



<https://arcticdata.io>

 @arcticdatactr

the **Arctic Data Center**

Amber Budden

 0000-0003-2885-3980



DataONE

NSF Award #1546024

Arctic Data Center Data Science Training

October 7-11, 2019 1



the **Arctic Data Center,**
NSF Standards & Policies





Troms Fylke



Rama



Detroit Publishing Co



Features and Services

- **Data Archive**
- **Portal** for data discovery
- **Tools & Infrastructure**
 - *Data and metadata submission*
 - *Provenance features*
 - *Replication features*
 - *Metadata quality check*
- **Support Services**
- **Training & Outreach**
- **Data Rescue**





Teams

Leadership Team



M. Jones



Schildhauer



Budden



Casey



Baker-Yeboah



Dozier



Walker



C. Jones



Mecum



Chong

CI Team

Data and User Services Teams



Clark



Vacant



Li



Mullen



Semnacher





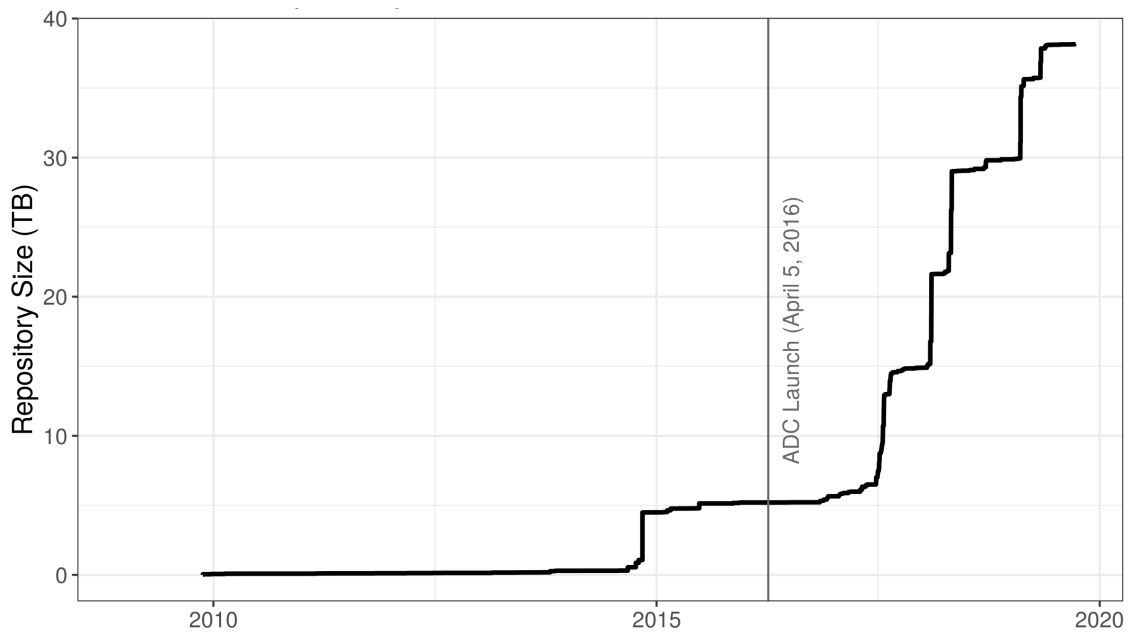
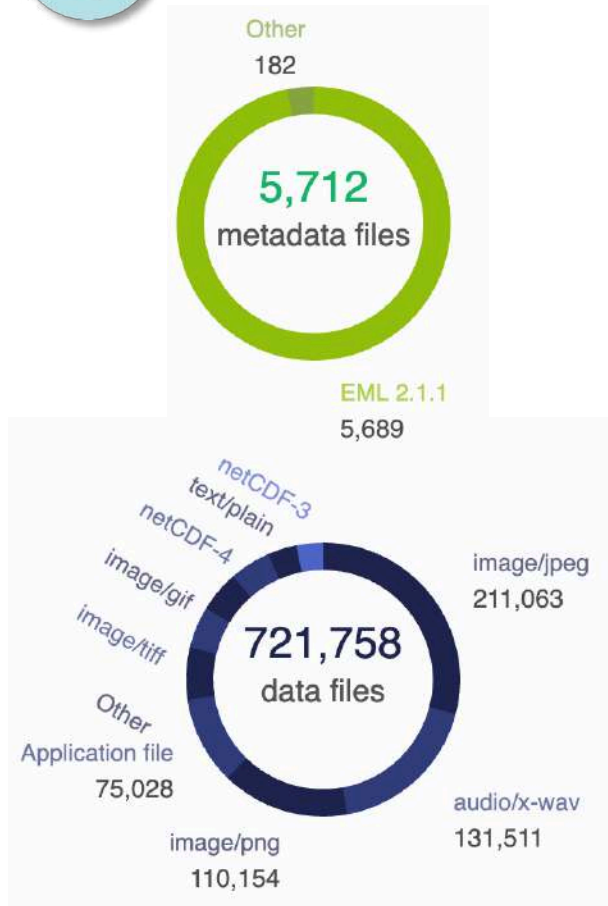
Data Archive





