PERSPECTIVE: SEARCH IMPLEMENTATION PLAN AND ARCTIC OBSERVING SYSTEM

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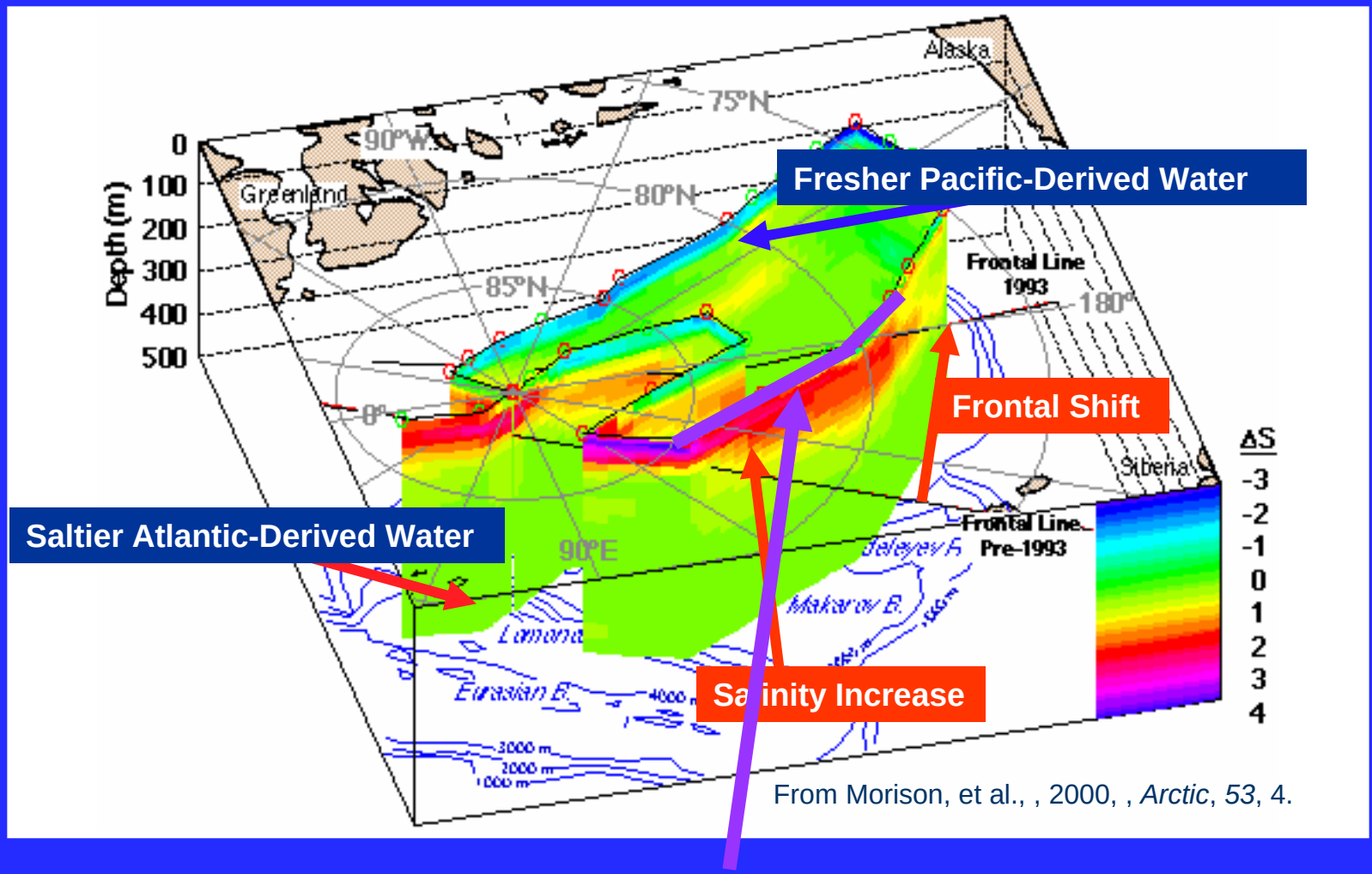
SEARCH Motivation

The Arctic has been characterized in recent decades by a complex of significant, interrelated, pan-Arctic changes (Unaami).

Example: The Makarov Section



From Morison, et al., , 2000, , *Arctic*, *53*, 4.

