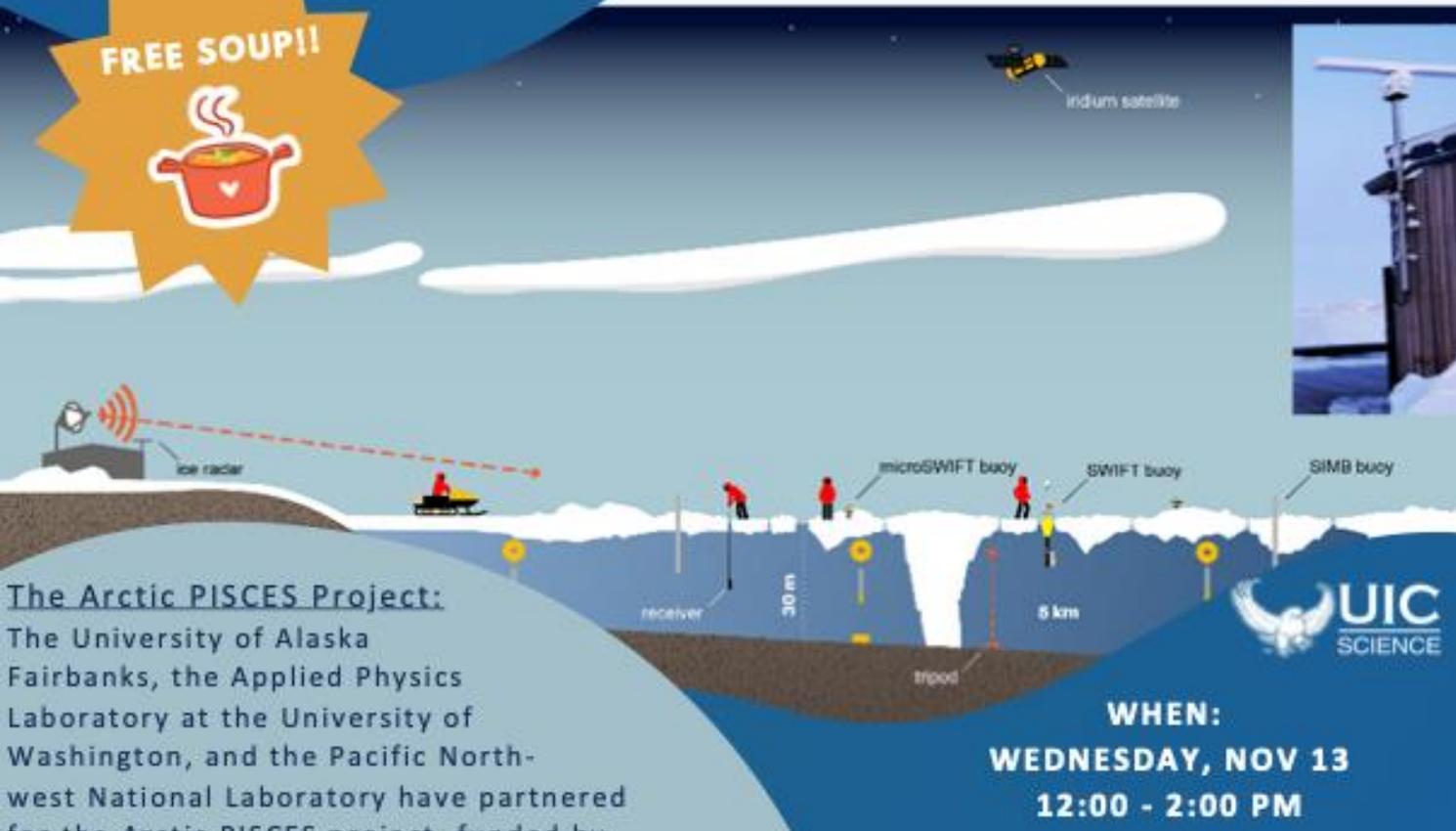




How can we collaborate on better ice and ocean observations and forecasts in Utqiagvik?

INTRODUCING THE ARCTIC PISCES PROJECT!

