

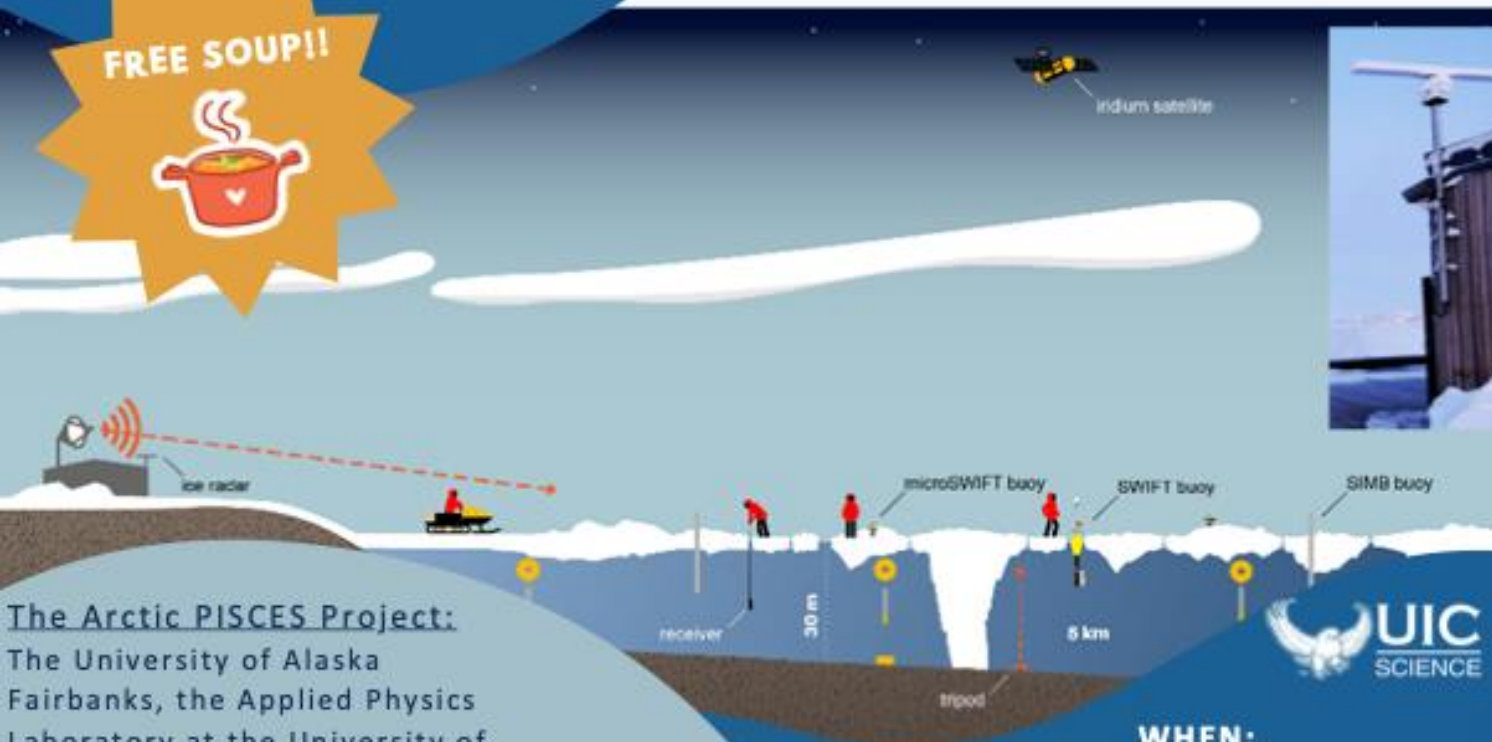


How can we collaborate on better ice and ocean observations and forecasts in Utqiagvik?

INTRODUCING THE ARCTIC PISCES PROJECT!

ARCTIC RESEARCH SOUP N SCIENCE

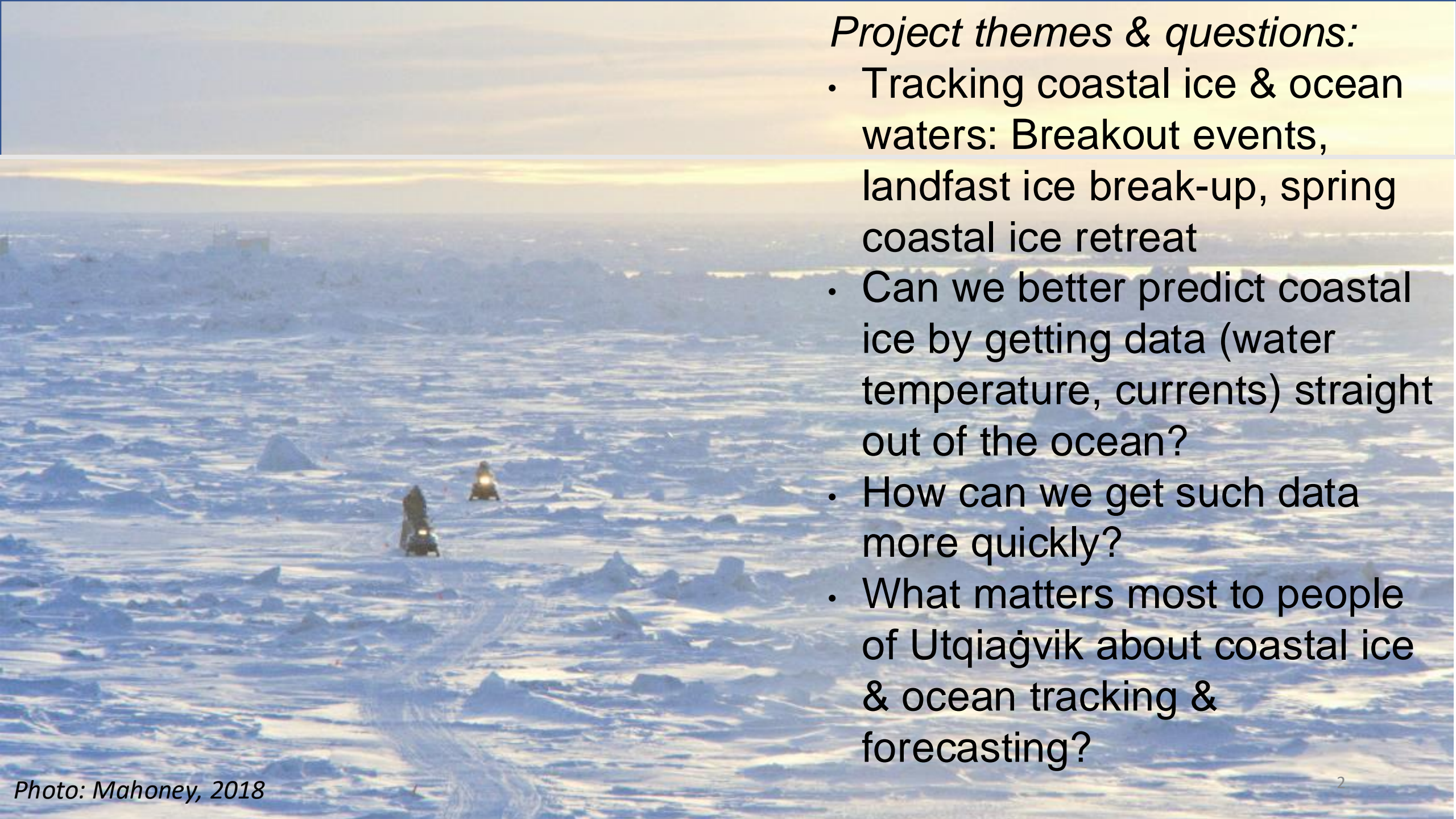
FREE SOUP!!