Section across the Makarov Basin gave the most profound indication of ocean change in the early 1990s. It is hard to make, especially with drifting buoys

SEARCH IMPLEMENTATION PLAN

- **DETECTING CHANGE**
  - **Modes of Variability**
  - **Observatories: Ocean, Atmosphere, Land**
- **UNDERSTANDING CHANGE**
  - **Arctic System Reanalysis**
  - **Global Coupling**
- **RESPONDING TO CHANGE**

MODES OF VARIABILITY AND REANALYSIS

- **TIME AND SPACE SCALES OF PHENOMENA**
  - **Restrospective, Historical, Paleo Studies**
  - **What fields are needed and can be interpolated accurately?**
- **Reanalysis**
  - **What is the interannual variability of the Basin Scale T, S, ice thickness fields?**
  - **Global Coupling: Drivers?**

DMO: Distributed Marine Observatories

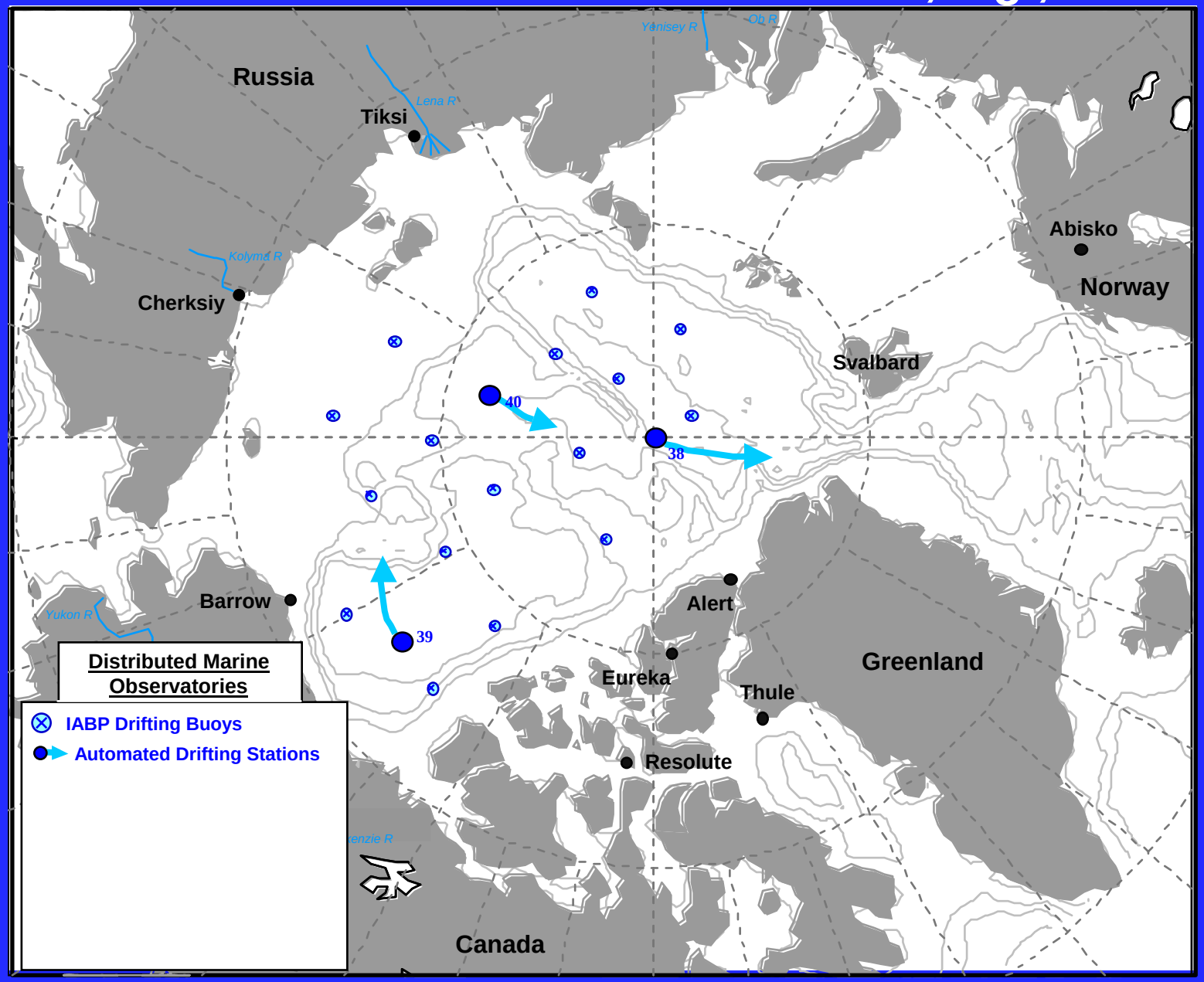
Make large-scale atmospheric, oceanographic, sea ice and ecosystem observations in the marine environment.

