



Advancing Hydrographic Data for Alaska: Development of a Statewide Strahler Stream-Order Layer

Emily McDermott and Wendy Steinberger

Alaska Department of Natural Resources, Division of Mining, Land & Water



Description

The Alaska Department of Natural Resources, Division of Mining, Land and Water has developed a new statewide map layer depicting Strahler stream order classification across Alaska to support hydrologic analysis and water resource management. Strahler stream order is a hierarchical network classification system in which each stream segment is assigned an integer value derived from the number and order of its contributing upstream tributaries. A stream order layer provides a standardized fluvial classification applied on a consistent basis for evaluating watershed characteristics.

This dataset was produced using the 2018 and 2024 USGS National Hydrography Dataset for the flowline geometry and RIVEX (v. 1.14) within ArcGIS Pro to perform network analysis and order assignment. For transboundary drainage systems, classification was supplemented with the Canada1Water hydrologic model to ensure continuity and alignment across the Alaska–Canada border. HUC 6 flowlines are currently excluded from the map.

The resulting stream order layer enables a consistent comparison of drainage systems across diverse regions of Alaska and facilitates integration of stream order information into hydrologic modeling and natural resource assessments. By standardizing stream network hierarchy at a statewide scale, this dataset addresses a long-standing data gap and provides a broadly applicable tool for agency staff, researchers, and resource managers. The dataset is publicly accessible through the Alaska DNR ArcGIS Online platform: <https://soa-dnr.maps.arcgis.com/home/item.html?id=2cdb9356a39e44f78432e74a6d90f7bc>

Acknowledgments

USGS, RiveEx, and Canada1Water Southeast AK data derived from:
<https://open.canada.ca/data/en/dataset/1c0e8a4e-952c-cd7a-1be8-29691aea2cd1>

