InteRFACE Data Management: Resources + Activities

University of Alaska Fairbanks — Scenarios Network for Alaska + Arctic Planning



Current data management activities

- Acquisition + curation of historical observations, focused specifically on hydrologic and coastal sea ice data.
- Increasing access + exploration of relevant Arctic focused data.
- More data management resources + processes to support the entire InteRFACE project team.

InteRFACE Data Index https://interfacedata.iarc.uaf.edu

Browse curated hydrologic data via web app and database. Planned improvements include more filters and the ability to export filtered site metadata as CSV or GeoJSON.



- Filter data by watershed (27) and parameter (24).
- Point locations have tooltips with basic metadata (left). Site summary pages contain more metadata.
- Access data via a Google Sheets API and Python wrapper.
- Data are stored on Google Drive (currently private), with validation and cross-sheet references to ensure consistency.

Data curation efforts to date

500+ permafrost hydrology datasets

- 200+ snow observations (oldest record 1901)
- 20+ stream and river discharge records
- 130 water quality records
- Soil properties
- ~30 meteorological stations

Landfast ice data for 1996-2018

- Chukchi Sea and Beaufort Sea regions
- Organized by season (e.g. 1996–97)
- Landfast ice extent is integrated every 10 days as it advances and retreats over the course of the season
- Includes monthly minimum, mean, median, and maximum landfast ice extents

Improving data access + exploration



ARDAC helps users find and utilize high-impact geospatial datasets about Alaska and the Arctic. The core of ARDAC is its "Toolbox" — geospatial data and technologies that facilitate data access. http://dev.arcticdatascience.org

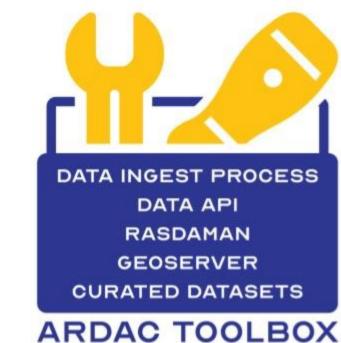
Apps that are built on the ARDAC Toolbox

NORTHERN CLIMATE REPORTS https://northernclimatereports.org Ecological futures in stories, charts, + data

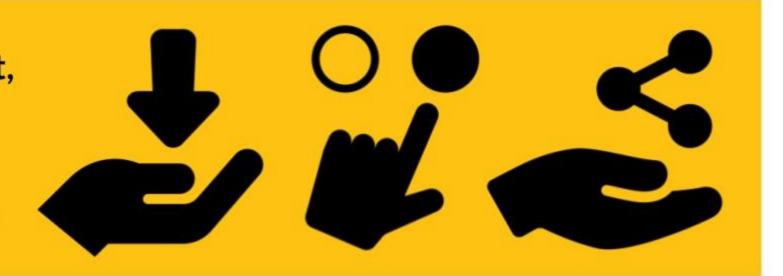
HISTORICAL SEA ICE ATLAS https://snap.uaf.edu/tools/sea-ice-atlas Sea ice concentrations off Alaska, 1850-present

ARCTIC-EDS https://arcticeds.org

Merge environmental data with science + engineering workflows



How we RECEIVE a dataset, **CURATE it, and SHARE it** via web services to bring its most useful parts to life



- **CURATION**: determine how the dataset could be most useful in its existing form, as derived products, and/or application with other ARDAC datasets
- AGGREGATION: e.g. compute decadal summaries for climate projections, which might help improve public interpretability and utility in research
- CONSTRUCTION: consider future query performance, and building a final dataset that can efficiently provide desired data

- QUALITY CONTROL: ensure that the resulting dataset is what we expect and that all constituent assets are standardized for interoperability
- TRANSPARENCY: use open-source software and standards with publicly-available code
- COMPREHENSIVENESS: make all data available in its native format, along with user-friendly documentation and standard, machine-readable, open formats

