Greenland Natural Sciences Data Workshop

October 5-6, 2022

https://griso.ucsd.edu/greenland-data-workshop/

Welcome!

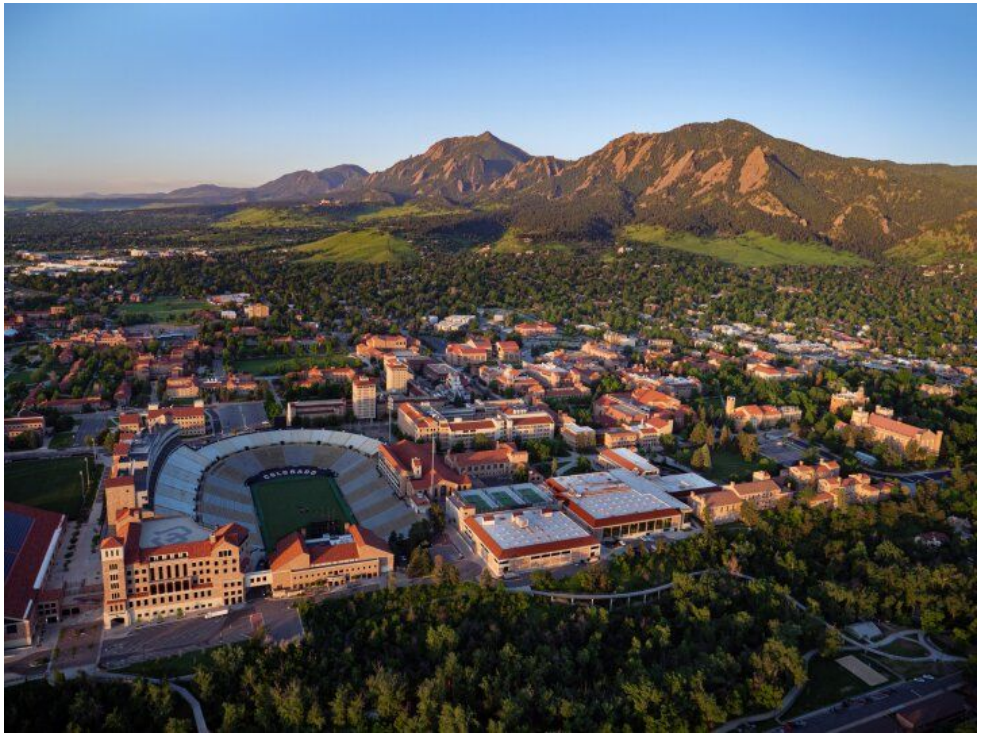
Who is here?

- ~32 virtual attendees, ~25 in-person attendees; 8 countries represented
  - USA, Canada, Spain, UK, Greenland, Denmark, Germany, Sweden

Why are we here?

- Map the ecosystem of Greenland natural science data archives, tools, workflows, and user needs
- Identify and prioritize gaps in the data and tool ecosystem
- Brainstorm routes to close gaps in the data to insight system
- Bring judgment and prioritization to identified routes

The land we stand on…



CU Boulder: CU Boulder, founded the same year Colorado became a state in 1876, recognizes that it sits on the traditional territories and ancestral homelands of the Arapaho, Cheyenne, Ute and many other Native American nations. Recognizing the history of the state, the university and the campus's origin story, however difficult, and the histories and experiences of the Indigenous peoples who have lived in these territories for millennia aligns with the campus's academic and research missions as Colorado's flagship public research university.

NSIDC: The National Snow and Ice Data Center (NSIDC) recognizes that the Arctic, subarctic, and mountainous regions around the world are the traditional homelands of many Indigenous Peoples. NSIDC offers gratitude and respect for Indigenous Peoples' long-standing knowledge of and stewardship of these lands and waters. We acknowledge that research in cryospheric areas has sometimes been complicit in colonial practices that have undermined Indigenous Knowledge systems.

And engage with…

The Inuit, the Indigenous peoples of Greenland, are understood to have crossed to northwest Greenland in a series of migrations beginning in roughly 2500 BCE. Today, Greenland's Indigenous peoples are descendants of the Thule people, who settled in Greenland around 1100 CE. About 90% of Greenland's population today are Inuit and identify as Kalaallit (West Greenlanders), Inugguit (from the Thule district), or Iit (East Greenlanders). The Inuit culture in Greenland is strong and vibrant.

Learn more by exploring resources from the Inuit Circumpolar Council (inuitcircumpolar.com).

Map Credit: Inuit Circumpolar Council Alaska. 2020. Food Sovereignty and Self-Governance: Inuit Role in Managing Arctic Marine Resources. Anchorage, Alaska.

