM V01 stream flow estimates

and opportunities to expand the stream flow estimates to include mean monthly and 7Q10 flows. While the V01 UROM estimates were found to be generally quite reasonable, some issues were identified. The first issue that will be addressed is that the V01 unit runoff values are based on a HUC-8 resolution, which is very coarse. The new method would rely on unit runoff grids at a finer resolution than HUC-8. Second, UROM did not take consumptive use and flow augmentation into account, especially west of the Mississippi River. The V02 method would adjust the UROM flow estimates on the major rivers to better agree with the gage flow values. Third, the QA of stream flows in V01 relied on graphs showing gage flows versus the UROM estimates. In V02 it is proposed to use statistically-based QA. This will provide users with statistical measures of UROM stream flow accuracy that should be very useful in NHDPlus V02 applications. The full proposal includes developing two other flow estimation methods. The second method is the development of a Regional Regressions. Regression equations would be developed and used to compute the flow estimates. The Regional Regressions approach is a scientifically intense effort with a corresponding project time frame and budget. The third flow estimation technique proposed is to use the Spatially Referenced Regressions on Watershed Attributes (SPARROW) model. SPARROW is a well developed regression-type model that is capable of efficiently utilizing regional and other explanatory variables. One major aspect of the proposed effort is the establishment of the selected set of stream flow gages upon which to base stream flow estimation. An index of natural flow disturbance will be computed. This gage database will provide an extremely valuable resource for other modeling efforts.