



<https://arcticdata.io>

 @arcticdatactr

the **Arctic Data Center**

Amber Budden

 0000-0003-2885-3980



DataONE

NSF Award #1546024

Arctic Data Center Data Science Training
February 11-15, 2019



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**





Team



M. Jones



Baker-Yeboah



Budden



Casey



Dozier



Schildhauer



Walker



C. Jones



Mecum



Clark



Goldstein



Li



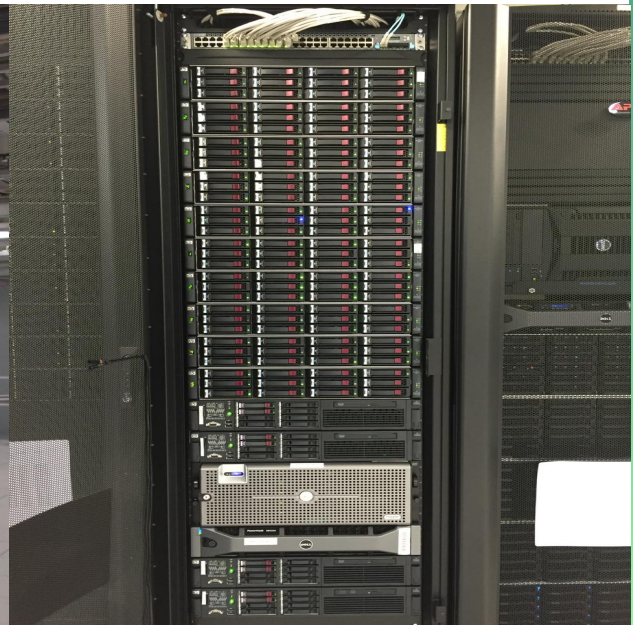
Mullen



Chong



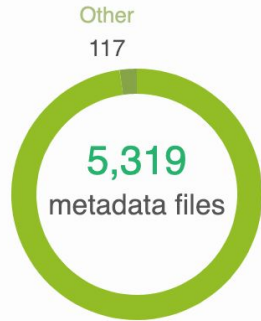
Data Archive



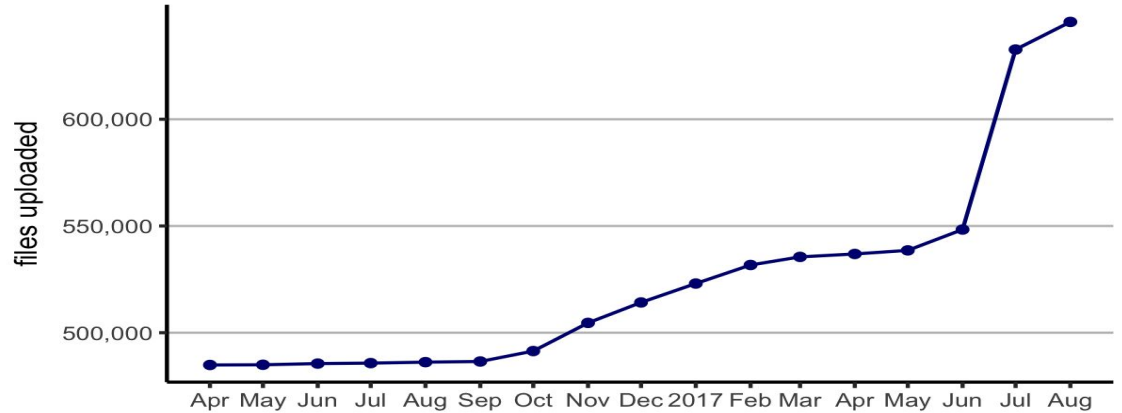
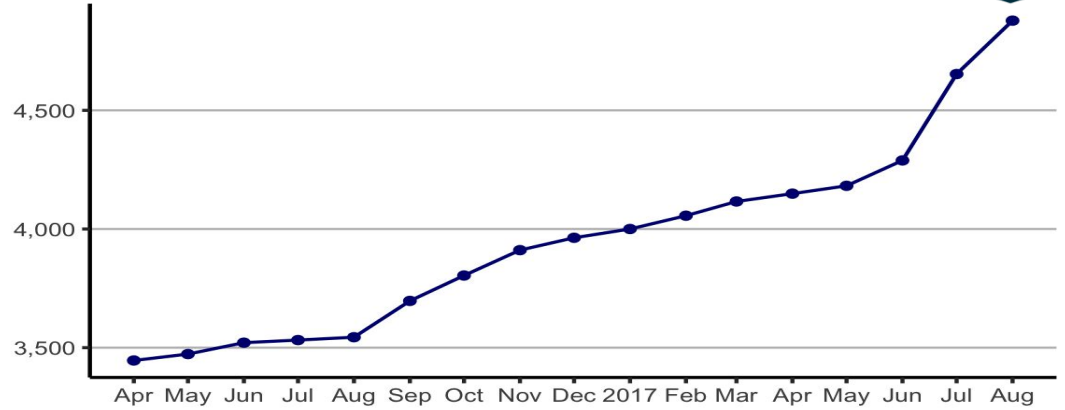
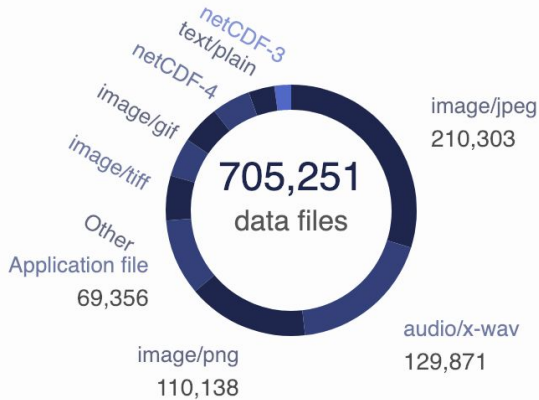