The Arctic PISCES Project:
The University of Alaska Fairbanks, the Applied Physics Laboratory at the University of Washington, and the Pacific Northwest National Laboratory have partnered for the Arctic PISCES project, funded by

WHEN:
WEDNESDAY, NOV 13
12:00 - 2:00 PM

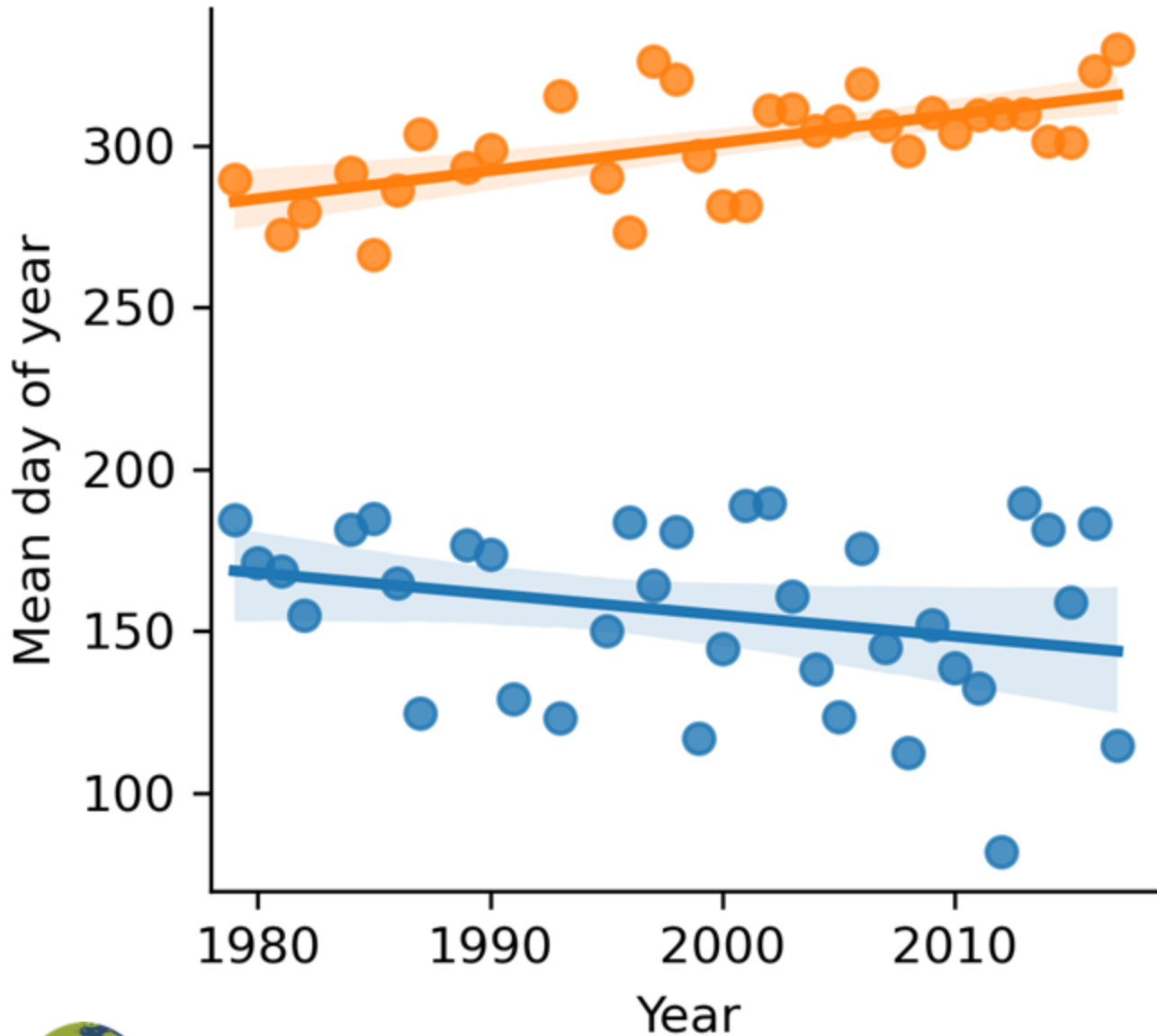
- *Community Partners Utqiagvik*
 - UIC Science – Logistics support & personnel
 - NSB Dept of Search and Rescue
 - Guidance on observing & prediction priorities incl. radar obs. relevant for S&R
 - Capacity building for community-supported/driven ice-ocean observing
- *University of Alaska Fairbanks*
(Eicken, Bieniek, Mahoney, Pnyushkov, Polyakov, Webley)
- *University of Washington*
(Thomson, Gobat, Lee, Light, Schweiger)
- *Pacific Northwest National Lab*
(Branch, Mahon)