ARCTIC RESEARCH SOUP N SCIENCE



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

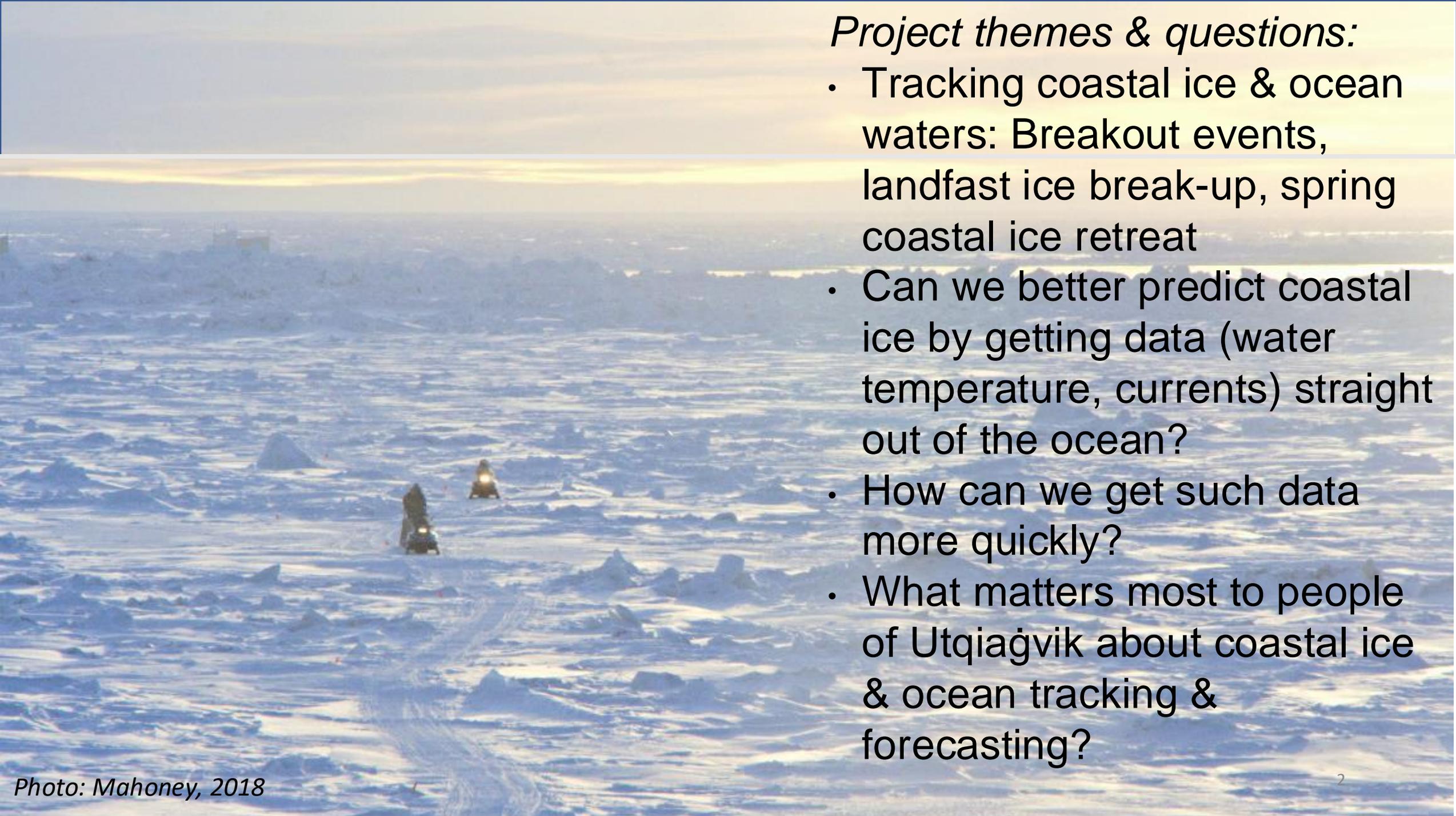
**WHEN:
 WEDNESDAY, NOV 13
 12:00 - 2:00 PM**

- *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)

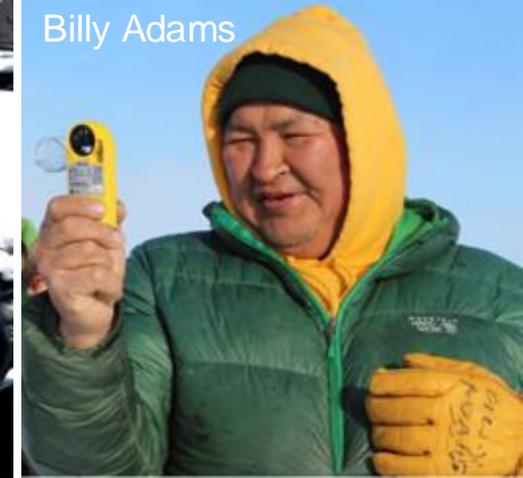
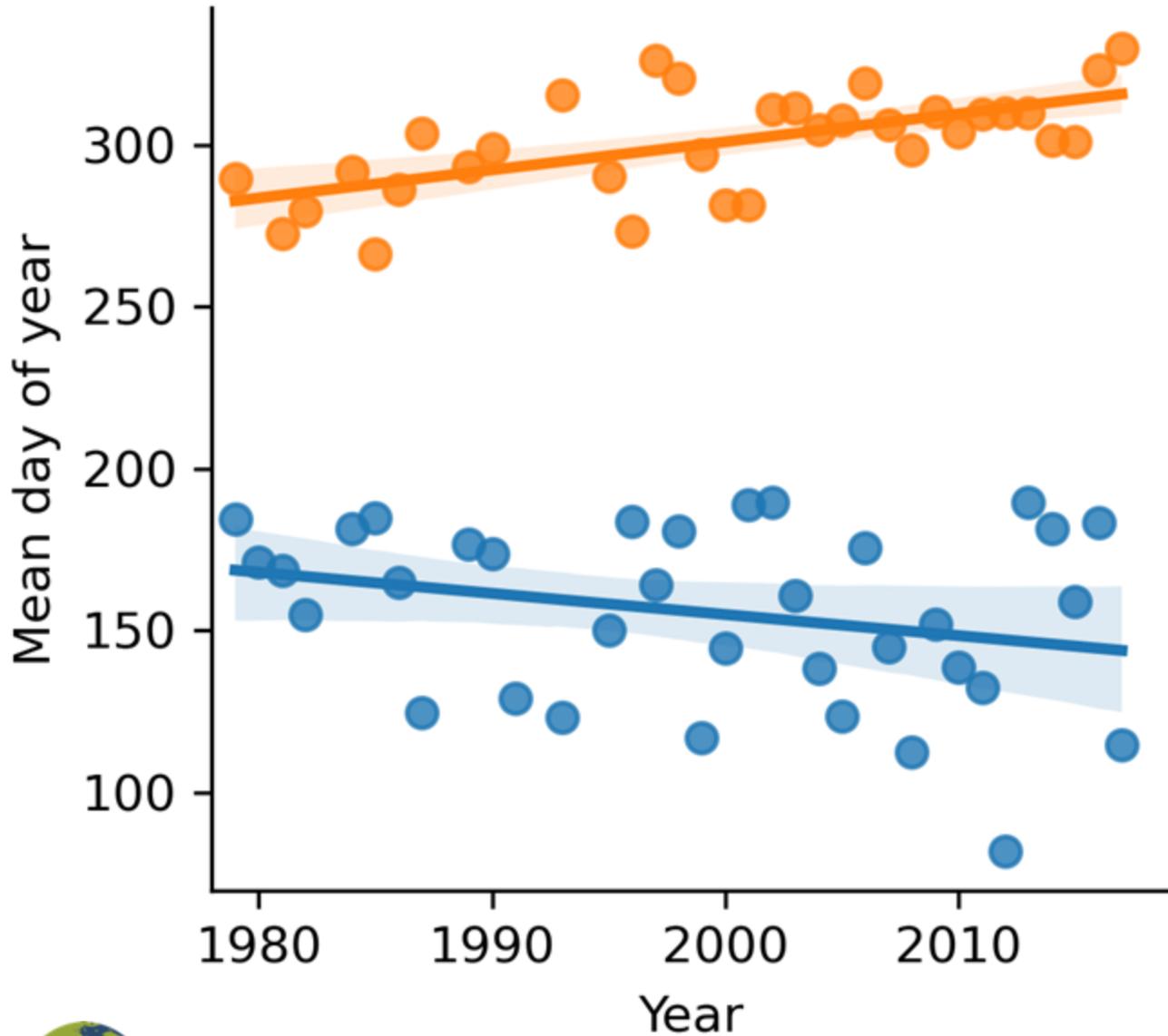
- *Pacific Northwest National Lab*
 (Branch, Mahon)