Data archive growth

4 to 27 TB



EML 2.1.1

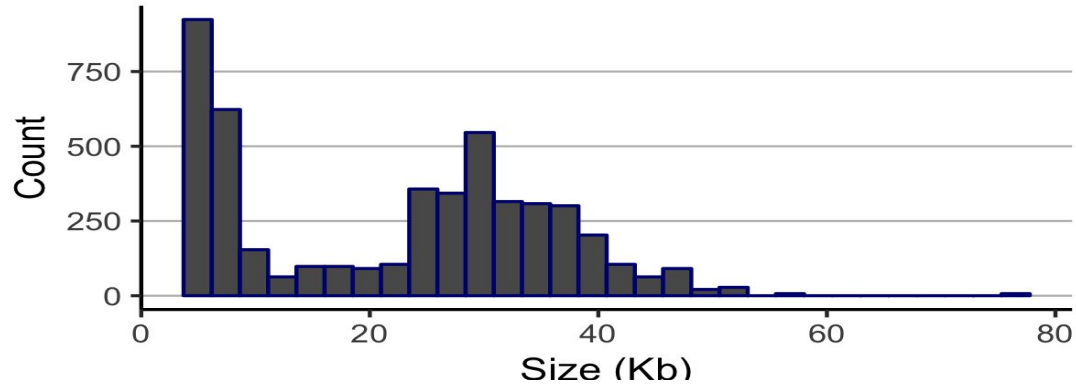




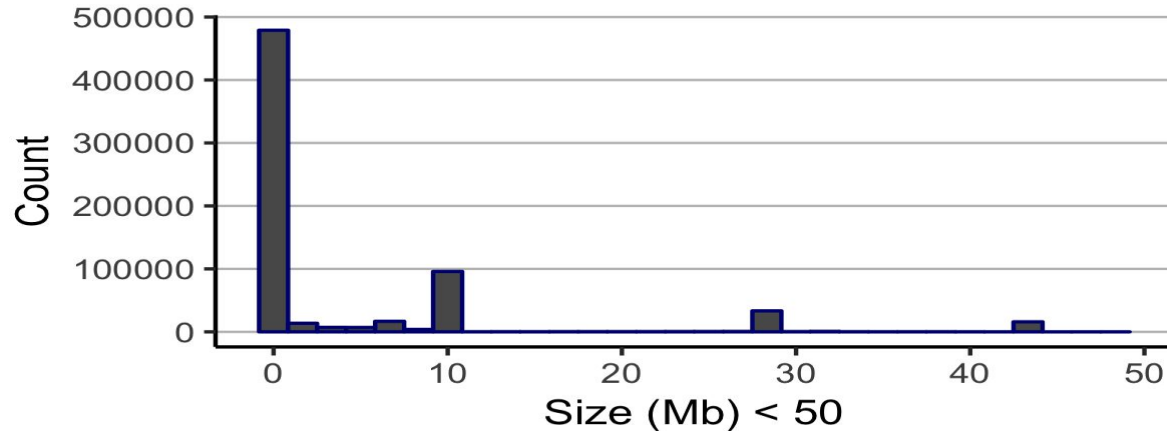
Size distribution



Metadata

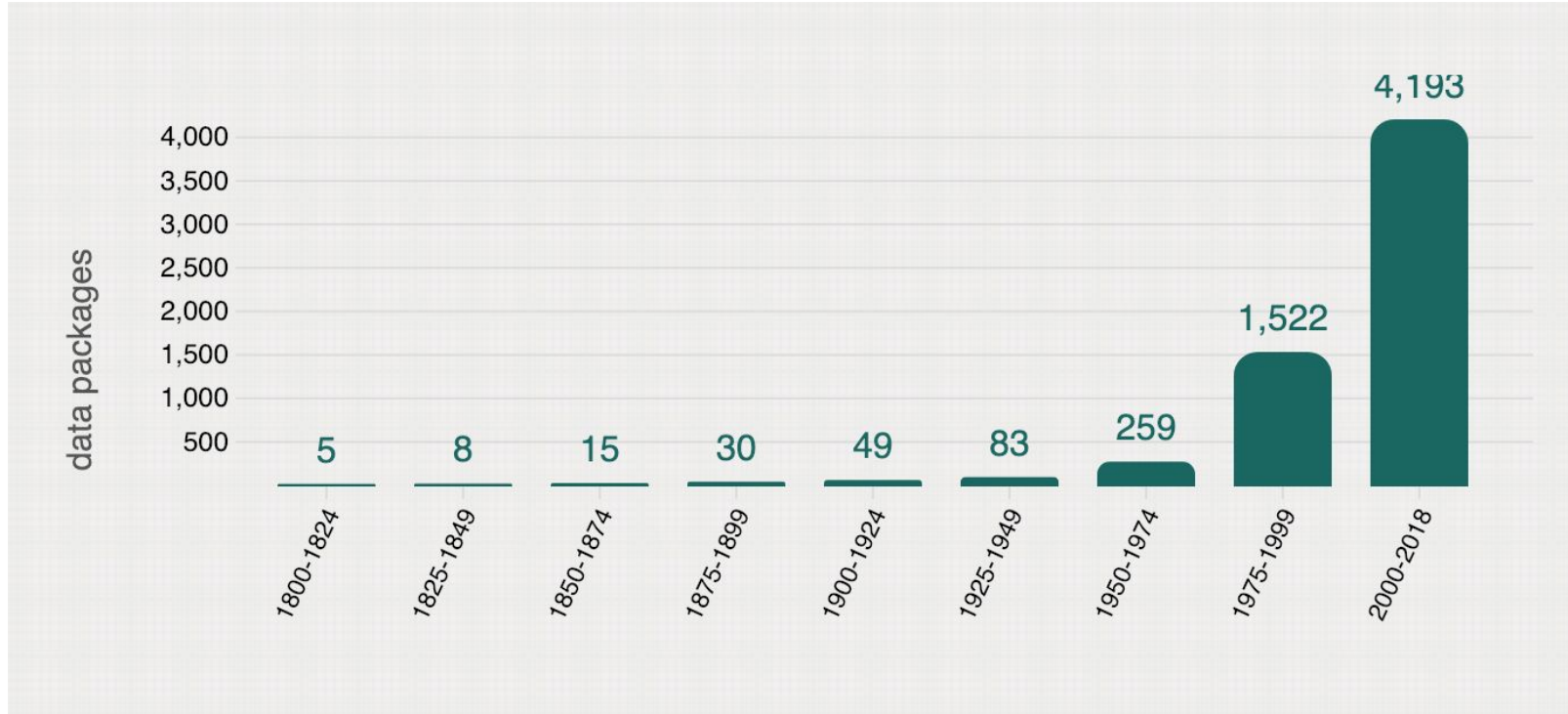


Data (< 50MB)