Project themes & questions:

- Tracking coastal ice & ocean waters: Breakout events, landfast ice break-up, spring coastal ice retreat
- Can we better predict coastal ice by getting data (water temperature, currents) straight out of the ocean?
- How can we get such data more quickly?
- What matters most to people of Utqiaġvik about coastal ice & ocean tracking & forecasting?

Utqiaġvik Sea Ice Indicators

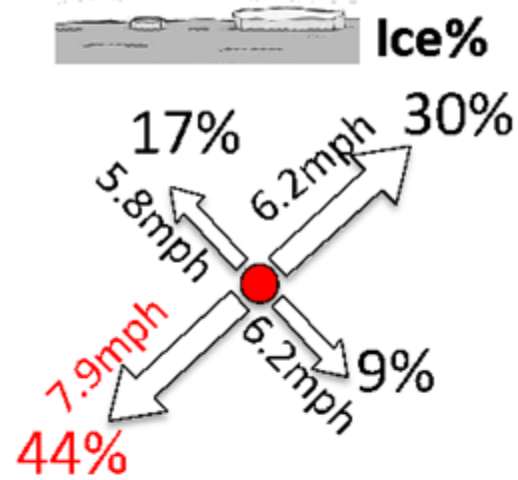
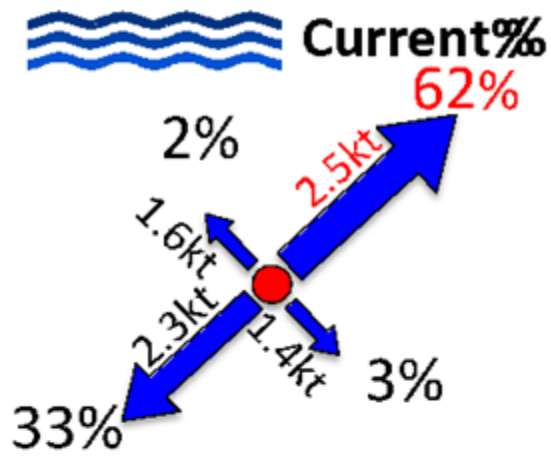
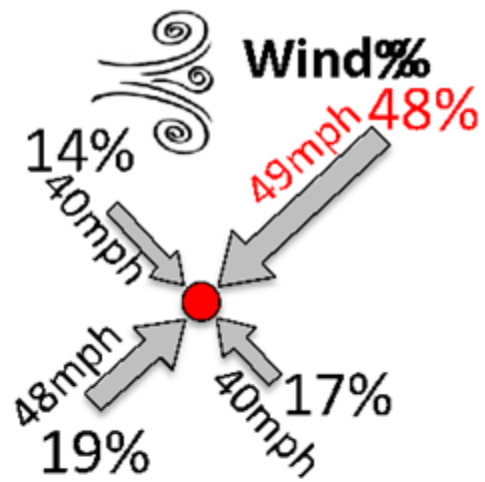


- Indicator
- Break-up Start
 - Freeze-up Start

Shorter ice seasons

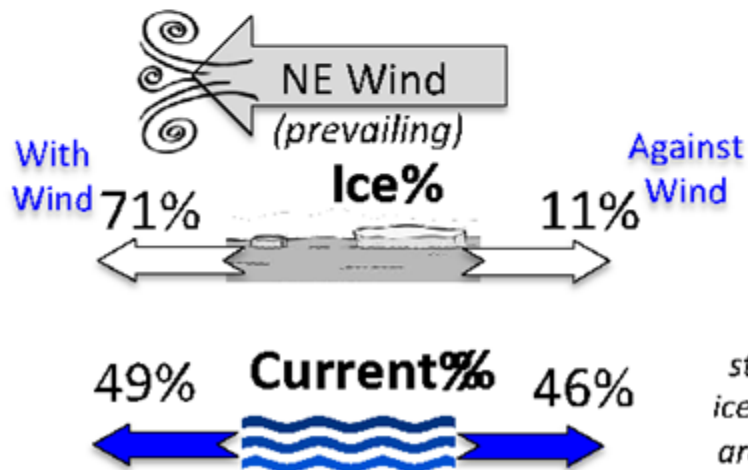
- Iñupiaq ice expert observations
 - long-term trend
- Ice season shorter by over 2 weeks per decade
- Large differences in break-up from year to year
 - Ability to predict?



