Lidar-Derived Hydrography as a Source for the National Hydrography Dataset

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Lidar-Derived Hydrography

Bathymetric and topographic data collected using the Experimental Advanced Airborne Research Lidar (light detection and ranging) sensor system are evaluated as a source for the high resolution (1:24,000) National Hydrography Dataset (NHD).

Channel Extraction for Variable Hydrologic Digital Elevation Model Resolutions and Flow Accumulation Threshold Values

<table>
<thead>
<tr>
<th>Cell size, in meters</th>
<th>Areas of synthetic stream segment, in square meters</th>
<th>Percent of maximum flow accumulation</th>
<th>Cell count</th>
<th>Area of synthetic stream segment, in square meters</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>9.84</td>
<td>0.94</td>
<td>26</td>
<td>1.375</td>
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<tr>
<td>1.0</td>
<td>12.63</td>
<td>0.74</td>
<td>22</td>
<td>1.638</td>
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<td>10.0</td>
<td>12.433</td>
<td>0.14</td>
<td>10</td>
<td>92.25</td>
</tr>
</tbody>
</table>

Compatibility of Lidar-Derived Hydrography and 3D Elevation Program Digital Elevation Model

Contours show a smooth transition between topobathymetric and 3D Elevation Program (3DEP) digital elevation models (DEMs). Differences are often concentrated at river bends. Most vertical differences range between plus or minus 2 meters, reflecting the absence of bathymetric elevations in the 3DEP DEMs. Differences ranging between plus or minus 2 meters with differences concentrated at river bends.

National Hydrography Dataset Flowline Network and Synthetic Flowlines—Correlation and Potential for New Data

Results for channel extraction.—Correlation and connectivity of synthetic flowlines for 5 of 6 NHD first-order stream/river feature types and potential for increasing stream/river feature type density to enhance river system network and develop streamgage dataset.

This is a preliminary study. Potential benefits for the NHDFlowline network may include the following:

- Increased feature type geometries
- Better integration of elevation and hydrography
- Adding river channel thalweg lineaments as a new feature type
- Slope to river bottom transitions without gaps for coastal zone and inland surface-water features
- Improved NHDFlowline connectivity
- Enhanced densification network of flowline feature types.

The information in this preliminary study is for illustrative purposes only and is subject to revision. It is being provided to meet the need for timely data and is not the final product of the National Hydrography Dataset. The information is preliminary and is subject to revision. It is being provided to meet the need for timely data and is not the final product of the National Hydrography Dataset. The information is preliminary and is subject to revision.