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

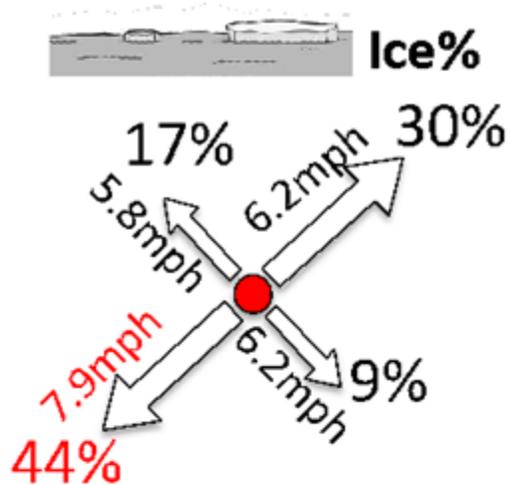
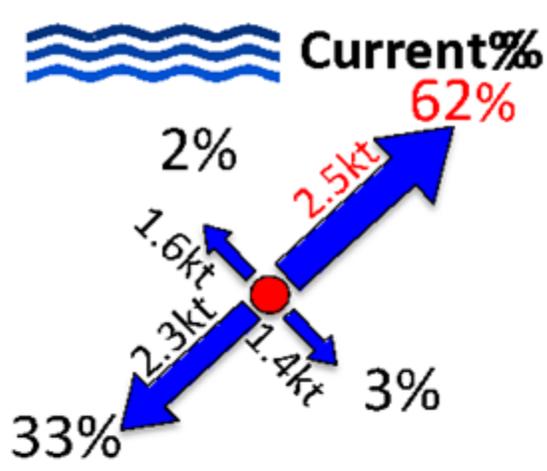
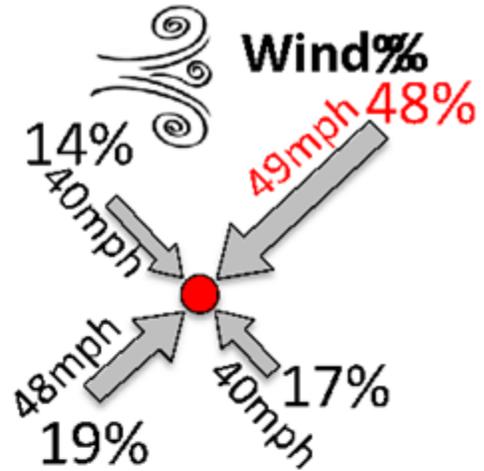


- Indicator
- Break-up Start
 - Freeze-up Start

Shorter ice seasons

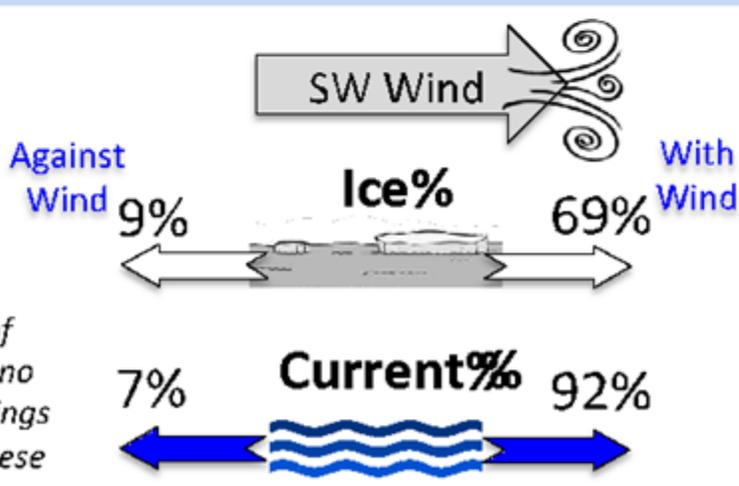
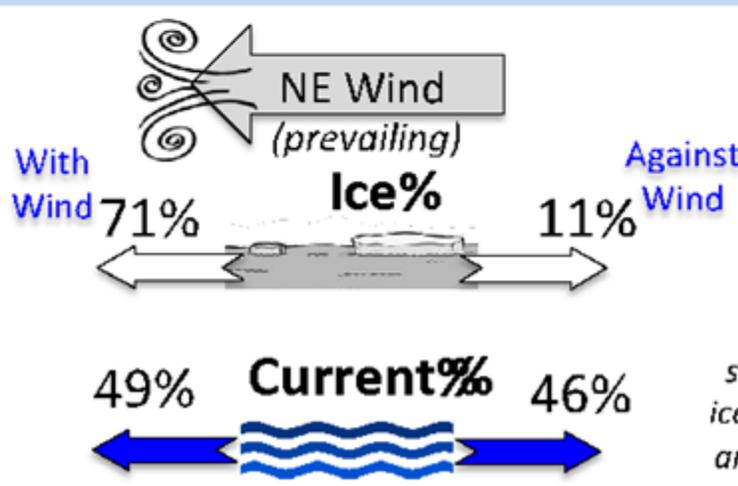
- Iñupiaq ice expert observations
 - long-term trend
- Ice season shorter by over 2 weeks per decade
- Large differences in break-up from year to year
 - Ability to predict?