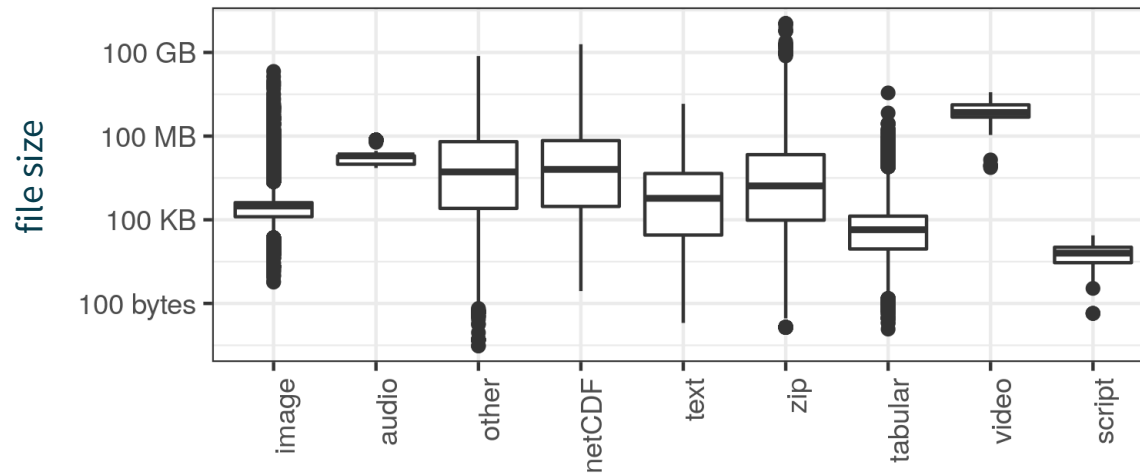
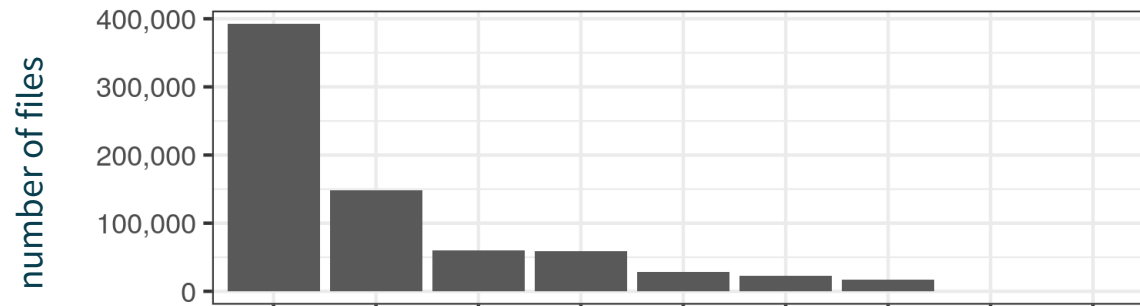
Data archive growth

