

U.S. Update to FARO for 2017

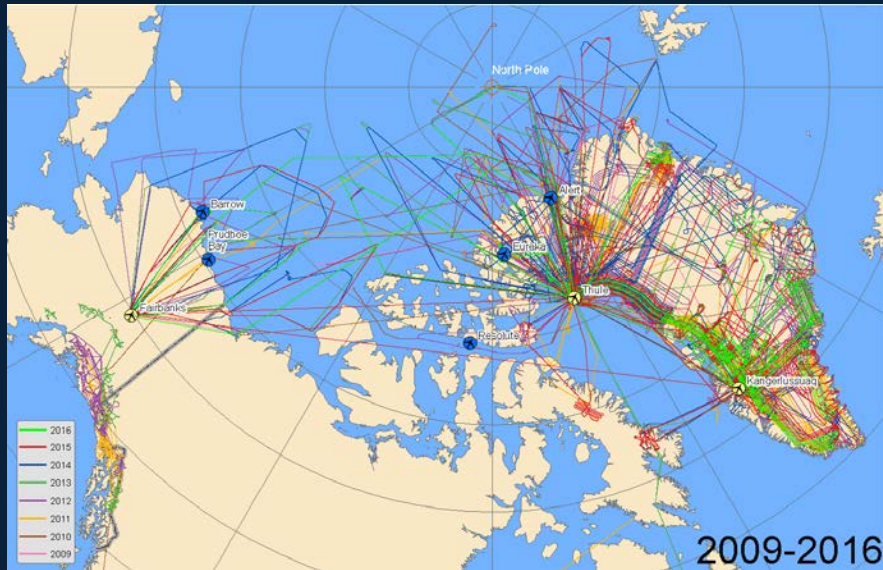
Dr. Jennifer L. Mercer
Program Manager
Arctic Research Support & Logistics Program



U.S. National Science Foundation
Geosciences Directorate (GEO)
Office of Polar Programs (PLR)



NASA: Operation Ice Bridge



Schedule

2017

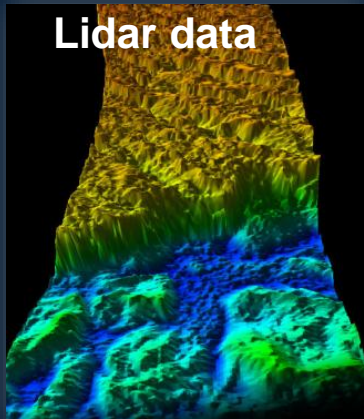
Greenland, March-May NASA P3

Alaska, May and August UAF DHC-3

2018 - TBD

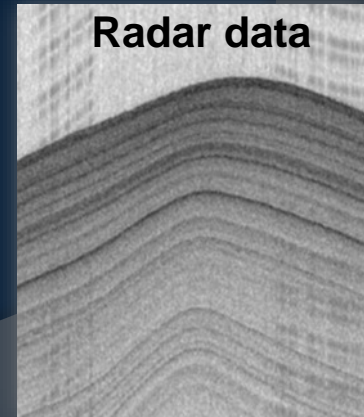
2019 - TBD

Lidar data



- **Ice surface elevation data** over ice sheets, glaciers, and sea ice to bridge the gap between **ICESat** and **ICESat-2** missions
- **New measurements critical to ice-sheet models:** bed topography, grounding line position, ice and snow thickness
- Data portal - <https://nsidc.org/data/icebridge/>

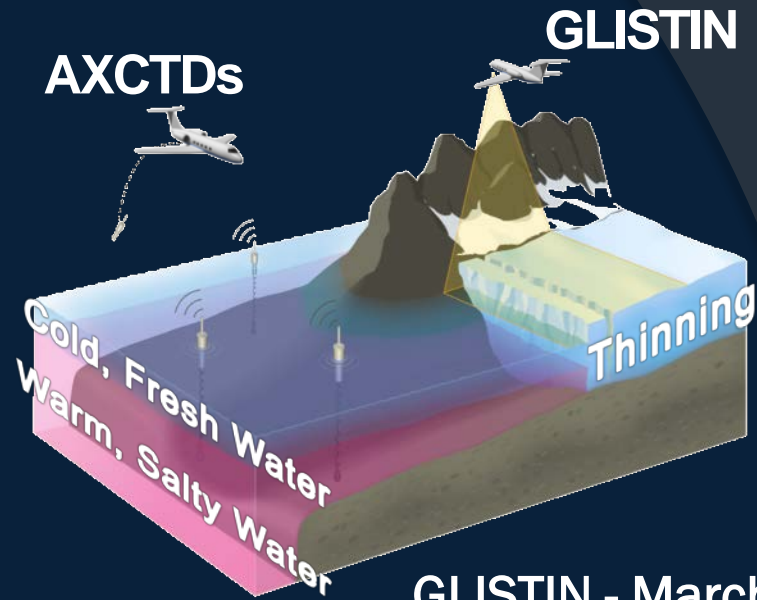
Radar data





NASA OMG

To what extent are the oceans melting Greenland's glaciers from the edges?