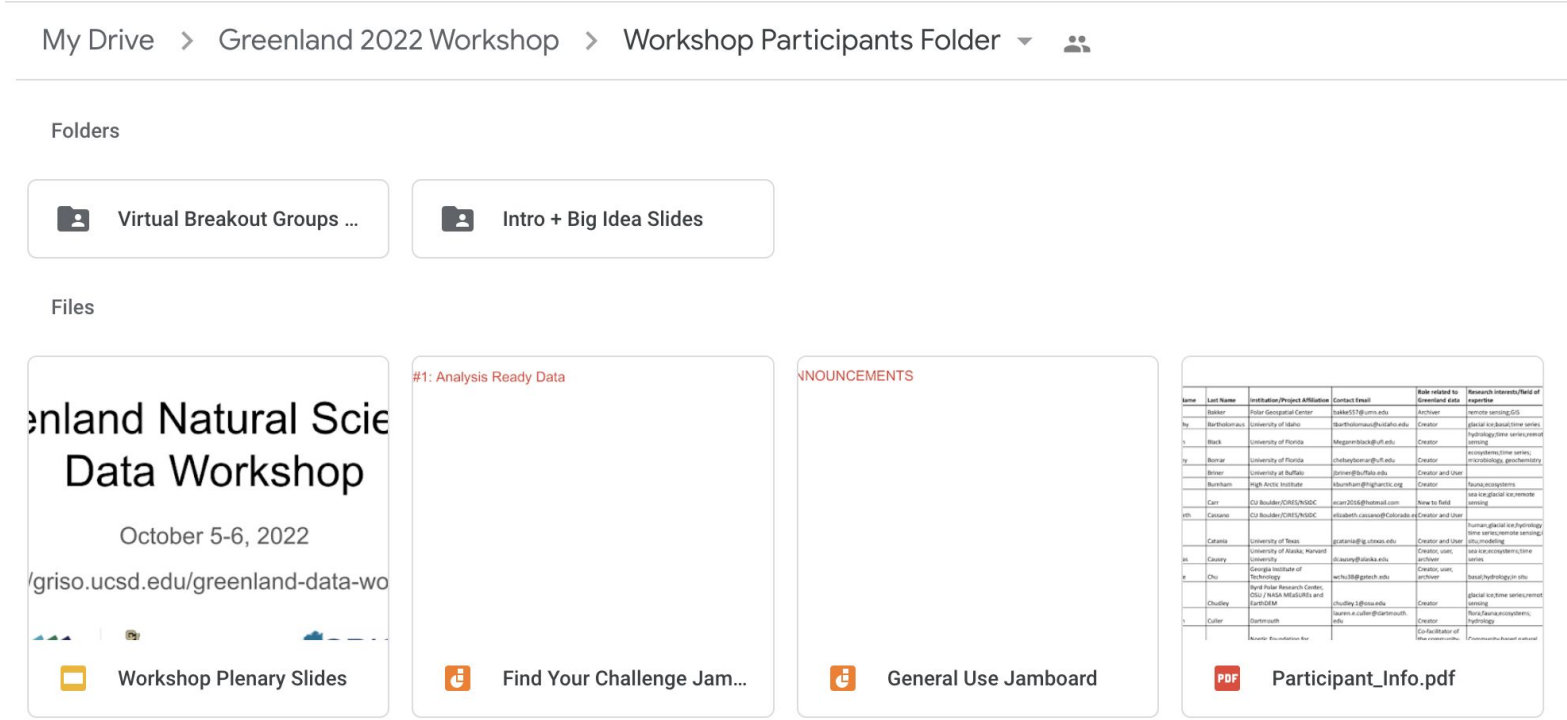
Thank you!

- Funding from NSF Arctic Natural Sciences
- Organizing Group:
  - Twila Moon (National Snow and Ice Data Center)
  - Claire Porter (Polar Geospatial Center)
  - Matt Jones (Arctic Data Center)
  - Ken Mankoff (National Snow and Ice Data Center)
  - Jason Briner (University at Buffalo)
  - Liz Cassano (National Snow and Ice Data Center)
- CIRES Events Planning, especially Linda Pendergrass

Code of Conduct: Respect, Listening, Engagement, Integrity

CU Boulder Ethics & Compliance Guidelines: https://www.colorado.edu/compliance/cu-boulder-ethics-and-compliance-plan-0#Standards-of-Conduct,-Polices-and%C2%A0Procedures

Workshop Digital Participant Folder



https://drive.google.com/drive/folders/1m_BdFwCOo5-g7B0D3LHrz5NrlWTc1qol?usp=sharing

Agenda - Day 1 first half

IN-PERSON & VIRTUAL

9:30-9:45: Workshop intro

9:45-10:05: Identify selves in Challenges/Solutions (using Jamboard or Wall paper)

10:05-10:35: Lightning talks (3 talks)

10:35-10:50: Break

10:50-11:30: Breakout groups (solutions brainstorm - Google slides)

11:30-12pm: Virtual groups report out to in-person groups

Data Challenge #1: Analysis Ready Data

Availability of Analysis Ready Data could shrink the data to insight/application timeline.

Manual labor is still necessary for many data cleaning and integration tasks.