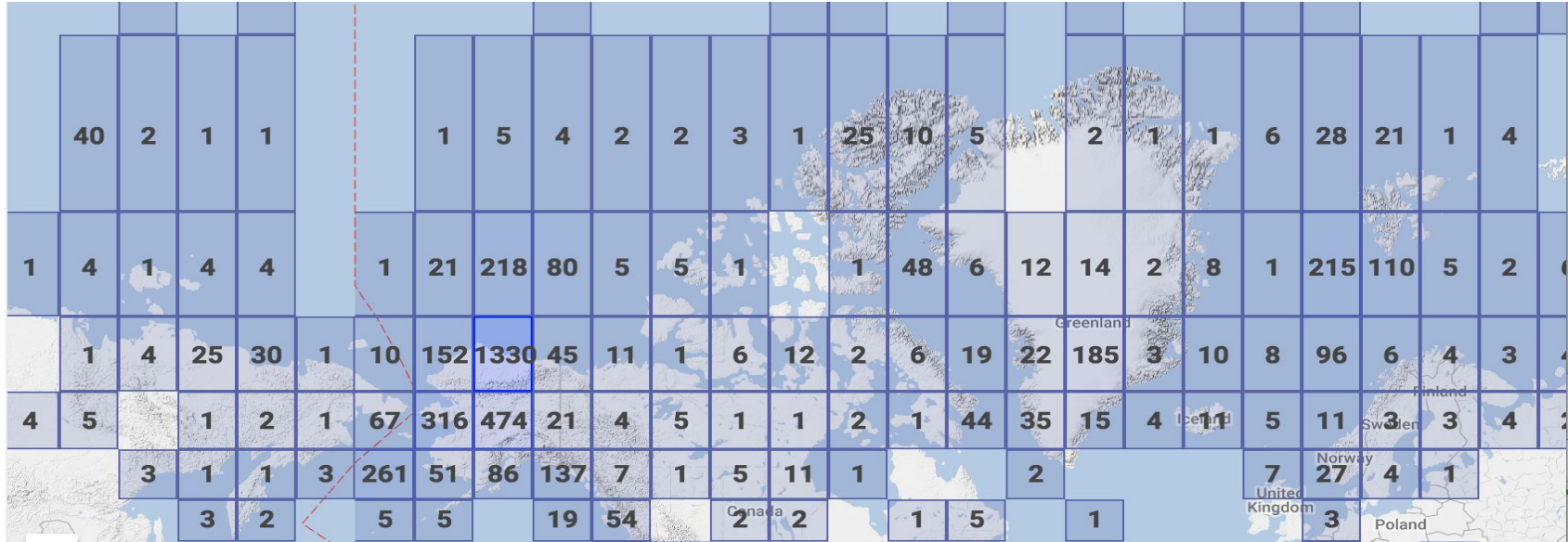


Data by time period





Pan-Arctic Data





Data Discovery Portal

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



[Data](#) [Support](#) [About](#) [Community](#) [Submit Data](#)