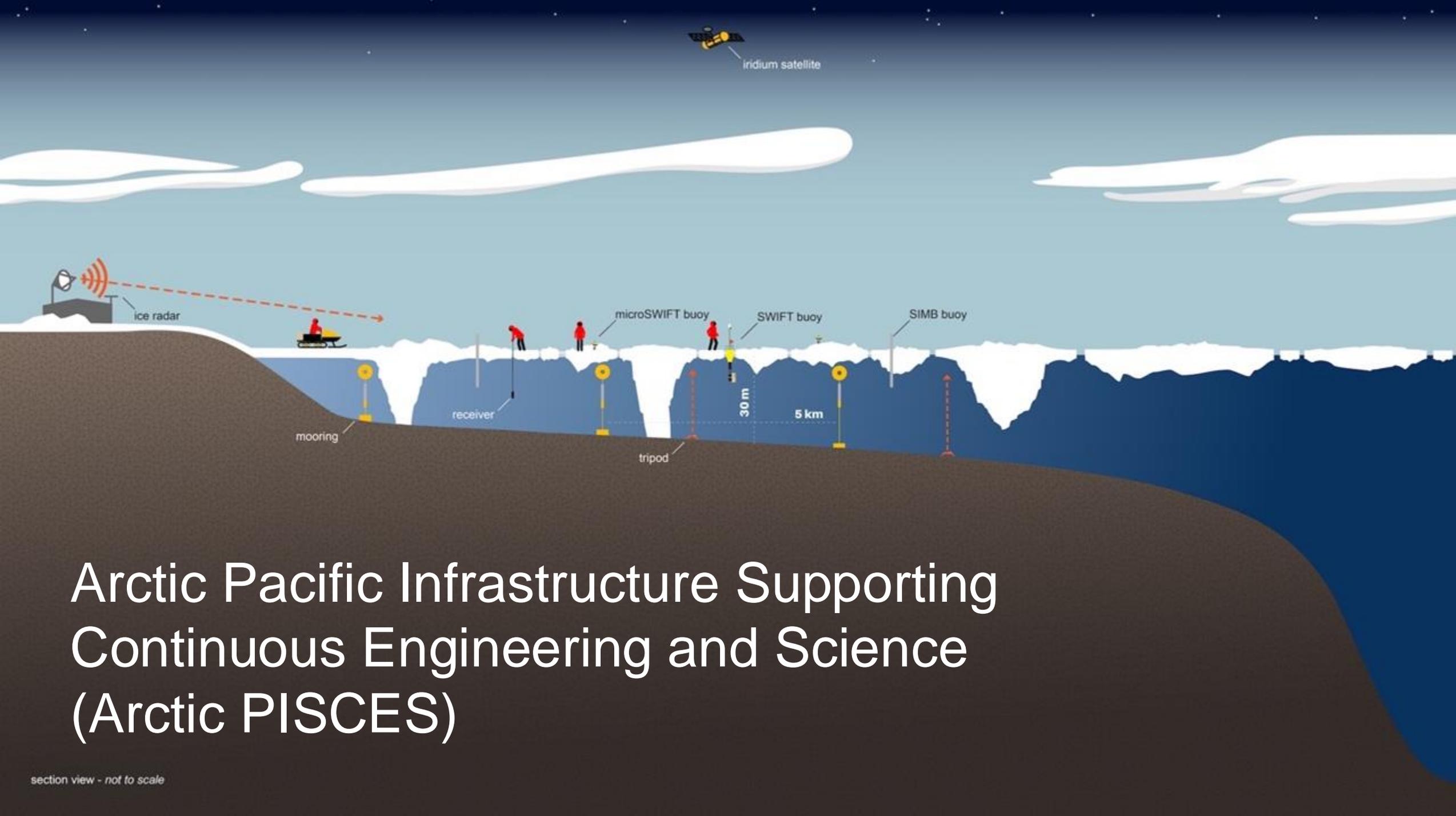


Building on past work

- 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



Iridium satellite

ice radar

mooring

receiver

tripod

microSWIFT buoy

SWIFT buoy

SIMB buoy

30 m

5 km

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