AXCTD - September, 2017



Ocean temperature and salinity profiles from the surface to the seafloor

Ocean Obs:
Track spread of warm water

Can we relate these?

GLISTIN - March, 2017



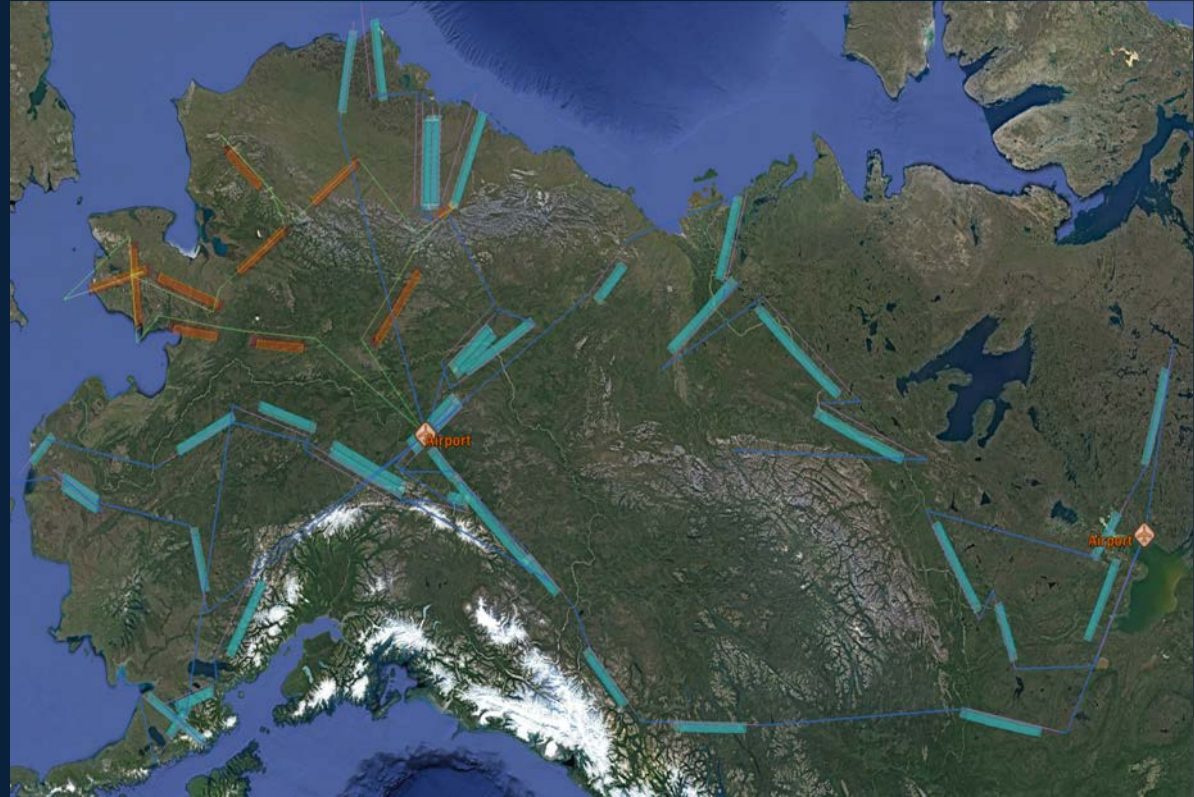
GLISTIN radar maps ice surface elevation

Ice Obs:
Quantify glacier loss



NASA Arctic-Boreal Vulnerability Experiment (ABOVE)

- 8-10 year airborne field campaign to study vulnerability and resilience of Arctic/boreal terrestrial ecosystems in Alaska and western Canada
- Airborne data collected over field sites from > 70 projects funded by NASA and other US and Canadian agencies who are participating in ABOVE