Sign in with OrCID

Search

Filter by:
 Data attribute

Creator
 Year

- Data coverage
- Publish year
- Identifier
- Taxon
- Location

DATASETS 1 TO 25 OF 5,289

1 2 3 ... 212 Next

Sort by Most recent

DETLEV HELMIG, Brendan Blanchard, and Daniel Obrist. 2018. **Soil, snow, and atmosphere exchanges of mercury in the interior Arctic tundra, Alaska.** Arctic Data Center. doi:10.18739/A21Z41S5S.



Carrie Morrill. 2018. **Code for lake energy and water balance model, Toolik Lake, Alaska, 2018.** Arctic Data Center. doi:10.18739/A2BC3SW87.



Jason Briner. 2019. **Holocene sediment physical properties in four southwest Greenland lakes, 2016-2018.** Arctic Data Center. doi:10.18739/A2MW28D81.



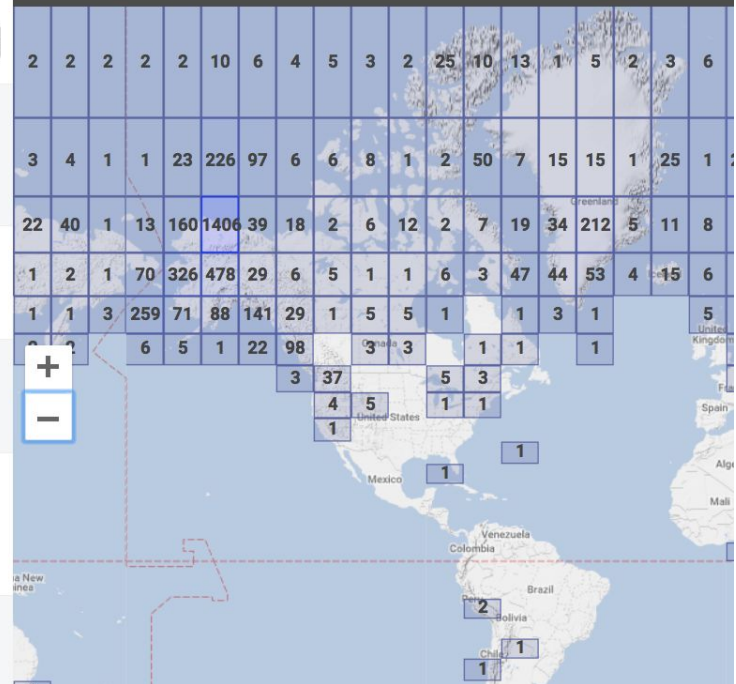
Sarah Das, Luke Trusel, and Matthew Osman. 2018. **Ice sheet and ice cap firn core physical and chemical stratigraphy, Disko Bay region, Greenland, 2014-2015.** Arctic Data Center. doi:10.18739/A2X921J1G.



Joseph R. McConnell. 2018. **Aerosol and chemical measurements from ice cores, Summit, Greenland, 1446-1763.** Arctic Data Center. doi:10.18739/A26T0GW17.



Hide Map





Data Discovery Portal

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



[Data](#) [Support](#) [About](#) [Community](#) [Submit Data](#)

Sign in with OrCID

Search

Filter by:

Data attribute

Creator

Year

1800 2018

Data coverage

Publish year

Identifier

Taxon

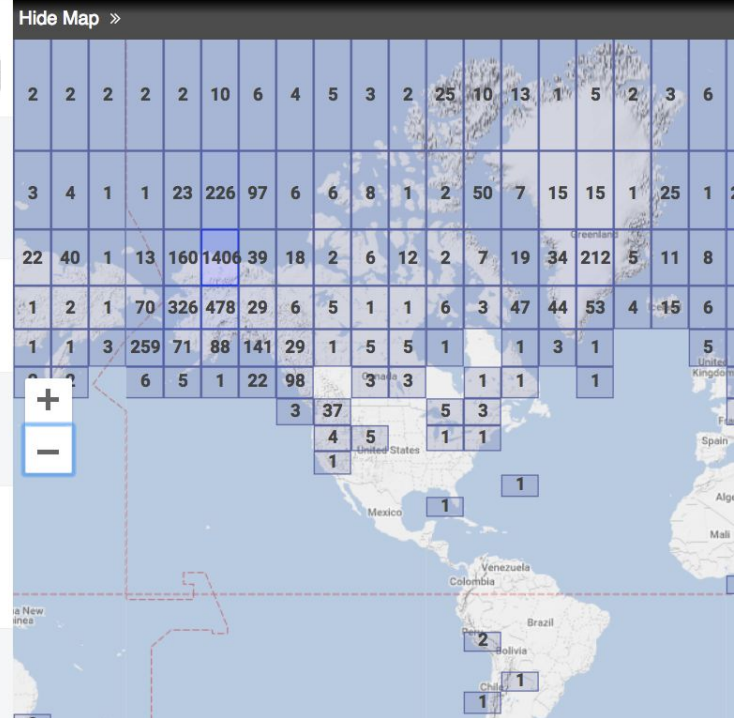
Location

DATASETS 1 TO 25 OF 5,289

1 2 3 ... 212 Next

Sort by **Most recent**

- DETLEV HELMIG, Brendan Blanchard, and Daniel Obrist. 2018. **Soil, snow, and atmosphere exchanges of mercury in the interior Arctic tundra, Alaska.** Arctic Data Center. doi:10.18739/A21Z41S5S.
- Carrie Morrill. 2018. **Code for lake energy and water balance model, Toolik Lake, Alaska, 2018.** Arctic Data Center. doi:10.18739/A2BC3SW87.
- Jason Briner. 2019. **Holocene sediment physical properties in four southwest Greenland lakes, 2016-2018.** Arctic Data Center. doi:10.18739/A2MW28D81.
- 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.
- Joseph R. McConnell. 2018. **Aerosol and chemical measurements from ice cores, Summit, Greenland, 1446-1763.** Arctic Data Center. doi:10.18739/A26T0GW17.





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 0

Downloads 0

Views 0

Copy Citation

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 and the Nuussuaq Peninsula, Greenland. These cores were collected in support of the NSF project Collaborative Research: Investigating the Influence of Sea Surface



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

0



Downloads

55



Views

301



Copy Citation



Quality report

Files

Untitled dataset

Add files to start your dataset

[+ Add Files](#)

Overview

People

Dates

Locations

Taxa

Methods

Title *

A title for this dataset. Include the topic, geographic location, dates, and if applicable, the scale of the data. Write out all abbreviations.

Example: Greater Yellowstone Rivers from 1:126,700 U.S. Forest Service Visitor Maps (1961-1983)

Abstract *

Provide a brief overview that summarizes the specific contents and purpose of this dataset.

2 inputs

Other Entity

Entity Name

[Download](#)

Data Object Type: Other

Physical Structure Description:

Object Name

Size

Authentication

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.