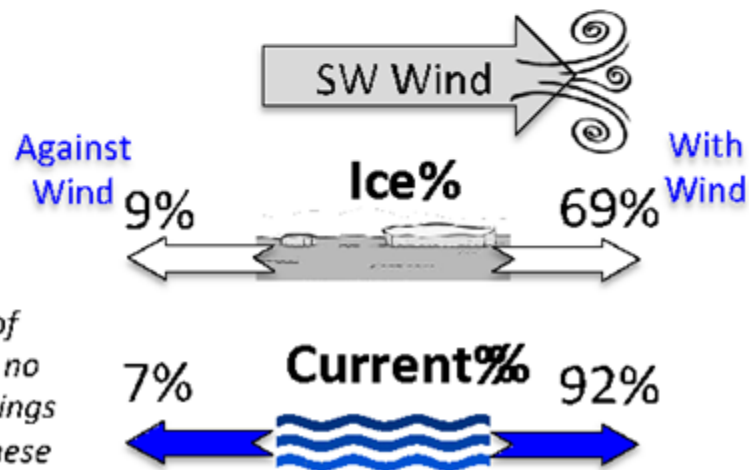


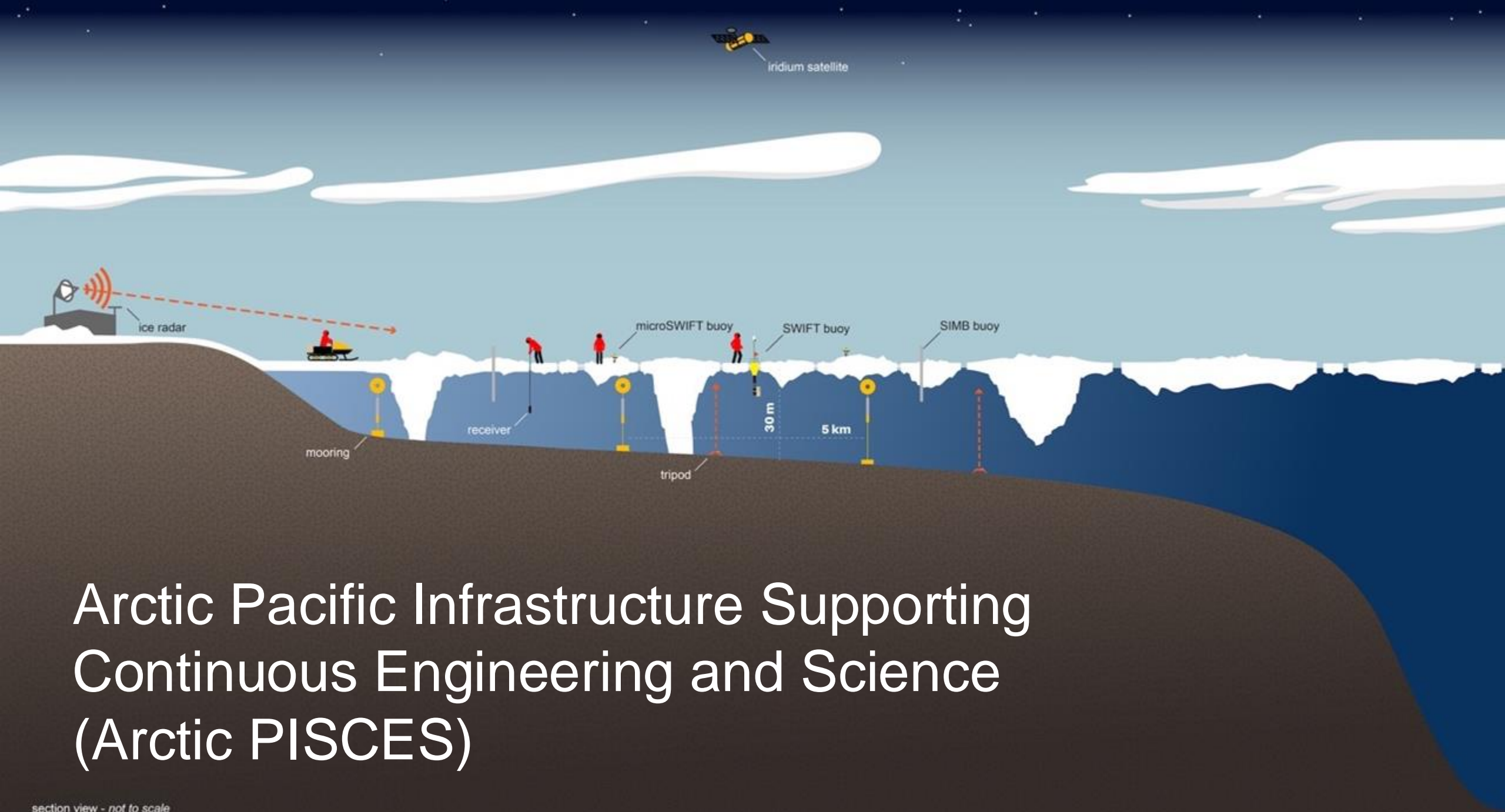
**Building on
past work**

- Key Points%**
1. Prevailing wind is *from* the Northeast
 2. Prevailing nearshore current is *toward* the Northeast
 3. Onshore or offshore currents are rare
 4. Sea ice mostly follows the wind, but can oppose the wind under strong currents



Note: Periods of stationary ice or no ice over the moorings are not used in these calculations








Arctic Pacific Infrastructure Supporting Continuous Engineering and Science (Arctic PISCES)

PISCES-A field plan / map

Arctic PISCES draft locations

45 views

Last edit was seconds ago

 Add layer  Share  Preview

☒ microSWIFT surface drifters

  Uniform style

 All items (9)

