NSGIC EDH for 3DNHD Monthly Forum:

Question and Answers

Washington: Washington NHD Strategic Plan for EDH: Taking Advantage of Opportunities

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Participant Questions:

What is the source/lineage of the state hydrography dataset used by local governments?
A combination of early NHD with a big push/update by the modeled hydrography layer maintained by the Department of Natural Resources.

Why doesn't DNR use the NHD?
DNR created its own hydrography dataset (processes and attributes/schema) prior to the NHD becoming the State Standard. It's easier for DNR to update and manage inhouse data versus trying to coordinate changes with the national data set. The DNR hydrography dataset uses unique segment IDs in place of linear referencing. The state NHD shop is a staff of one and has few resources to manage data updates.

DNR has a history of processes in place. DNR regulates timber production and therefore has a strong relationship with the timber companies. Changes to the data can have big implications, e.g. the addition of a new stream affects the management of the plans submitted by timber companies. So there is a challenge maintaining both accuracy and required planning documents. The structure of the DNR data is very different from the NHD and it will require a huge effort on the part pf DNR to change their processes, attributes, etc. We are working with DNR to explore how we can get to a single hydrography dataset that supports all stakeholders.

Why is the DNR hydrography dataset used by local governments?
Local governments utilize it because DNR takes responsibility for all updates. DNR is working on a grant that would enable them to identify what resources and processes are needed to move their Hydro data to NHD.

The Stillaguamish watershed pilot project will explore how to meet the needs of local government, the use of tools based on the NHD data structure, and determine what we might be breaking in the process. The USGS toolkit is an opportunity for community engagement, especially with respect to small updates and edits.

My understanding is that geomorphon techniques can be used as a part of the process to derive hydrography from elevation data. What experience have others had?

Both EDH and geomorphon have multiple steps using Lidar data and there is a fair amount of overlap of the techniques. I would characterize geomorphon as adding some techniques to the

EDH approach. How those are integrated and if they are successful is the focus of the pilot project.

The advantage of integrating the geomorphon approach, along with the EDH process, is to incorporate landscape topography and move beyond the adjacent cell model. This can help locate blockages such as culverts, and identify channel edges. It also can provide bank width and bank height which is useful when delineating a riparian zone. Some research is being done in the state to study channel migration and to address the policies of what is a 'channel' and how it is mapped. The results will drive policy decisions. Washington State and several counties are working on how to monitor and manage riparian areas and this would provide uniformity to the approach

We are open to combining the approaches, but we are currently exploring the geomorphon approach to gain a better understanding of how it can be integrated into the EDH process

Other states exploring geomorphon analysis:

- Pennsylvania - includes using geomorphons and other indices to determine channel direction
- Chesapeake Bay Watershed https://www.usgs.gov/media/videos/chesapeake-bay-elevation-derived-hydrography

With geomorphon modeling providing bank width and height information will that help solve your riparian area mapping inaccuracy issue?
The pilot project is an attempt to better understand and improve the process so that we can, possibly, tailor management practices and policies. We want to motivate local governments to participate in NHD and stop having to submit changes to both the DNR and NHD datasets. Having a single dataset will increase the available data attributes of watercourses so that more information can be used to determine riparian areas. For example, instead of the riparian area management plans being delineated solely on fish presence, it could also incorporate physical attributes of the stream at the location.

Can you elaborate on the outreach and engagement with the Tribal community with regard to the pilot project?
The contact with the Tribes was actually initiated first through the Governors State and Tribal riparian restoration workgroup. It was through discussion at that workgroup that the need for accurate hydrography was identified. We are working with tribes that have lands adjacent to the study area and have allocated some money to engage organizations, including tribes, outside of the study area. Some tribes have done their own hydro-correction. Tribes have great interest in managing riparian zones.

Interview Questions:

What would you now do differently?
Expand the NHD team, recognizing the magnitude of the work

What surprised you?
Even with all of the past effort, the projection for completion is 20 years. That won't work, we need the more accurate data yesterday. We must increase the update speed and look forward to the USGS 3DHP to facilitate.

What resources, other than the data (e.g. tool, document, online resource, etc.) did you find of most value to the process?
The NSGIC 3DEP and EDH working groups provide a great opportunity to share and exchange knowledge.

What resource(s) would you recommend for development to assist the derivation of hydro?
Money and contract support.