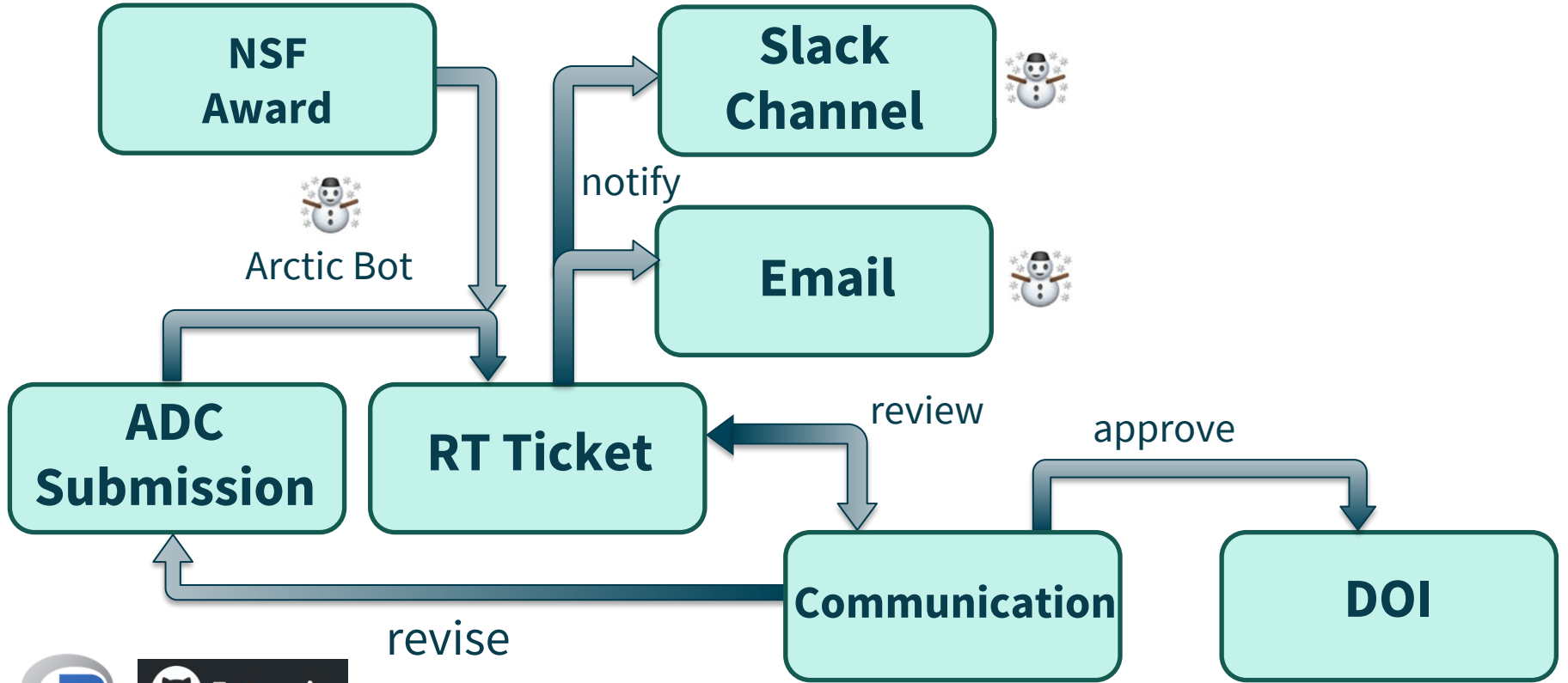


Support Services





Support Systems





Support Team (support@arcticdata.io)



Clark



Goldstein



Mullen



Chong



Monper



Pruett



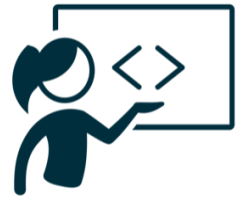
Sun



Student Interns

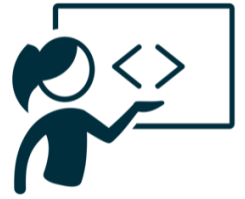


Training and Outreach





Training and Outreach

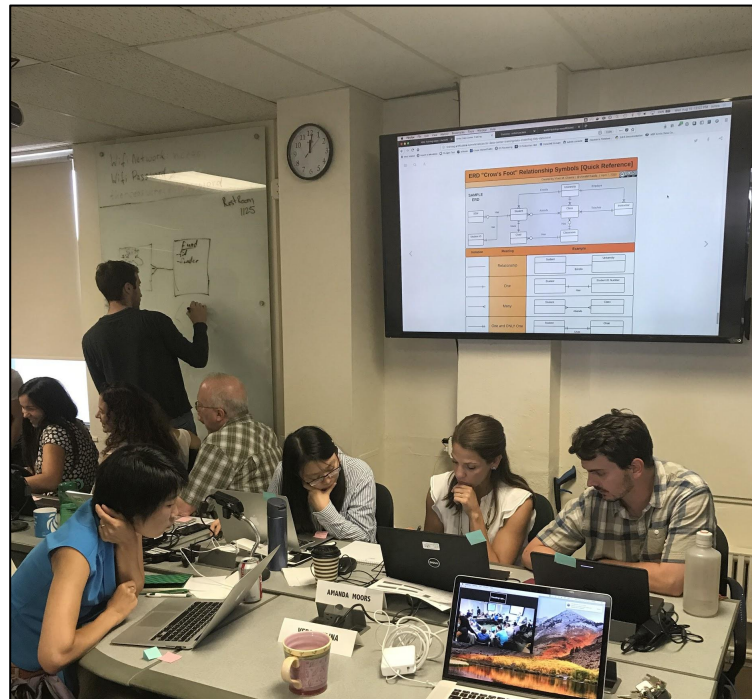
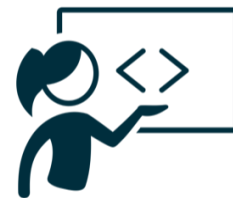


- Training
 - Trainings
 - Workshops
 - Internship Program
 - Data Fellows Program
 - Webinars



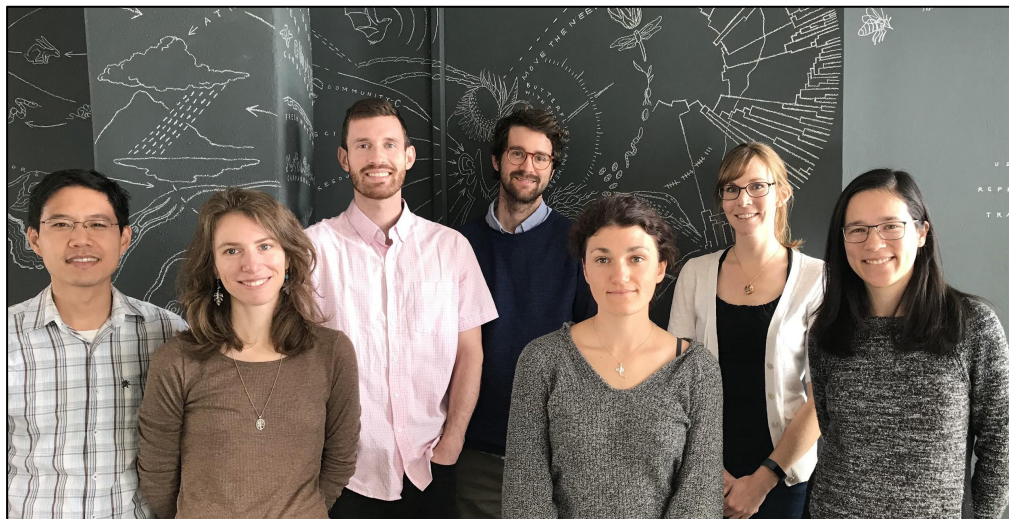
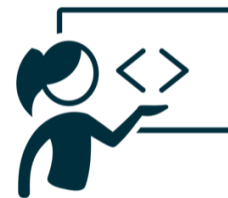