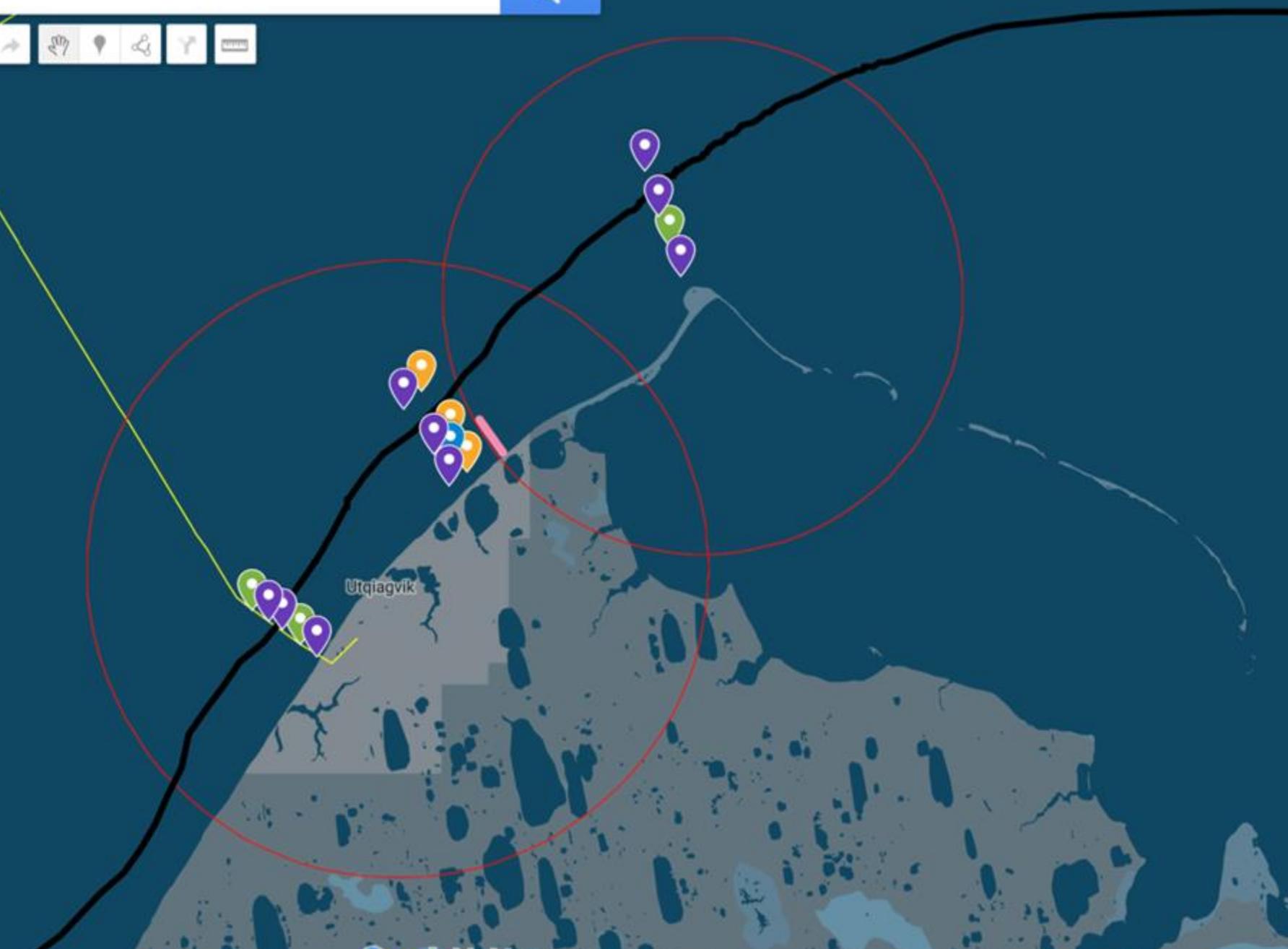
Permanent radar

Median fast-ice edge

Individual styles

median 2014-2023

Base map



Measurements of sea ice, ocean waves, and currents



Sea floor tripod



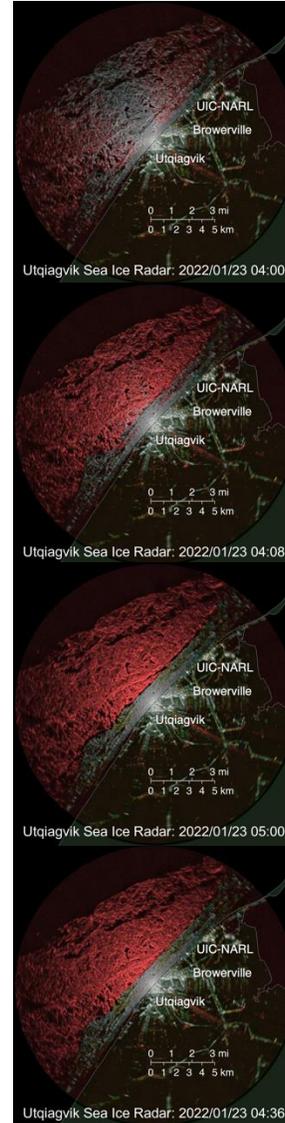
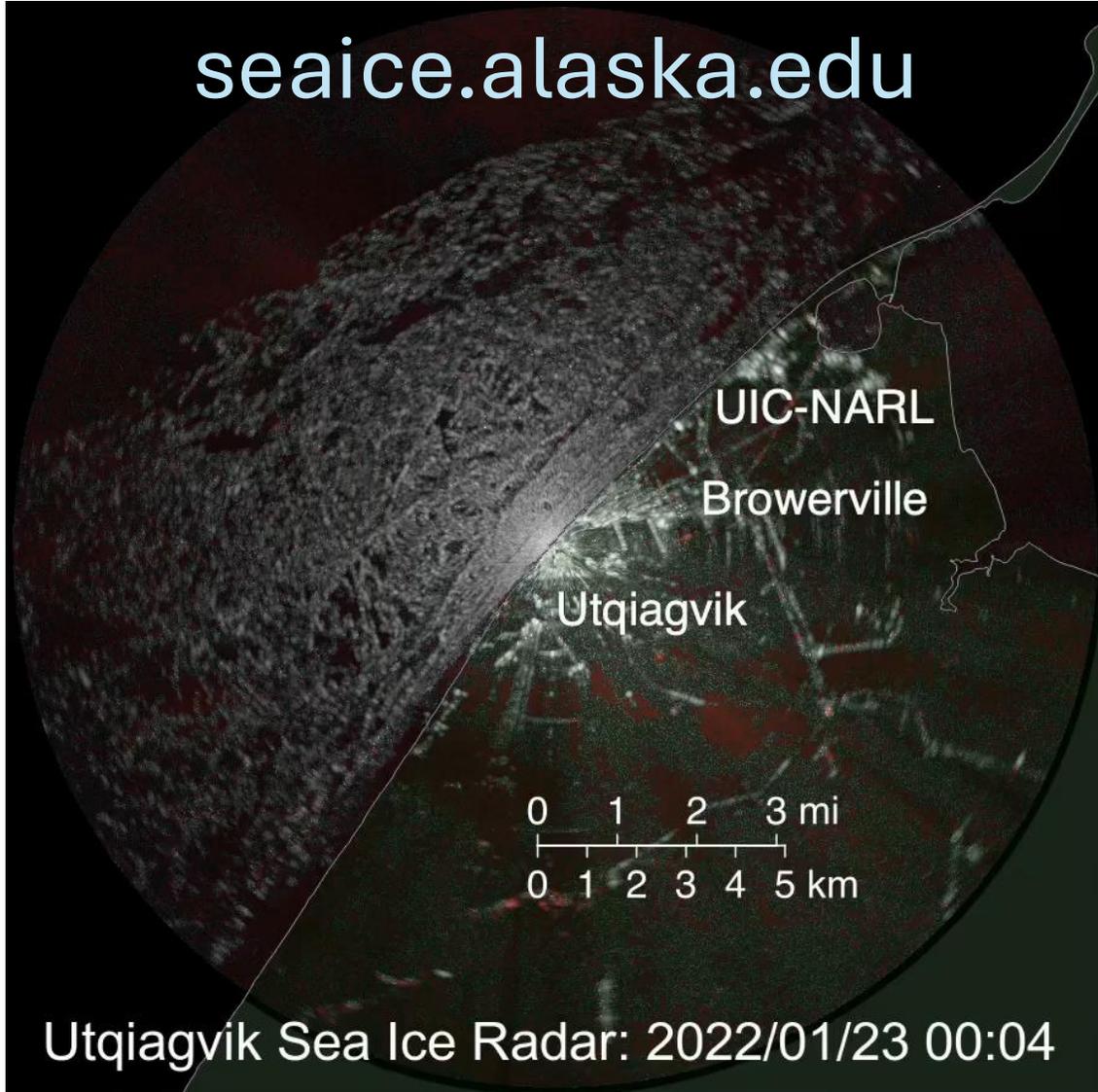
Thru-ice moorings