☐ Other

☒ Radar range

 Individual styles

 mobile radar

☒ Radar range

 Individual styles

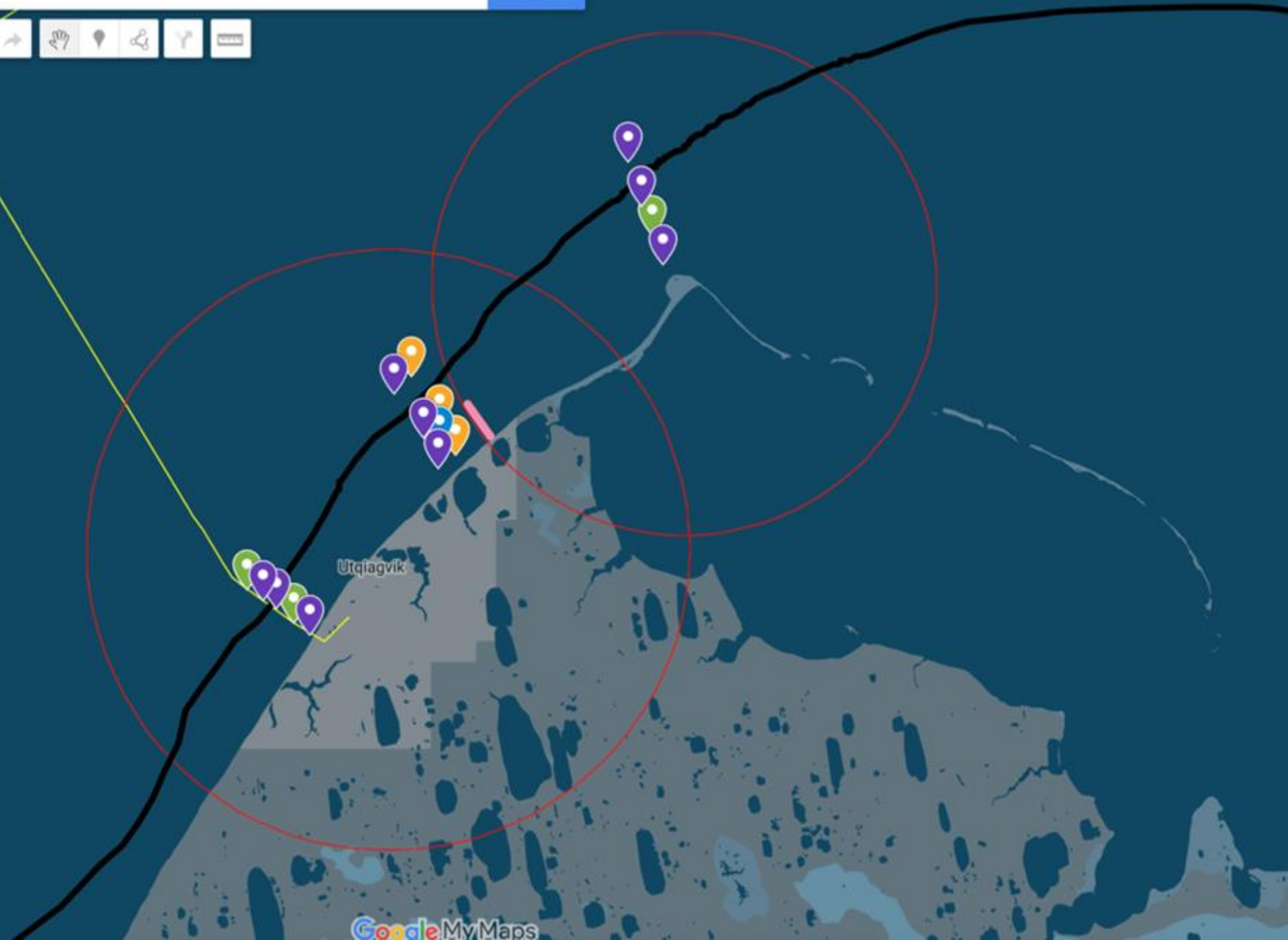
 Permanent radar

☒ Median fast-ice edge

 Individual styles

 median 2014-2023

☐ Base map



Measurements of sea ice, ocean waves, and currents



Sea floor
tripod



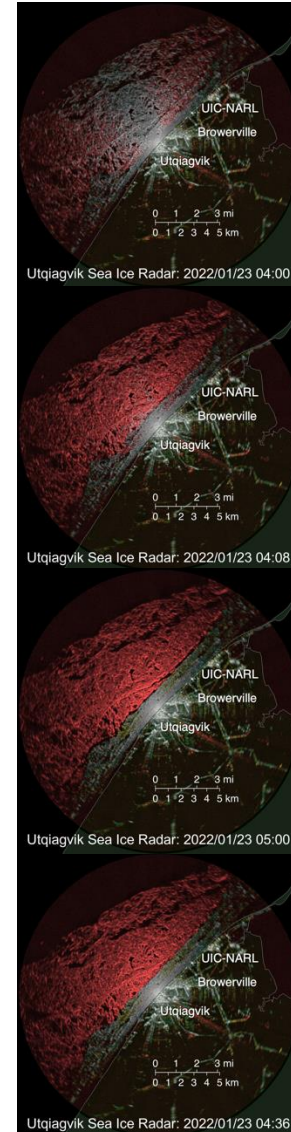
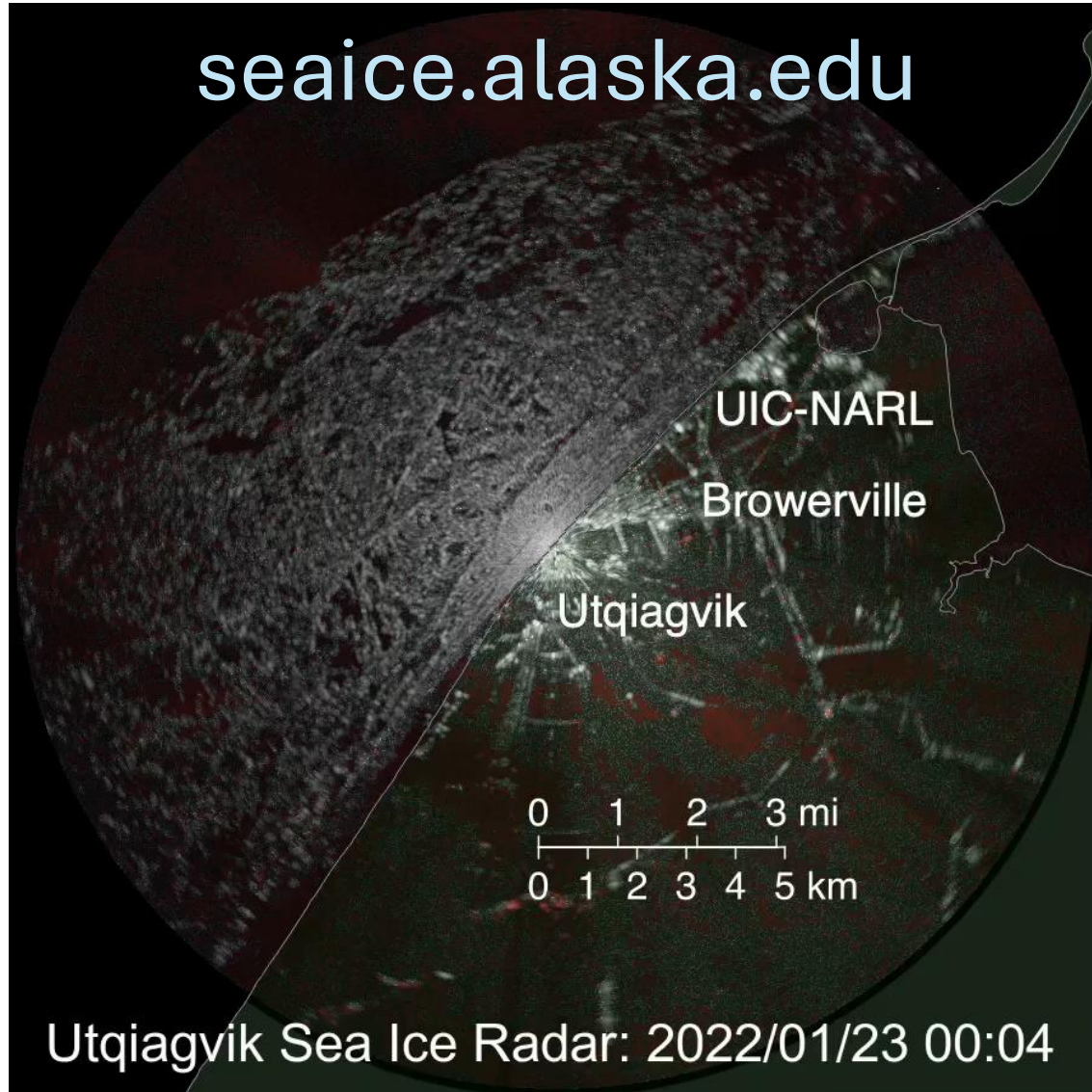
Thru-ice
moorings