Arctic Data Science Training





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



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](#)



Steven Chong Improved Carbon Data Accessibility

"My professional goal is to build a career that makes biological information more accessible and user-friendly."

[More](#)



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](#)



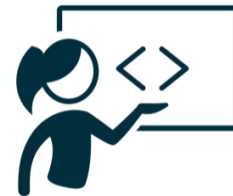
Stephanie Freund Indulged Her Satisfaction in Well-Prepared Datasets

"I believe that principles of open science are widely applicable for both scientific research and its applications."

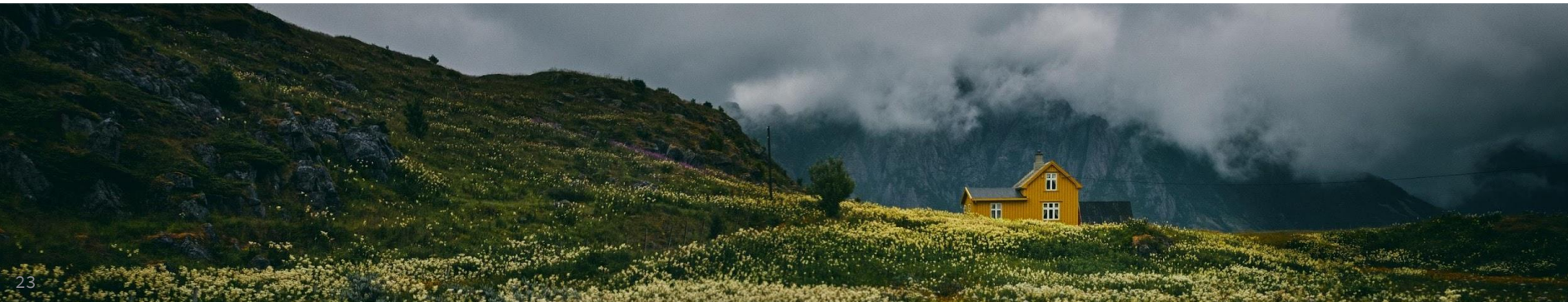
[More](#)



Training and Outreach

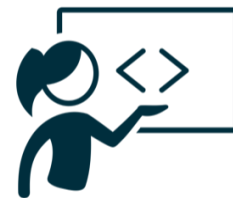


- Outreach
 - In-person events
 - News items and other communications
 - Social media
 - Arctic Data Center website



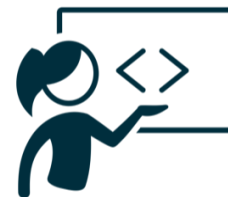


Data Training & Outreach





Dataset Highlights



Dataset Highlight: Phenological Mismatch in the Arctic, with Dr. Kathy Kelsey

By Kathryn Meyer

Citation: Katharine Kelsey. 2017. Methane and nitrous oxide fluxes as a function of the timing of goose grazing, Yukon Kuskokwim Delta, Alaska, 2016. Arctic Data Center. [doi:10.18739/A28J6F](https://doi.org/10.18739/A28J6F).

Highlight: *“These data are critical for understanding how climate-induced changes in the timing of migratory herbivore grazing should be included in projections of the role of Arctic and Subarctic ecosystems in the global climate system,” – Dr. Kathy Kelsey.*

Phenological mismatch is when the timing of food and/or habitat availability for a species is altered relative to that which that species is accustomed. It's also a phenomenon becoming more prevalent in a changing climate. As climatic changes lead to an earlier spring in the Arctic and many other parts of the world, the timing of herbivore migration and grazing is also changing. Dr. Kathy Kelsey, a Postdoctoral Fellow at the University of Alaska, Anchorage, and her team led by Principal Investigators Dr. Karen Beard, Dr. Jeffrey Welker and Dr. Joshua Leffler, know this well.



Dr. Kathy Kelsey collecting greenhouse gas data. PC: Ryan T. Choi

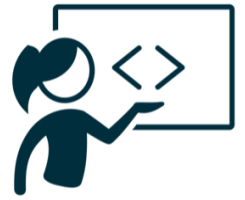


But while phenological mismatch is known to have effects on herbivore populations, Kelsey and her team are specifically investigating how these timing changes affect interactions between the biosphere and the atmosphere. To do this, they collected data on the exchange of greenhouse gases, including carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O), between the ecosystem and the atmosphere. This particular dataset helps to understand how changes in the timing of the growing season and the timing of goose grazing affect greenhouse gas fluxes.