4 to 34 TB





Content Characterization





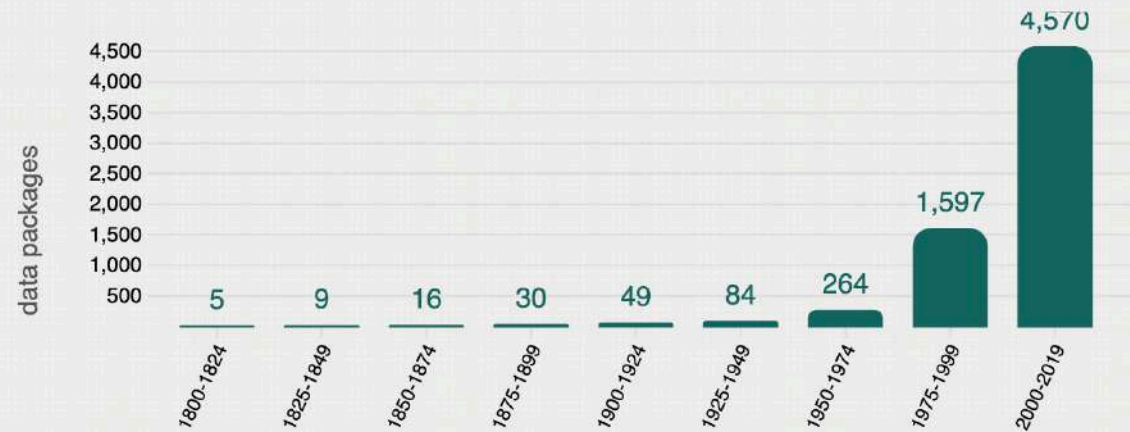
Data by time period



Time period of data

1800 - 2019

The years in which data was collected, regardless of upload date. Only the most recent version of the data package is counted.





Pan-Arctic Data





Data Discovery Portal



The screenshot shows the NSF Arctic Data Center website. The browser address bar displays 'arcticdata.io/catalog/data'. The page features a search bar, a navigation menu with 'Data', 'Support', 'About', 'Community', and 'Submit Data', and a 'Sign in with Orcid' button. A left sidebar contains a search filter section with categories like 'Data attribute', 'Annotation', 'Creator', 'Year', 'Identifier', 'Taxon', and 'Location'. The main content area displays 'DATASETS 1 TO 25 OF 5,700' with a list of dataset entries, each including author names, titles, and DOIs. A world map on the right side is overlaid with a grid of numbers, representing data distribution across various geographic regions. The map includes labels for countries and continents, and a 'Hide Map' button is visible above it.

<https://arcticdata.io/catalog/>



Data Discovery Portal



The screenshot shows the NSF Arctic Data Center website. The browser address bar displays 'arcticdata.io/catalog/data'. The page features a search bar, a filter sidebar, a list of datasets, and a world map with a data grid overlay. The datasets list includes:

- William Daniels, Yongsong Huang, James Russell, Carrie Morrill, William Longo, et al. 2019. **Leaf wax hydrogen isotope data, and modern precipitation isotope data, Lake E5, Alaska, 2014-2018.** Arctic Data Center. doi:10.18739/A2DZ03215.
- Rachel Fowler and Jasmine Saros. 2019. **Lake water quality data from Kangerlussuaq, Greenland, 2013-2018.** Arctic Data Center. doi:10.18739/A2QB9V561.
- Timothy Pasch and Olaf Kuhlke. 2019. **Arctic Unmanned Aerial Video (UAV) 4K footage demonstrating topographical factors in Huslia, Alaska, summer 2019.** Arctic Data Center. doi:10.18739/A2W37KW0M.
- Julie McKnight. 2015. **Thule, Greenland CO2 flux, soil moisture and temperature - 2015.** Arctic Data Center. doi:10.18739/A20V89H5P.
- Julie McKnight Konkel. 2017. **Soil CO2 flux, temperature, and moisture, Thule, Greenland 2016.** Arctic Data Center. doi:10.18739/A24M9199T.
- Patrick Sullivan. 2016. **Light Saturated Needle Photosynthesis and Stomatal Conductance, Arctic Data Center. doi:10.18739/A20V89H5P.**

The world map on the right shows a grid of data points, with a 'Hide Map' button and 'Satellite'/'Terrain' map style options.

<https://arcticdata.io/catalog/>



Data Discovery Portal



Sarah Das, Luke Trusel, and Matthew Osman. 2018. Ice sheet and ice cap firn core physical and chemical stratigraphy, Disko Bay region, Greenland, 2014-2015. Arctic Data Center. doi:10.18739/A2X921J1G.



Citations

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Quality report

Files in this dataset Package: resource_map_doi:10.18739/A2X921J1G

| Name | File type | Size | Download All |
|--|------------|-------|--------------|
| Metadata: Disko Bay Project, Greenland: ice sheet and ice cap firn core physical and chemical stratigraphy.xml | EML v2.1.1 | 65 KB | Download |
| gw2014_melt_vs_depth.csv | text/csv | 631 B | Download |
| nu2015_melt_vs_depth_nov2017.csv | text/csv | 19 KB | Download |
| gc2015_density.csv | text/csv | 33 KB | Download |

[Show 6 more items in this data set](#)

General

Identifier doi:10.18739/A2X921J1G

Abstract This dataset is comprised of physical and chemical stratigraphic records from firn cores collected on the western flank of the Greenland Ice Sheet, and ice caps on Disko Island, Greenland. The dataset includes physical and chemical stratigraphic records from firn cores collected on the western flank of the Greenland Ice Sheet, and ice caps on Disko Island, Greenland. The dataset includes physical and chemical stratigraphic records from firn cores collected on the western flank of the Greenland Ice Sheet, and ice caps on Disko Island, Greenland.