FOGSS Related challenge: Better integration of observations and models

FOGSS Solution (moonshot): Cloud-supported data structures and modular models, with notebook-style tutorials to facilitate data and model exploration and experimentation by non-experts, facilitated by user-experience experts resourced to break down access barriers.

Data Challenge #2: Data Fragmentation across Repositories

Data are fragmented across the repository landscape, inhibiting discovery and integration

- Gaps between specialist repositories (handle one data type well, but miss lots of other data) versus generalist repositories (any data type, but limited data manipulation tools).
- A lack of systematic data preservation.

FOGSS Related challenge: Water remains a unifying unknown

FOGSS Solution (near-term): Prioritize field observations that ground-truth remote sensing observations and numerical models, *along with databases of those efforts* (e.g., a SUMup for Fjord Properties or Surface Meltwater).

Data Challenge #3: Community consensus data and evaluation

- Barriers exist to realizing shared international data infrastructure, and much infrastructure work is duplicated and overlapping between North America and Europe.

FOGSS Related challenge: Sustained, open polar observations

FOGSS Solution:

- Establish a consensus framework for evaluating remote-sensing data with in situ observations (near-term solution).
- Community consensus time series of ice and water fluxes (e.g. IMBIE for X, where X is ice surface velocity, elevation change, runoff) that combine data from multiple platforms and agencies (moonshot solution).

Data Challenge #4: Metadata quality

- Minimally described (un-FAIR) data and/or a lack of semantic (~descriptive) metadata hinders analysis, interpretation, and automation.
- Heterogeneous data collection methodologies exist and can introduce challenges in synthesizing across datasets or appropriately using individual datasets.

Data Challenge #5: FAIR and CARE

Implementing FAIR (Findable, Accessible, Interoperable, Reproducible) and CARE (Collective benefit, Authority to control, Responsibility, Ethics) principles can be difficult. Issues include: understandable guidelines and examples, language challenges, valuing of doing this work, etc.

FOGSS related challenge: Decolonizing foreign research in Greenland

FOGSS Solution: Solution (near-term): Mandate international participation in Greenlandic research portals (Isaaffik.org, ArcticHub.gl, g-e-m.dk)

Data Challenge #6: Quantifying uncertainty

Problem:

- Papers often assess uncertainty at O(1 %).
- Authors think small uncertainty is better than large uncertainty.
- Reviewers see “± X” and think that uncertainty has been sufficiently addressed.

FOGSS related challenge: Projecting Greenland’s contribution to sea level rise.

Directions on Jamboard/Wall activity

Lightning Talks

1) Lauren Culler, Dartmouth University
2) Finn Danielsen, Nordic Foundation for Development and Ecology
3) Megan Thompson-Munson, University of Colorado Boulder

BREAK

Return at 10:35am MT

Directions on Breakout Activities

AGENDA SLIDES

(May change during workshop)

Agenda - Day 1 first half

IN-PERSON

8:30: Breakfast starts for in-person folks

9-9:30: Arrive, in-person announcements

IN-PERSON & VIRTUAL

9:30-9:45: Workshop intro

9:45-10:05: Identify selves in Challenges/Recommendations (using Jamboard or Wall paper)

10:05-10:35: Lightning talks (3 talks)

10:35-10:50: Break

10:50-11:30: Breakout groups (recommendations brainstorm - Google slides)

11:30-12pm: Virtual groups report out to in-person groups

Agenda - Day 1 second half

IN-PERSON

12-1:30: Lunch

1:30-2:30: Breakout groups to work w/ identified recommendations short-list

2:30-3: Breakout group share

3-3:30: Wander and discuss - part 1

3:30-4: Wander and discuss - part 2

4-4:45: Breakout group: 2 x from 3 to 1 recommendation (so in-person and virtual groups have a recommendation to work with) & PREP SLIDE for morning sharing

4:45+: Mingle, group chats

(Optional) Dinner and hang out at Rosetta Hall - 6:30pm
1109 Walnut St.

Agenda - Day 2 first half

IN-PERSON

8:30: Breakfast starts for in-person folks

9-9:30: Arrive, in-person announcements

IN-PERSON & VIRTUAL

9:30-10: Day 1 summary from in-person groups

10-10:30: Lightning talks (3 talks)

10:30-10:45: Break

10:45-11:30: Breakout groups - Recommendation deep dive

11:30-12pm: Virtual report back in plenary

OPTIONAL - 12:00-12:30: In-person group presentations

Agenda - Day 2 second half

IN-PERSON

12:00-12:30: In-person group presentations

12:30 - 2: Lunch

2-3: Individual thinking + Plenary discussion of recommendations and identifying additional recommendations

3-3:30: Break & Recommendation voting

3:30-4:30: Small group recommendation writing

- Using document template

4:30-5: Wrap-up discussion

- How should we share? Who will do it? (Group photo)

(Optional) Dinner at Avanti Food and Beverage at 6:30pm

Feedback

Workshop feedback link: https://forms.gle/mC1kZ2YGhKiFoJSeA