Addressing their research questions really is a team effort. To collect and analyze their own data, Kelsey's team relied on other available data – including data on geese arrival,



Social Media & Marketing



The screenshot shows the Arctic Data Center website. At the top, there is a navigation bar with links for Data, Support, About, Community, Submit Data, and Sign in with ORCID. The main header reads "Data and software from NSF Arctic research". Below this are two buttons: "Search for Data" and "Submit New Data". A featured article titled "2019 Arctic Data Center Data Science Trainings" is visible, with a sub-headline "January 9, 2019 - The Arctic Data Center is kicking-off 2019 by hosting two data science trainings in January and February. These 5-day trainings provide Arctic researchers with an overview of best data management practices, data science tools, reproducible data analysis in R and Github, and concrete steps and methods for more easily documenting and uploading their data to the Arctic Data Center." A "Read more" link is at the bottom of the article snippet.



28 September 2018 Issue

Highlighting the Stories and People Behind Preserved Arctic Data

The Arctic Data Center has recently established a Dataset Highlights page. The Dataset Highlights page provides insights directly from the researchers, including how their data might be applied to other questions in support of Arctic research. The six datasets highlighted here are from studies of Arctic soil bacteria, Arctic river geochemistry, Indigenous subsistence harvest, local community response to ecosystem change in the Bering Sea, the habitability of fragile rotten ice, and phenological mismatch in the Arctic.

By: Kathryn Meyer, Community Engagement and Outreach Coordinator at the Arctic Data Center



 @arcticdatactr

The screenshot shows the Twitter profile for the Arctic Data Center (@arcticdatactr). The profile bio reads: "The primary data repository for the Arctic section of @nsf. Check out the Arctic data, trainings, and tools at arcticdata.io". It shows 199 tweets, 133 following, 313 followers, 191 likes, 0 lists, and 0 moments. A tweet from MOSAIC Expedition (@MOSAICArctic) is highlighted, stating: "Hi, I'm Matthew Shupe and I'll be tweeting here about a very exciting international science expedition to the Arctic called MOSAIC. Bear with me as I learn how twitter works... and always feel free to ask questions...". Another tweet from ARCUS (@ArcticResearch) is also visible, mentioning a call for Arctic Indigenous scholars to apply for an NSF-supported opportunity to travel to Washington DC.



Data Rescue

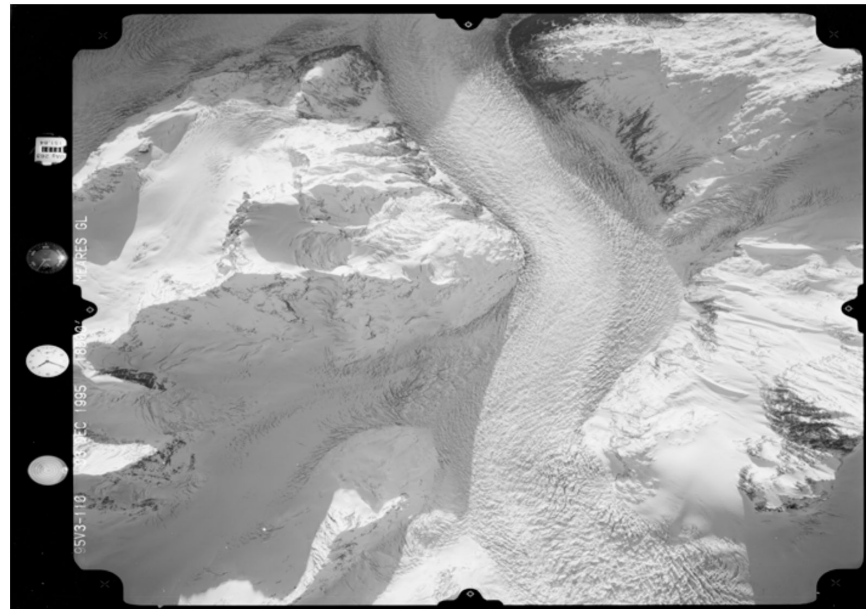




Data Recovery: Aerial Glacier Photos



- 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)*



the **Arctic Data Center,**
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:node:ARCTIC. doi:10.18739/A2RV0D050.

” Citations

0

Downloads

55

Views

301

Copy Citation

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. At the top left is the logo with the text "NSF Arctic Data Center". To the right are navigation links: "Data", "Support", "About", and a green "Submit Data" button. Further right is a "Sign in with Orcid" button. Below the navigation is a yellow warning banner that reads "NOTE: A newer version of this dataset exists". Below the banner is a breadcrumb trail: "Home / Search / Metadata". The main content area contains the following text: "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 page content.



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



5,300+
DATA SETS



1,700
CREATORS



705K+
DATA FILES



9,300+
USERS



31 TB
DATA STORAGE



258K+
FILE DOWNLOADS



<https://arcticdata.io>