Tools and Infrastructure



Anna K. Liljedahl. 2017. Groundwater levels and temperature, Delta Junction, Interior Alaska, 2014-2016. urn:node:ARCTIC. doi:10.18739/A2RV0D050.

Citations

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Downloads

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Views

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Quality report

Files

Untitled dataset

Add files to start your dataset

+ Add Files

Overview

People

Dates

Locations

Taxa

Methods

2 inputs

Other Entity

Entity Name: heatmaps.R

Download

Data Object Type: Other

Physical Structure Description:

Object Name: heatmaps.R

Size: 3439 bytes

Authentication: c76doddadf719f1d4501ba5ce9da1e90fbadc8c3 Calculated By SHA1

5 outputs

Metadata Quality Report

After running your metadata against our standard set of metadata, data, and congruency checks, we have found the following potential addressing the issues below:

26 checks

- Identification: 100% complete
- Discovery: 100% complete
- Interpretation: 100% complete

- Passed 18 checks out of 18 (informational checks not included).
- Warning for 0 checks.
- Failed 0 checks.
- 8 informational checks.

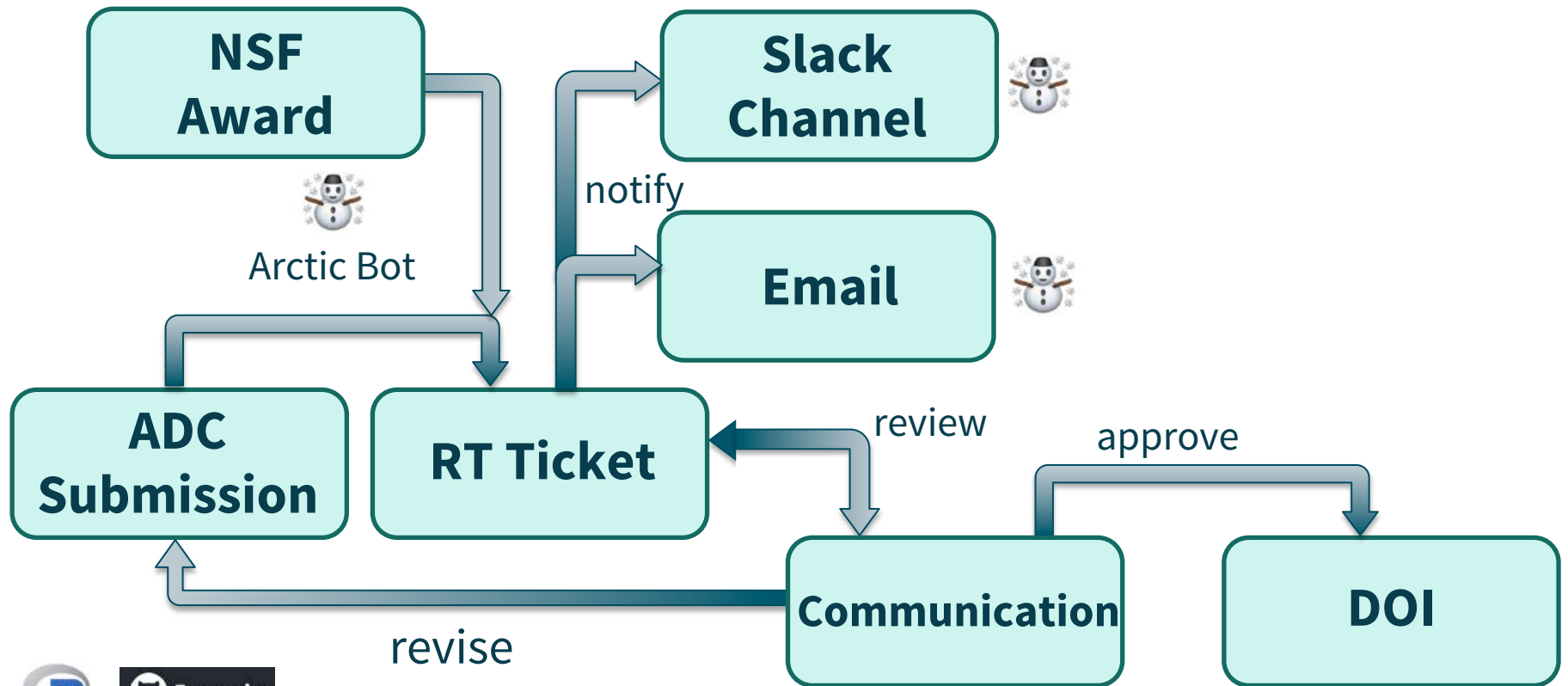


Support Services





Support Systems





Support Operations Team



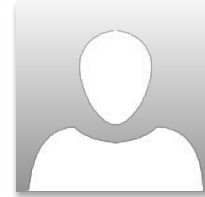
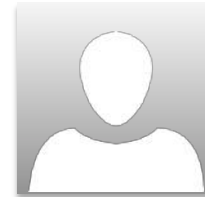
Project Data Coordinator
Dominic Mullen



Project Data Support
Jeanette Clark



Student Intern
Rachel Sun

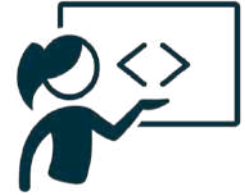


(support@arcticdata.io)



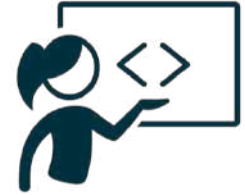


Training and Outreach





Training and Outreach

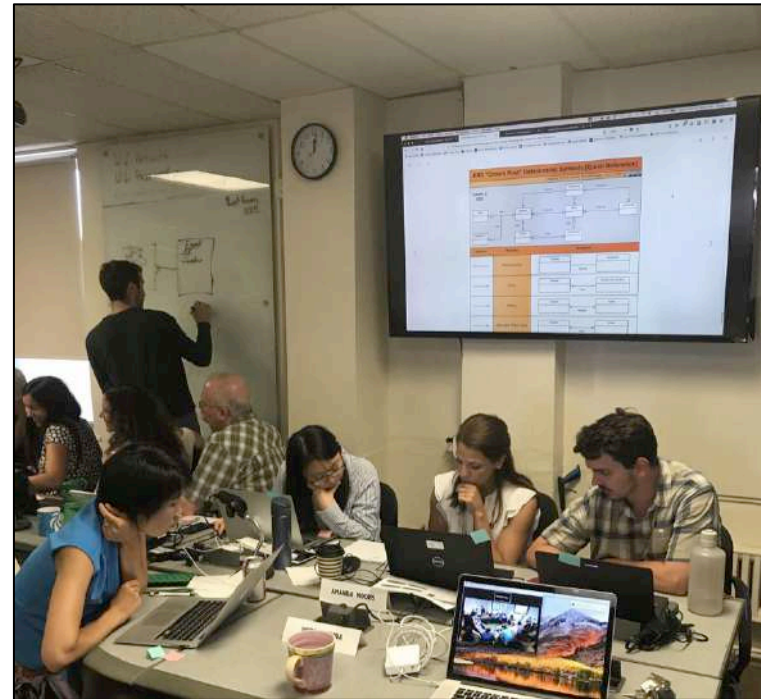
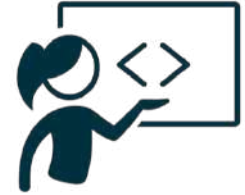


- Training
 - Trainings
 - Workshops
 - Internship Program
 - Data Fellows Program
 - Webinars



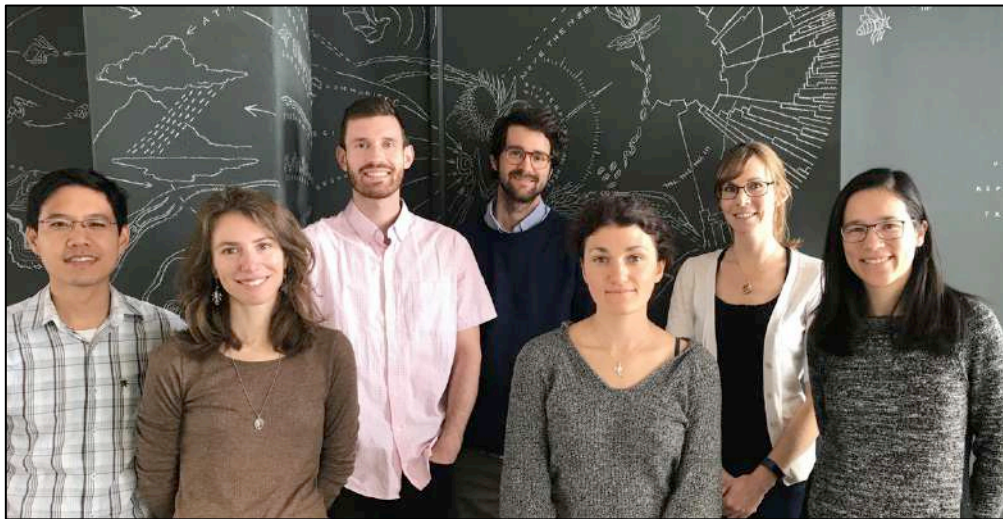
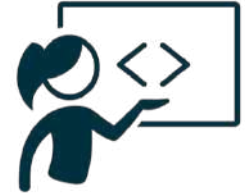