Locations of areas to be imaged by the NASA UAVSAR and AirMOSS airborne radars during ABOVE. Two data collection periods are scheduled for late May/Early June and mid-August, 2017



National Oceanic and Atmospheric Administration - NOAA

- Reducing presence at Summit Station, Greenland
 - Will no longer consider Summit Station as an atmospheric baseline observatory
 - Will continue:
 - Halocarbon and trace species (HATS) flasks
 - Carbon cycle flasks
 - Aerosol monitoring
 - Discontinuing:
 - HATS in situ
 - Balloons
 - Radiation
- NOAA led Observing Theme for ASM
 - Outcome is creation of US AON to better facilitate cross-agency observing
 - Sandy Starkweather is Executive Director



NSF Vessel Projects 2017

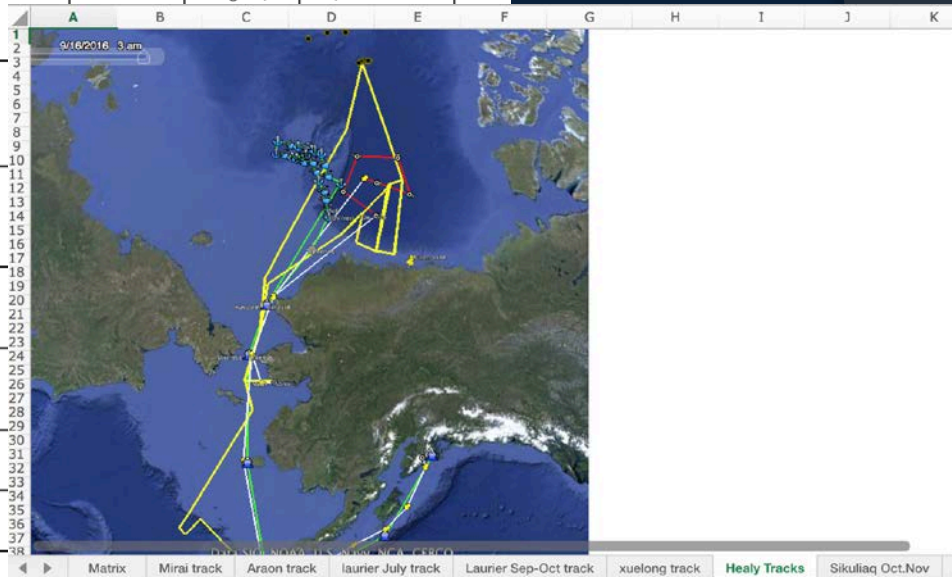
- R/V Sikuliaq: 5 cruises in the Bering, Beaufort & Chukchi seas
- CCG Louis St. Laurent: work in the Beaufort Gyre, collaboration with Fisheries and Oceans Canada
- R/V Akademik Tryoshnikov: work in the Nansen and Amundsen basins (NABOS II) <http://research.iarc.uaf.edu/NABOS2/>
- USCGC HEALY supporting DBO and ONR research in the Beaufort Sea, NSF maintains the science capability on the vessel
- R/V Oceanus: work in Bering
- Local vessels in Alaska and Greenland



Vessel Activity Database

Question for FARO? Develop database for whole Arctic?

2016 Cruise Matrix											
Vessel	N - Bstrait - demarcation line	S - Bstrait demarcation line	Dist fr Shore Chukchi	Planned Arrival Barrow	Heading fr Barrow/Dates	Dist fr Shore Beaufort	Planned Arrive Eastern Beaufort	Approximate Location for Research	Vessel Operator Contact	Research Contact	
USCG Healy	7-Jul	4-Aug	> 40 nm	None	None	> 40 nm	None	Chukchi/Beaufort	David.Forcucci@uscg.mil,	RRHopcroft@alaska.edu, 907-474-7842	
USCG Healy	21-Aug	15-Sep	> 40 nm	None	None	> 40 nm	None				
USCG Healy	19-Sep	6-Oct	> 40 nm	None	None	> 40 nm	None				
Norseman II	8-Jul	14-Jul	?	None	None	?	None				
Norseman II	17-Jul	14-Sep	?	None	None	?					
NOAA Oscar Dyson	None	None	None	None	None	None	None				
NOAA Ranier	None	None	None	None	None	None	None				
NOAA Fairweather	None	None	None	None	None	None	None				
Sikuliaq	2-Sep	28-Sep	>30 nm	15-Sep	15-Sep	Small Boat	None	Chukchi/Beaufort	MStein10@ala	ljuranek@coas.oreg	