Wave

Utqiagvik Coastal sea ice radar

Early warning for break-out



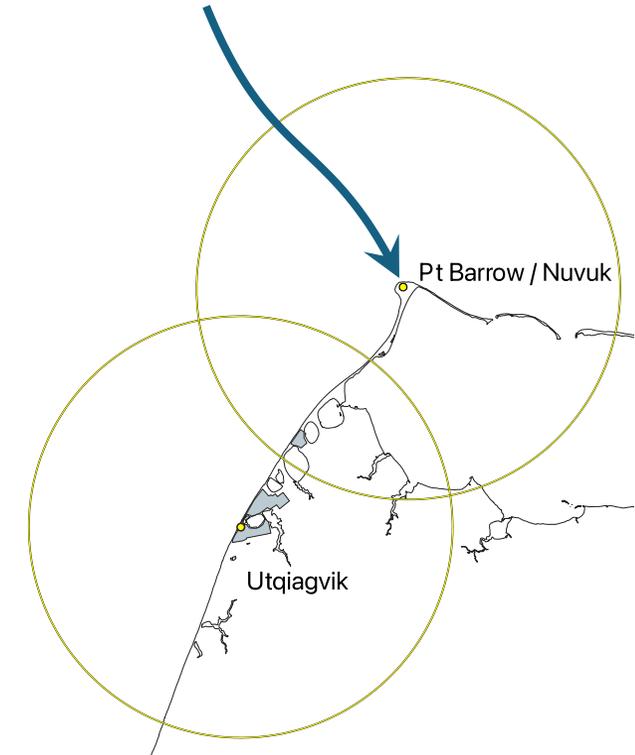
04:00
First
“flickering”