Arctic Data Science Training





Data Science Fellowship



NCEAS
National Center for Ecological Analysis and Synthesis

About Research Informatics Opportunities News Give Contact

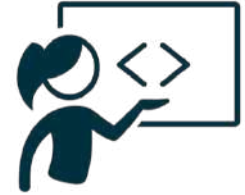
The Next Generation of Environmental Scientists are Data Scientists

NCEAS Portraits: Data Science Fellow Edition

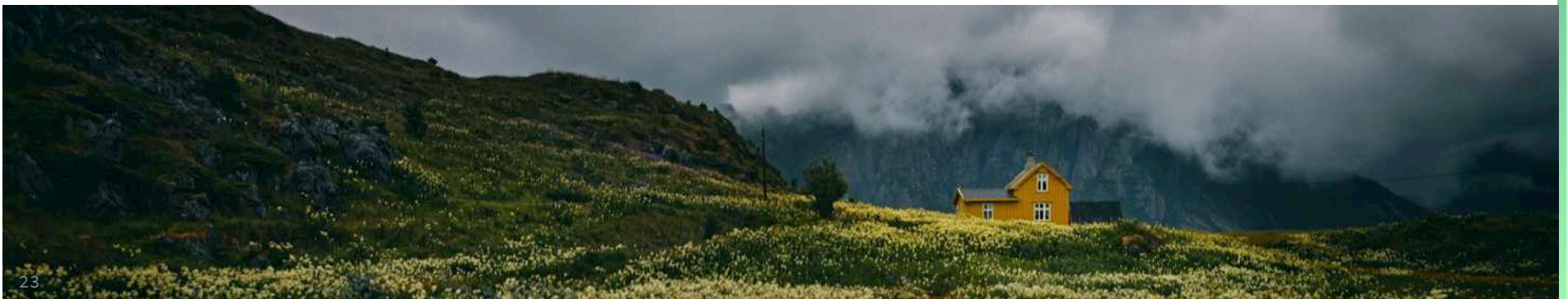
| | |
|--|--|
| <p>Rachel Carlson Leveraged the Power of Data Sharing "I think data science is a great example of using 21st-century tools to address 21st-century environmental problems." More</p> | <p>Steven Chong Improved Carbon Data Accessibility "My professional goal is to build a career that makes biological information more accessible and user-friendly." More</p> |
| <p>Emily O'Dean Reenergized Her Passion for Mixing Software and Science "Working at NCEAS has made me really excited about utilizing my computer science knowledge in the context of ecological research." More</p> | <p>Stephanie Freund Indulged Her Satisfaction in Well-Prepared Datasets "I believe that principles of open science are widely applicable for both scientific research and its applications." More</p> |



Training and Outreach

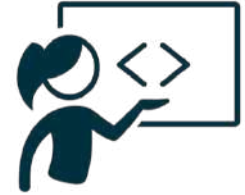


- Outreach
 - In-person events
 - News items and other communications
 - Social media
 - Arctic Data Center website



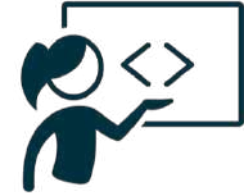


Data Training & Outreach





Data Highlights



Arctic Data Center

Data Support About Community [Submit Data](#) [Sign in with ORCID](#)

Dataset Highlights

Learn how specific datasets in the Arctic Data Center incorporate best data management practices and how their data can be applied to assist the Arctic research community.

- [Data Provenance and Arctic Soil Bacteria, with Michael P. Ricketts](#)
- [Dissolved Organic Carbon in the Arctic, with Dr. Rose Cory](#)
- [Learning from the Hunters in Savoonga, with Dr. Henry Huntington](#)
- [Subsistence Harvests in Alaskan Communities along the Bering Sea, with Dr. Rose Cory](#)
- [Investigating Rotten Ice, with Dr. Karen Junge](#)

Citation: Karen Junge. 2017. Extreme summer melt: Assessing the habitability and physical structure of rotting first-year Arctic sea ice. Chukchi Sea, Alaska. 2015-2018. Arctic Data Center. doi:10.18739/A28C9R366.