SEARCH Implementation Strategy available at
http://psc.apl.washington.edu/search/index.html

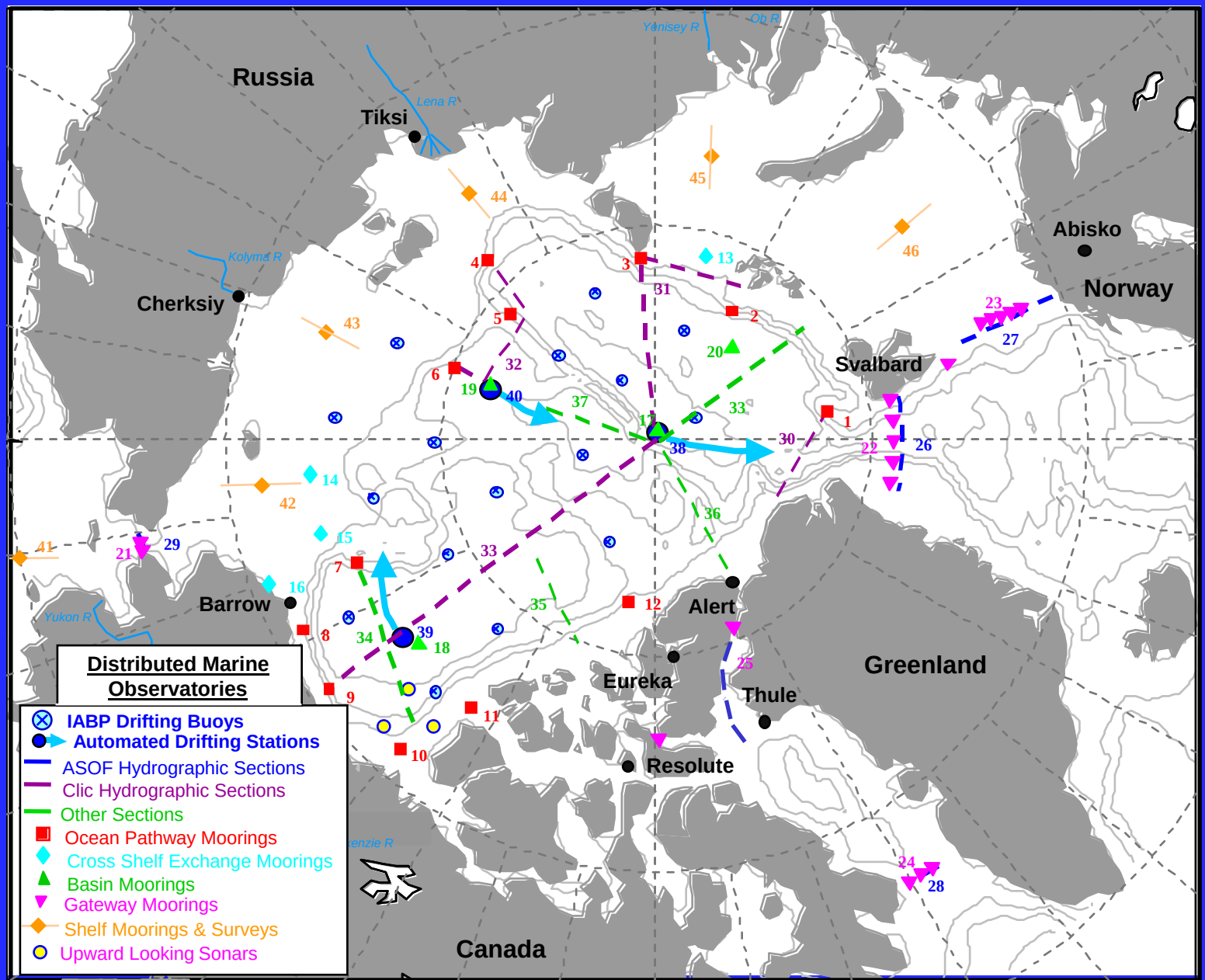
AND: COPIES ON THE TABLE OUTSIDE IN THE HALL

