Hydrology Data Products Summary

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Toulouse SDT
Lake Data Product Presentation

• Product description has evolved and primary data products have been described

• Algorithms to make finalized lake data products are still under development

• Better coordination between ADT water detection working group and vector products working groups for both rivers and lakes
A priori databases

- Landsat-based mean annual flow global river mask and river width (~completed, T. Pavelsky). To be used for preliminary river centerlines, river width estimates
- SRTM/HydroSheds-based global dataset of river slopes, drainage area, and reach boundaries (in process, T. Pavelsky). Association of dams and reservoirs, and stream gages to this dataset. Reaches so identified will be used during first year of mission operations.
- Hydrologic model-based estimate of mean annual flow, flow percentiles; also river bathymetry measurements in situ (in process, G. Schumann), and roughness coefficient. To be used for first-guess estimates and constraining SWOT river discharge.
- Landsat-based time-varying river mask and river width (need identified by multiple groups; task not assigned): To be used to both improve water detection algorithms, and potentially to help infer floodplain DEM from SWOT data
- Landsat-based mask of lake locations (need identified; task not assigned): To be used to improve water detection for lakes
- Database of rivers and lakes that can possibly freeze (need identified; task not assigned): To be used to improve water detection and ice flagging
- Possibility of entraining other new datasets identified (e.g. Sentinel-2)
Raster Product Options

*Web-based tool was selected via compromise.*

- Raster produced all the time, everywhere
- Raster produced via web-based tool (on demand)
  - Potential for duplicated Science Data System (SDS) processing
  - Potential for difficult debugging of products
- Stand-alone app for users to build on their local machines
Polygon hydrology data products

• Making river polygons of narrow rivers will be challenging

• There are plans to investigate, but teams are stretched relatively thin

• R Fjortoft investigating feasibility of these polygons
Monthly-average products

- Seems clear there ought to be averaged vector products: ought to be able to instantly import a global shapefile containing river elevation or discharge
- Community seemed to support both of these options

Pavelsky et al. (2014): prediction of SWOT-observable rivers via downstream hydraulic geometry