Highlight: "So-called rotten ice has experienced a long summer of melt, is fragile, difficult to work with, and has received little attention. Comprehensive information on its physical and microbiological properties does not exist," – Dr. Karen Junge.



Sampling a structurally rotten ice floe offshore. PC: Dr. Karen Junge, July 2017.

Decreases in ice extent, concentration, and thickness have all been observed in the Arctic as sea ice responds to a changing climate regime with earlier melt and later autumn freeze-up. Dr. Karen Junge, Senior Oceanographer at the University of Washington's Applied Physics Laboratory, and her team (co-principle investigators Dr. Bonnie Light and Dr. Monica Orellana and postdoc Carie Frantz, among others) are studying a less-familiar type of Arctic sea ice that could become more prevalent as the climate continues to warm: rotten ice.

"Rotten ice at the end of summer can be expected to be more prevalent as sea ice is being subjected to an increasingly longer summer melt period," says Junge. "Rotten ice is fragile and difficult to work with; and comprehensive information on its physical and microbiological properties does not exist."

This dataset is part of a project that is examining the microstructural properties and potential habitability of rotten ice. The team traveled to Utqiagvik (formerly Barrow), Alaska, to study rotten ice from shorefast and drifting ice off the Utqiagvik coast. Dr. Bonnie Light led the team in collecting data on the physical properties (temperature, salinity, density, microstructure) and optical (light scattering) properties; while Dr. Junge and Dr. Orellana led the team in collecting data on the biological properties. Being pioneers in rotten ice sampling, the team relied on local Inuit knowledge regarding on-site sea ice and weather conditions to ensure safe access to drifting rotten ice floes and safe ice sampling conditions during their fieldwork.



Junge notes that no formal criteria exist to qualify when ice becomes rotten, so they sampled melting ice at the point where its structural and optical properties advance beyond the summer melt season peak.

The data indicate that Arctic sea ice at the end of melt season (rotten ice) is physically different from summertime ice. Pore space increased as ice temperature increased, ice salinity decreased, and bulk density decreased.



Social Media

Ecology @ESAecology · Sep 4
#New in @ESAecology with #OpenData from @arcticdatactr

Poor #nutrition as a potential cause of divergent #tree growth near the #Arctic treeline in northern Alaska

#dendroclimatology
esajournals.onlinelibrary.wiley.com/doi/10.1002/ec...
Branch Extension (mm)

3

Ecological Monographs @ESAMonographs · Jun 11
#New in @ESAMonographs with #OpenData from @arcticdatactr

Dissociation of climatic cues and warming #climate are linked with phenological mismatch between #Arctic #shorebirds and prey invertebrates

#phenology @eunbkwon
esajournals.onlinelibrary.wiley.com/doi/10.1002/ec...

7 6

Andy Parsekian 🇺🇸 @uw_nsgeophysics · May 16

The full, hard-earned dataset is also published on the @arcticdatactr in raw and processed forms. If you like playing with surface NMR data, or if you just want talk info to use in your own work, we encourage you to download the dataset! (2/2) arcticdata.io/catalog/view/d...