Wave

Utqiagvik Coastal sea ice radar

Early warning for break-out



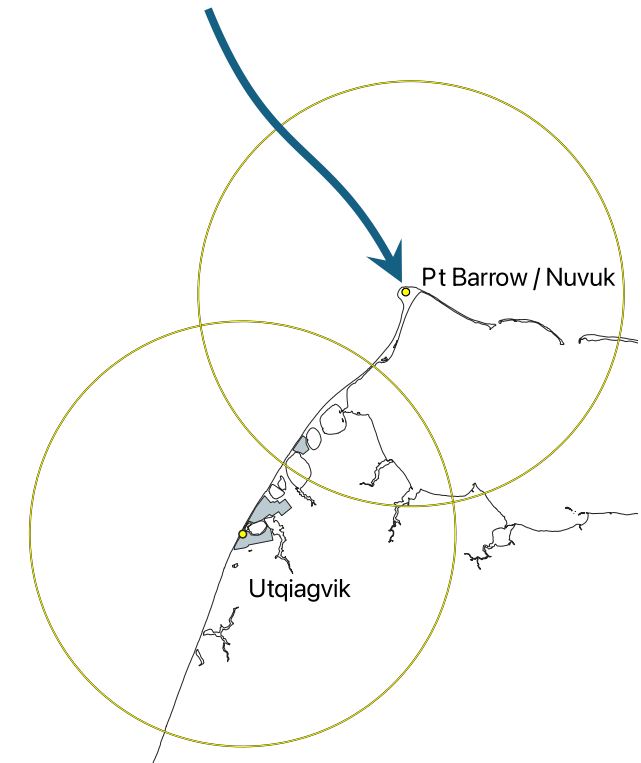
04:00
First
“flickering”