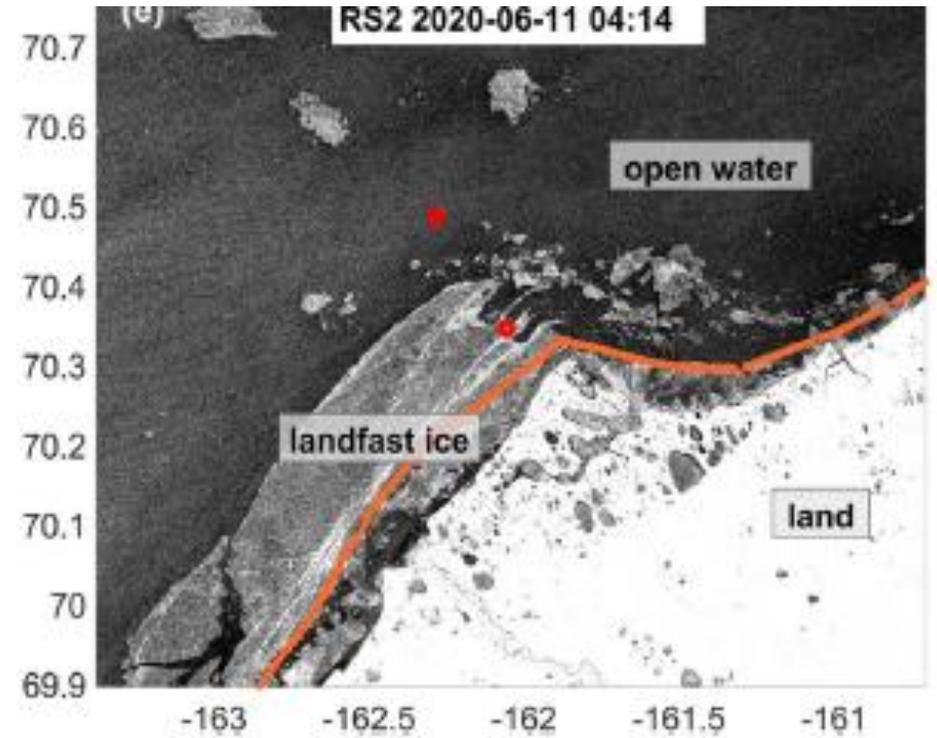
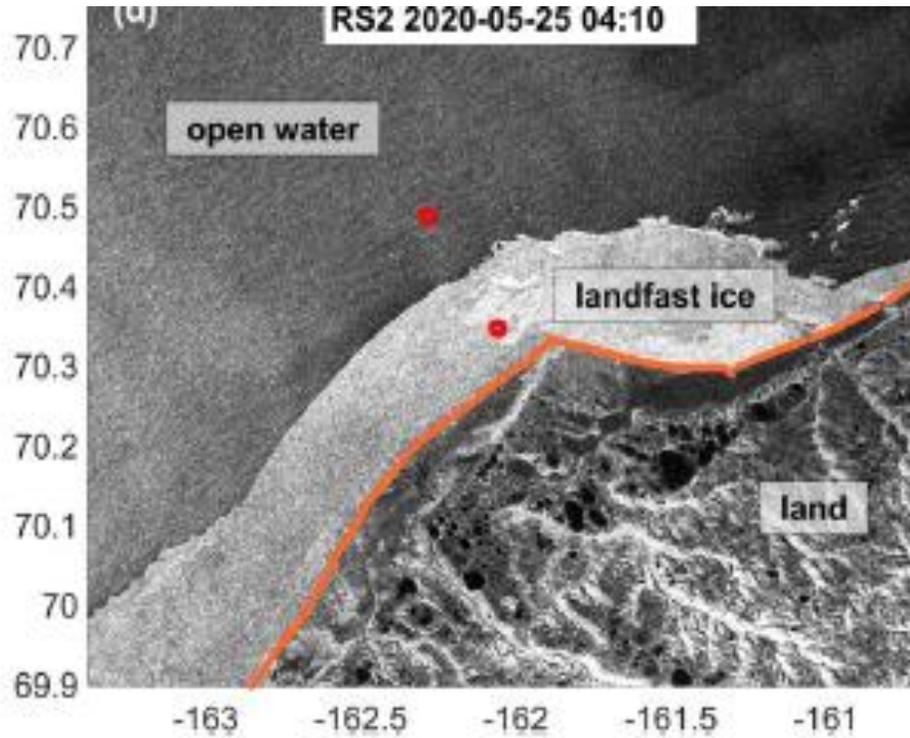
04:08
Unstable ice
”lit up”