Navigation and search controls for the map interface:

- Matrix
- Mirai track
- Araon track
- laurier July track
- Laurier Sep-Oct track
- xuelong track
- Healy Tracks
- Sikuliaq Oct.Nov

Search and contact information:

- bering sea fisheries
- www.noaa.gov
- 541 867 8703
- john.c.ciary@noaa.gov

NSF Land-based Projects 2017

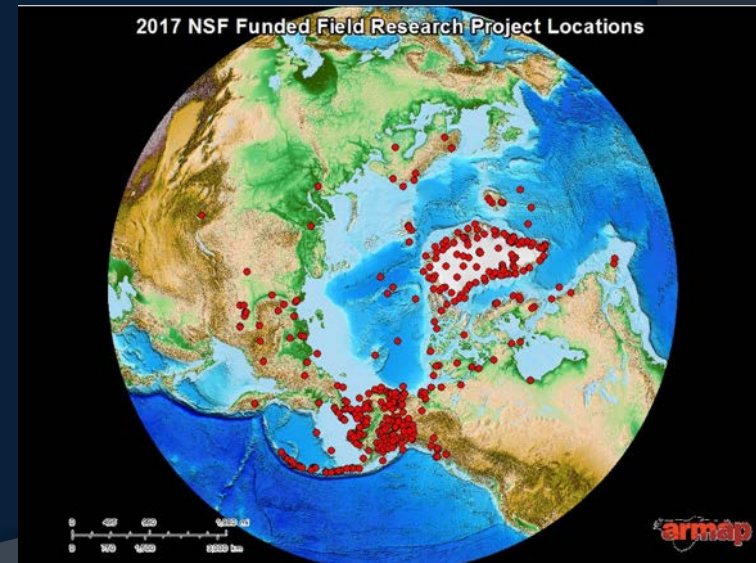
INTERACT sites - Toolik Lake and Barrow, Alaska and Summit Station, Greenland

Example Projects:

- Alaska lake warming manipulation project
- Vole-proof fences at 3 Alaska sites
- Caribou nutritional study
- Education/research at Yukon River delta
- Ice camps along GrIS margin
- Iceberg studies in East Greenland
- Mooring deployment over sea ice
- Snowmobile traverses on GrIS
- 80 m core at Summit, Greenland
- JSEP

Arctic Research Mapping Tool
(ARMAP)

<http://armap.org>



Greenland Inland Traverse (GrIT)



Deliverables in 2016

- D7 Bulldozer
- Construction materials
- MicroTurbine CHP Power Generator and fuel tank
- Helium
- No fuel delivered in 2016 due to disabled tractor

Moved EGRIP camp in 2015

No GrIT in 2017

Arctic Facilities Updates

Alaska: Repairs to foundation pad and boardwalk at Toolik



Greenland: Construction of sled-based garage and install of CHP microturbine generator

Interagency Arctic Research Policy Committee (IARPC)

- Arctic Research Coordination across the U.S. Government
- NSF lead agency, Dr. France Cordova, Chair
- White House Office of Science and Technology Policy (OSTP), Dr. Martin Jeffries, Executive Director
- Collaboration website - <http://www.iarpccollaborations.org>
- New Arctic Research Plan – Research Goals
 1. health and well-being
 2. atmospheric composition and dynamics
 3. sea ice cover
 4. marine ecosystems
 5. glaciers, ice caps, and the Greenland Ice Sheet
 6. permafrost
 7. terrestrial and freshwater ecosystems
 8. coastal community resilience
 9. environmental intelligence

ARCTIC RESEARCH PLAN:
FY2017–2021

U.S. Arctic Research Commission

Report on the Goals and Objectives for Arctic Research 2017-2018

https://www.arctic.gov/reports_goals.html



Arctic Science Ministerial

- Washington, D.C., September 28, 2016.
- Representatives from 28 governments and Arctic Indigenous organizations
- Raise the profile of Arctic research with policy makers to advance four themes relevant across all our research programs -
 - *Identifying Arctic-Science Challenges and their Regional and Global Implications;*
 - *Strengthening and Integrating Arctic Observations and Data-Sharing;*
 - *Applying Expanded Scientific Understanding of the Arctic to Build Regional Resilience and Shape Global Responses; and*
 - *Empowering Citizens through Science Technology, Engineering, and Mathematics (STEM) Education Leveraging Arctic Science*
- We look forward to the next ASM in Europe in 2018