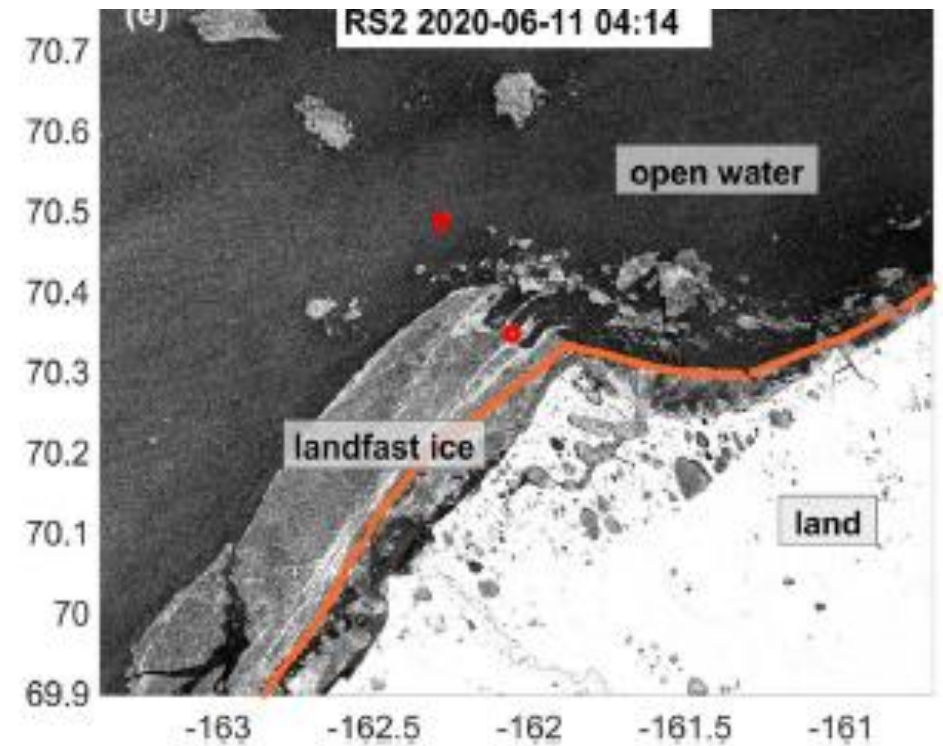
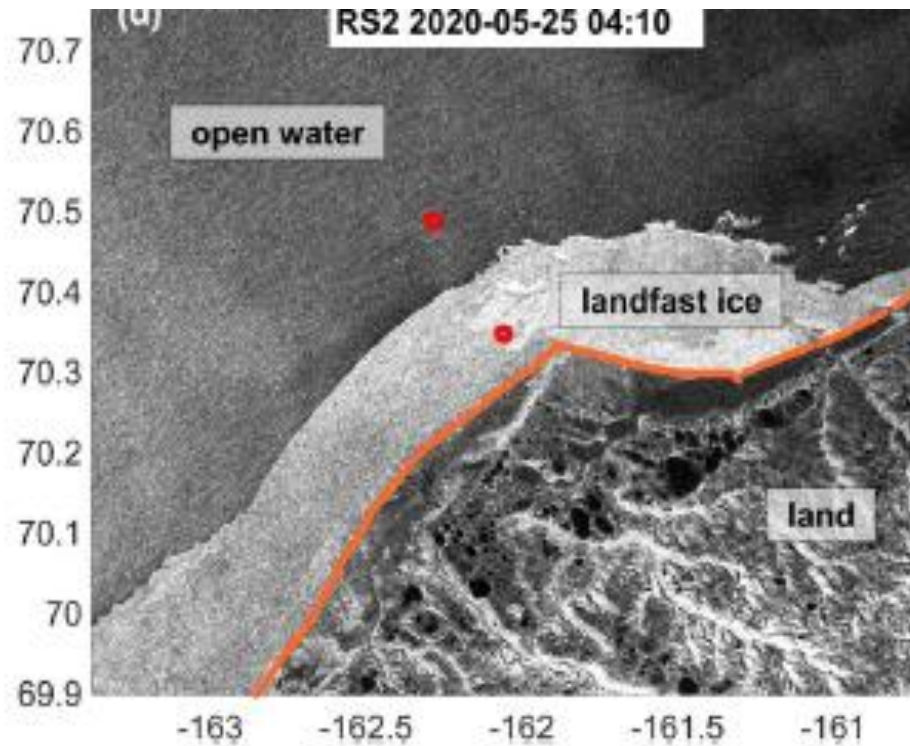
04:08
Unstable ice
“lit up”