04:36
First
detectable
crack

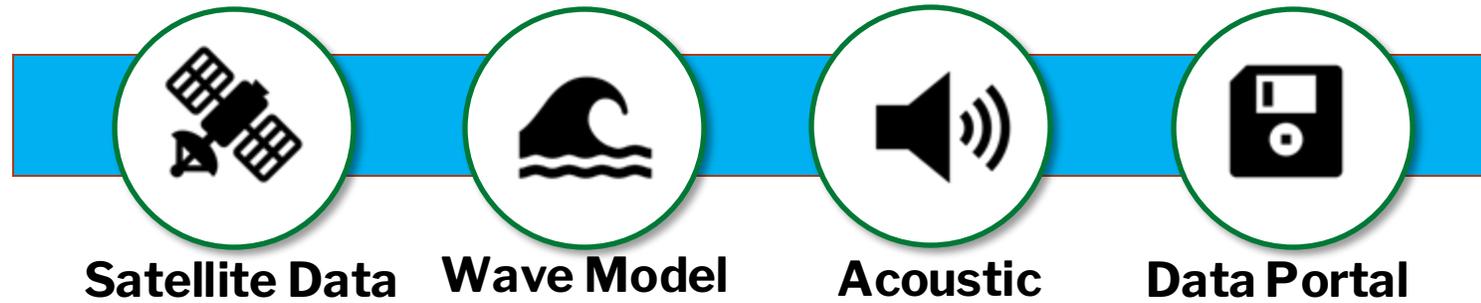
05:00
Widening
crack

New temporary radar
at Nuvuk planned for
whaling season

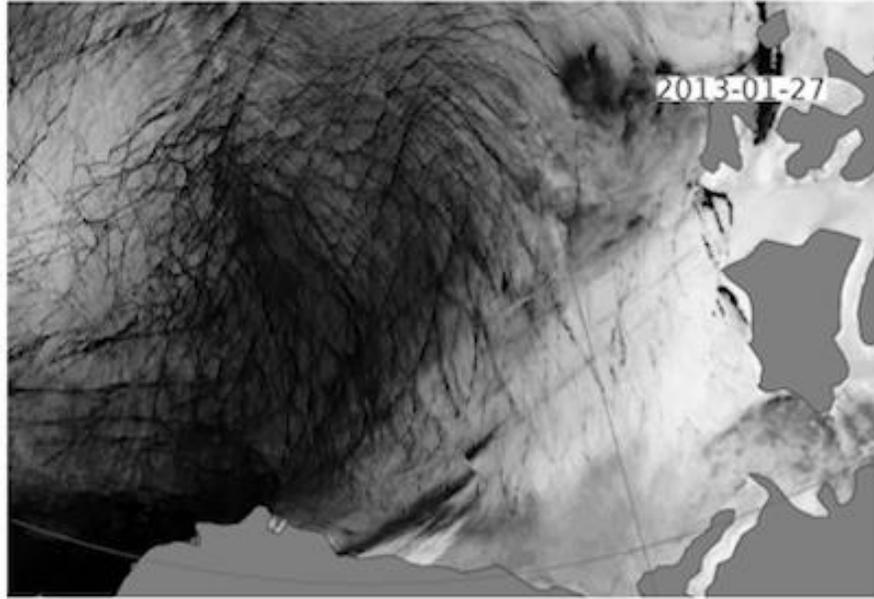




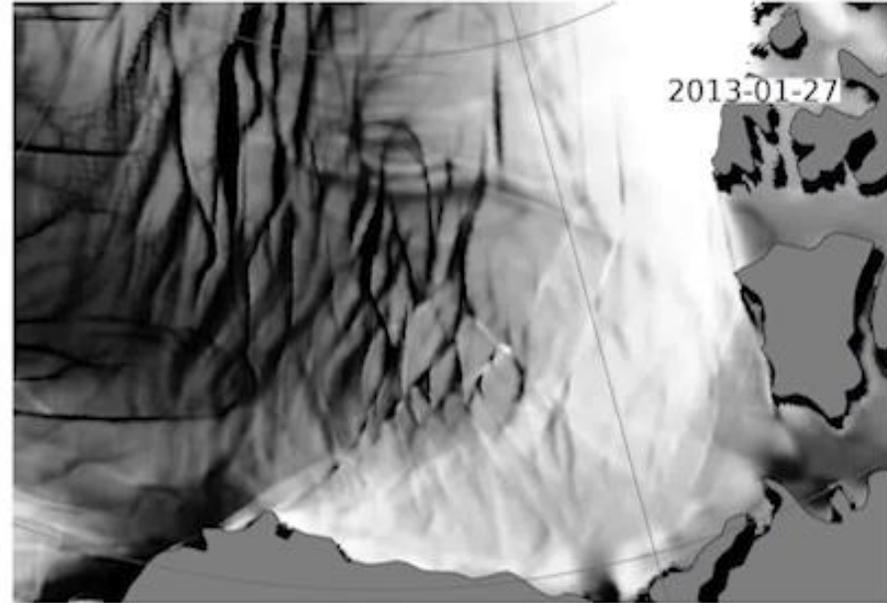
Hosekova et al. 2021



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



Satellite
images



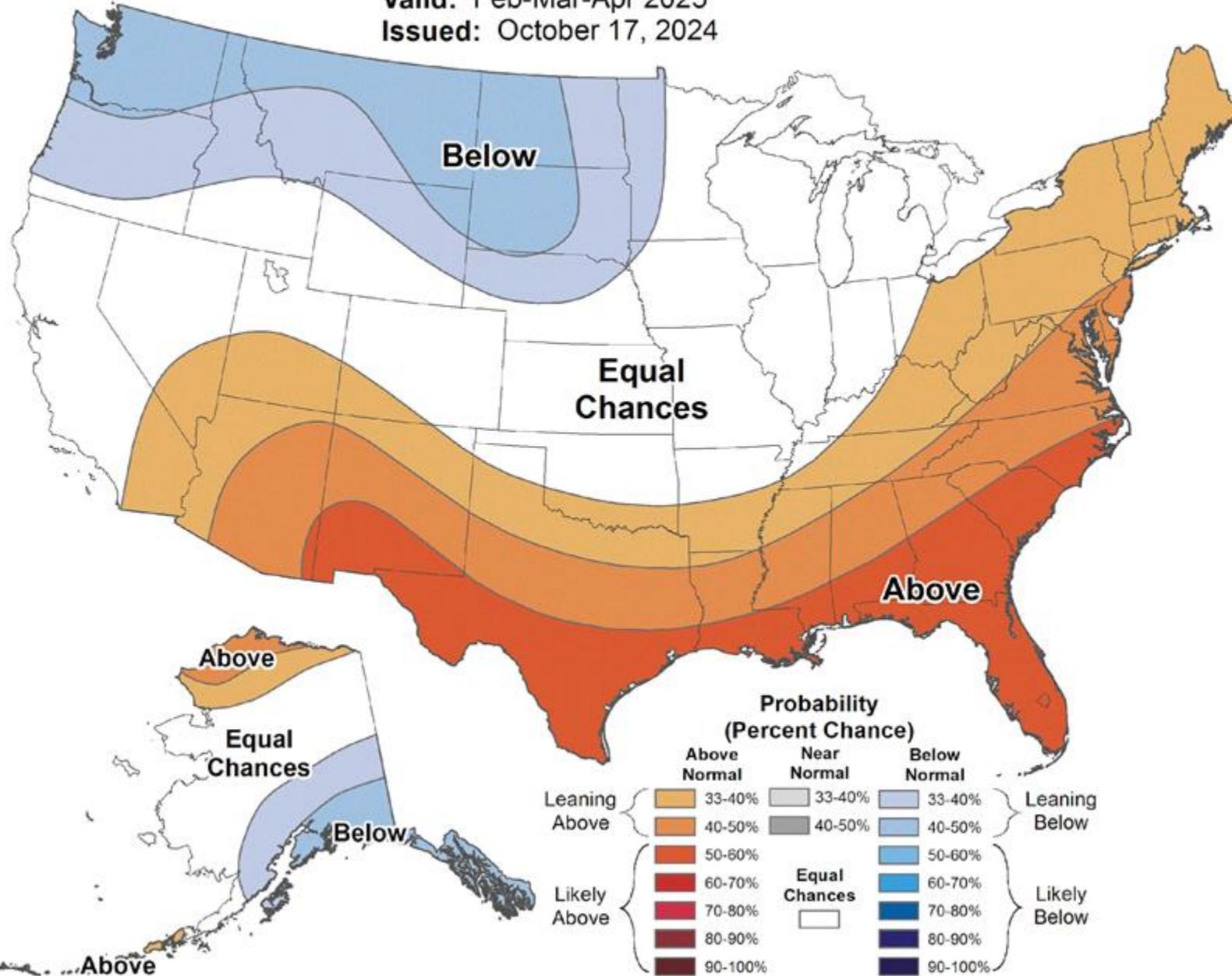
Model
simulations



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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- Ruth Branch & Alicia Mahon, PNNL
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