4



@arcticdatactr



Data Rescue

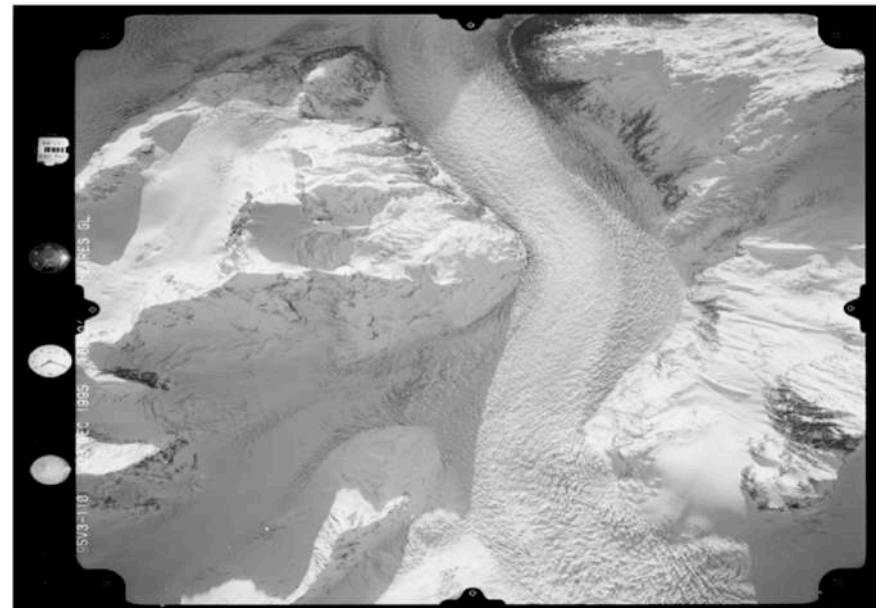




Data Recovery: Aerial Glacier Photos



- Austin Post's collection
- 1964 – 1997
- 2 - 6 rolls per year
- 100,000+ files = 4.9 TB
 - Glacier photos: TIFs, JPGs, TNs
 - Reconstructed flight paths, images of notes, image metadata, camera specs



*Meares Glacier, Prince William Sound, AK
61.187448, -147.457573, taken from 18,000'
December 3, 1995, Roll 3, Frame 110
doi:10.18739/A2FF6Z (NAGAP_95V3_110.jpg)*



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NSF Standards & Policies



Who Must Submit

<https://arcticdata.io/submit/#who-must-submit>

Arctic Research Opportunities (ARC):

- Complete metadata and all appropriate data and derived products
- Within 2 years of collection or before end of award, whichever comes first

ARC Arctic Observing Network:

- Complete metadata and all data
- Real-time data made public immediately
- Within 6 months of collection



Who Must Submit: Social Sciences

<https://arcticdata.io/submit/#who-must-submit>

Arctic Social Sciences Program (ASSP):

- NSF policies include special exceptions for ASSP and other awards that contain sensitive data
- Human subjects, governed by an Institutional Review Board, ethically or legally sensitive, at risk of decontextualization
- Metadata record that documents non-sensitive aspects of the project and data
 - *Title, Contact information, Abstract, Methods*



Terms of Use: Licensing and Distribution

<https://arcticdata.io/submit/#license-and-data-distribution>

All metadata and (non-sensitive) data will be released under either:



CC-0 Public Domain Dedication:

“...can copy, modify, distribute and perform the work, even for commercial purposes, all without asking permission.”



Creative Commons Attribution 4.0 International License:

*“...free to...copy,...redistribute,...remix, transform, and build upon the material for any purpose, even commercially,...[but] **must give appropriate credit**, provide a link to the license, and indicate if changes were made.”*



Data Citation

- We assign a DOI to each published data set
- Researchers should cite data they use

Anna K. Liljedahl. 2017. Groundwater levels and temperature, Delta Junction, Interior Alaska, 2014-2016. urn:nod:ARCTIC. doi:10.18739/A2RV0D050.

Citations

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Quality report

- We are working as part of Make Data Count to track the citations to data





Data Citation

- Each update has a unique identifier
- Cite the exact version used
- Newer versions are clearly indicated

The screenshot shows the Arctic Data Center website interface. At the top left is the logo for the NSF Arctic Data Center. To the right are navigation links for 'Data', 'Support', and 'About', along with a green 'Submit Data' button and a 'Sign in with Orcid' button. Below the navigation is a yellow warning banner that reads: 'NOTE: A newer version of this dataset exists'. Underneath is a breadcrumb trail: 'Home / Search / Metadata'. The main content area displays a citation: 'Nina J. Karnovsky, Pomona College, Ann M. A. Harding, Environmental Science Department, Alaska Pacific University, and UCAR/NCAR - Earth Observing Laboratory. 2016. **At-sea density of foraging little auks (Alle alle) near Hornsund Fjord.** Arctic Data Center. urn:uuid:849a7036-8dc4-400e-a584-9d1aafacca63.' A small circular icon with a plus sign is visible in the bottom right corner of the citation area.



the **Arctic Data Center,**
NSF Standards & Policies,
Summary



Arctic Data Center Features and Services



Data Archive



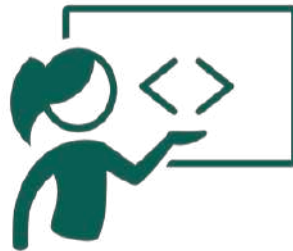
Data Discovery Portal



Tools and Infrastructure



Support Services



Training and Outreach



Data Rescue





Operation Metrics



5,700
DATA SETS



1,520
CREATORS



721K+
DATA FILES



14,119
USERS



34TB+
TOTAL SIZE



11.9M+
FILE DOWNLOADS



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Center**

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