04:36
First
detectable
crack

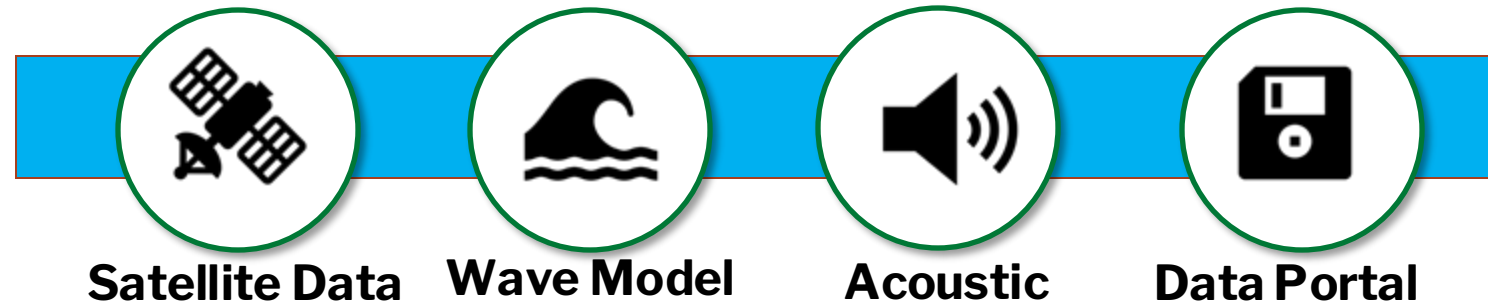
05:00
Widening
crack

New temporary radar
at Nuvuk planned for
whaling season

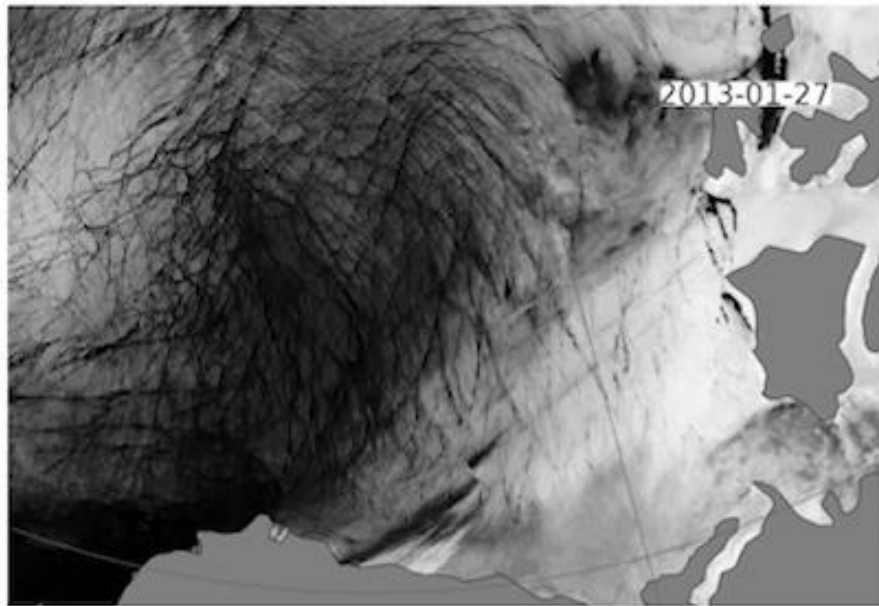




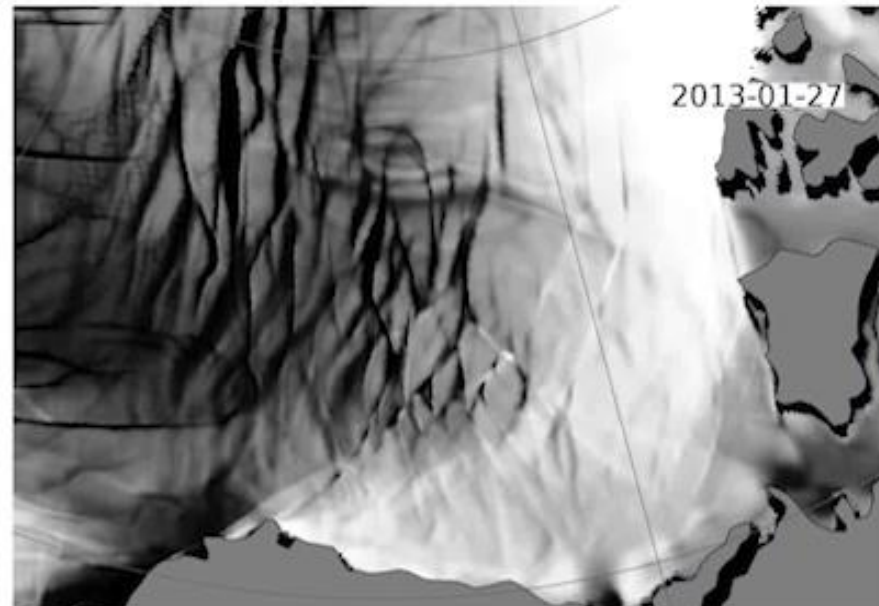
Hosekova et al. 2021



Leads in the Beaufort Sea: Observed and modeled January 27-March 22 2013



Satellite
images



Model
simulations

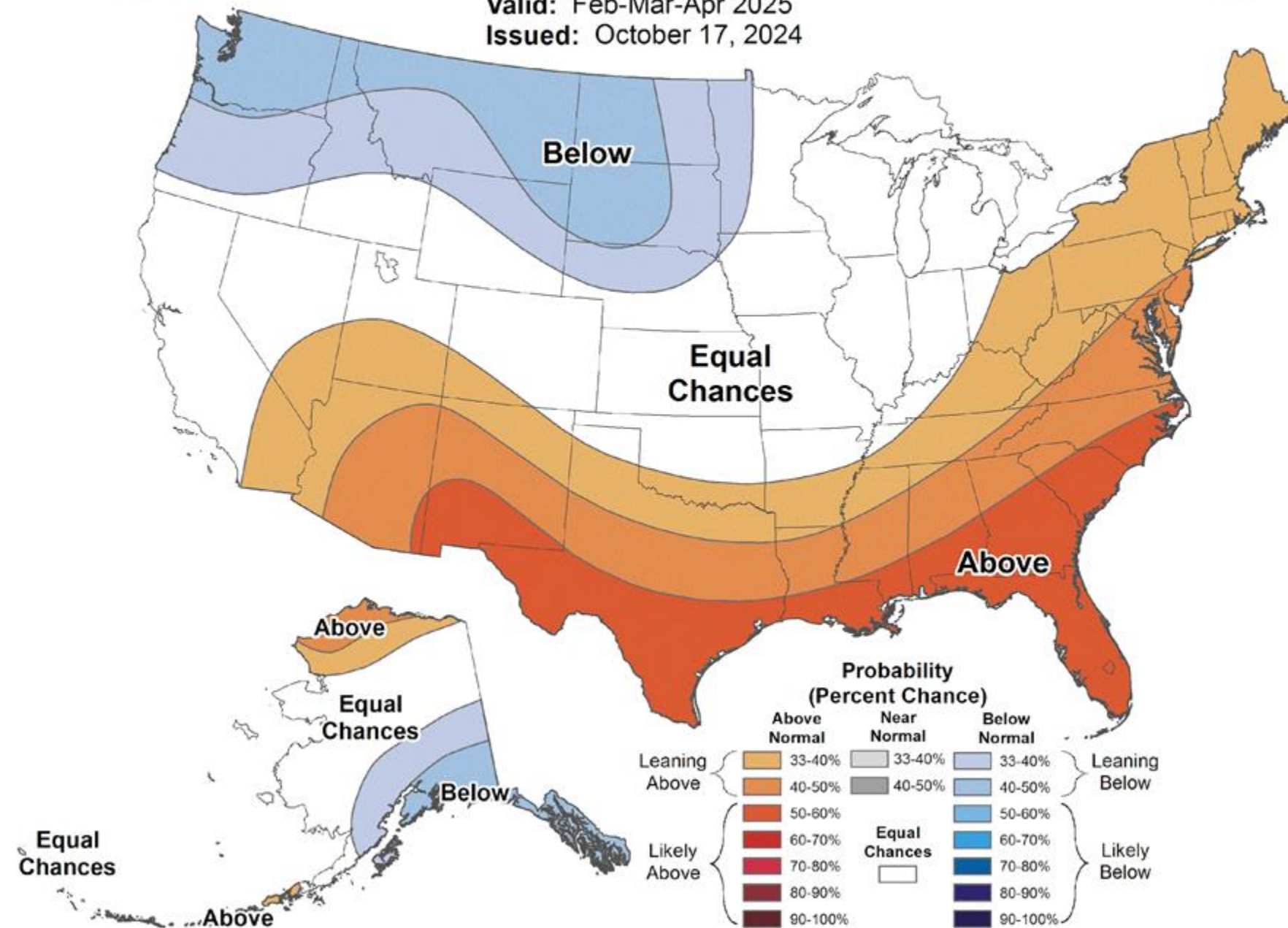


Seasonal Temperature Outlook



Valid: Feb-Mar-Apr 2025

Issued: October 17, 2024



Would a sea ice forecast several weeks to months out be of value?

Collaborate with us!



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- Jim Thomson, APL-UW
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