ALSO: See Poster by Takashi Kikuchi: JAMSTEC JCAD

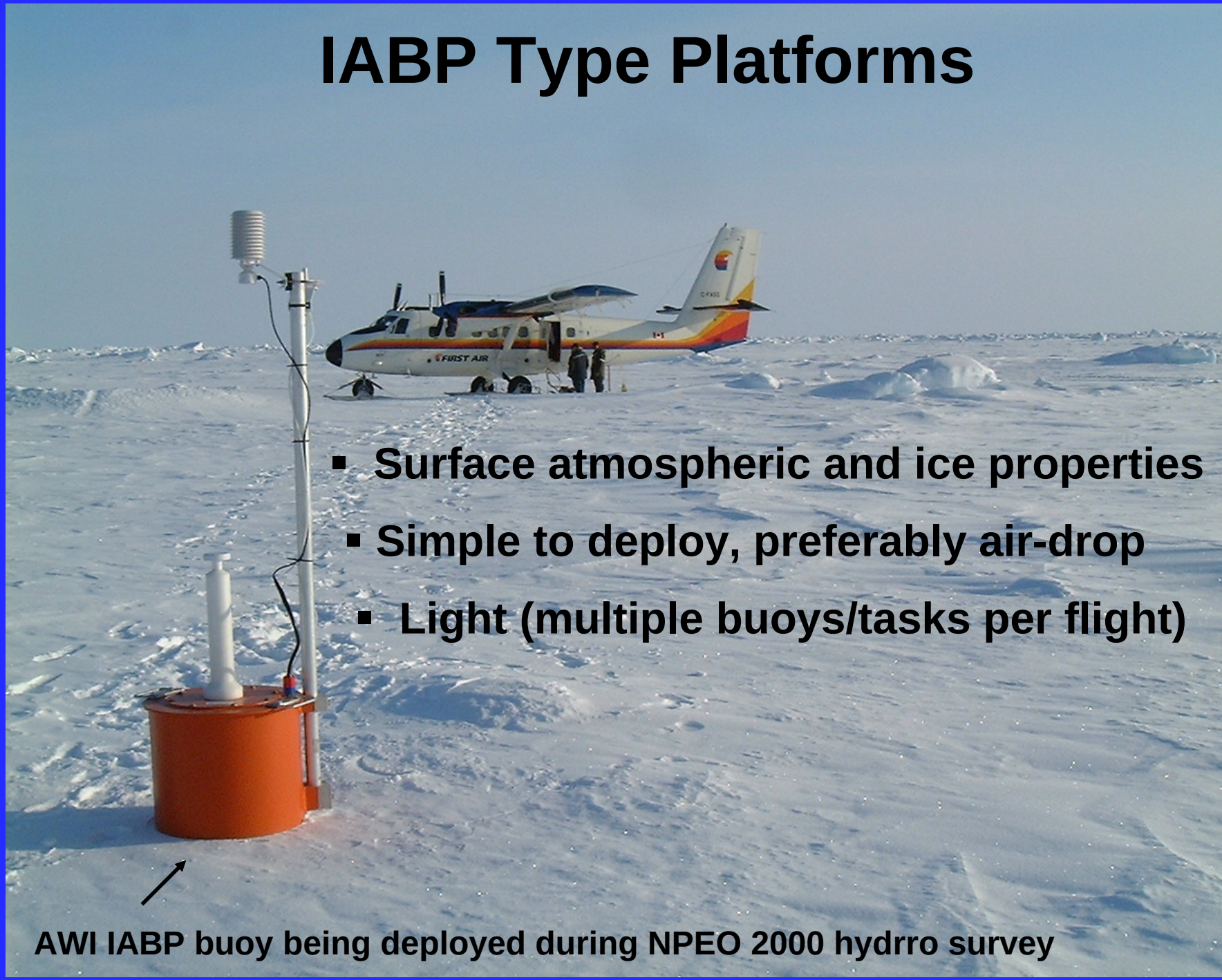
Ice-tethered platforms are important to the SEARCH Distributed Marine Observatories, e.g.,



So, while ice-tethered platforms are important to the SEARCH DMO, they aren't everything.



IABP Type Platforms

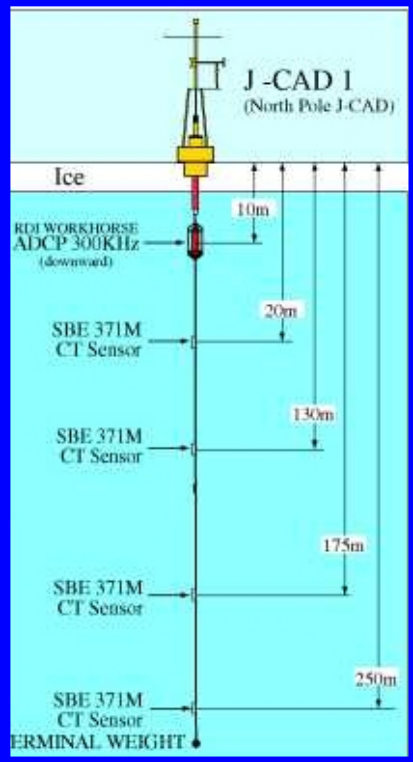


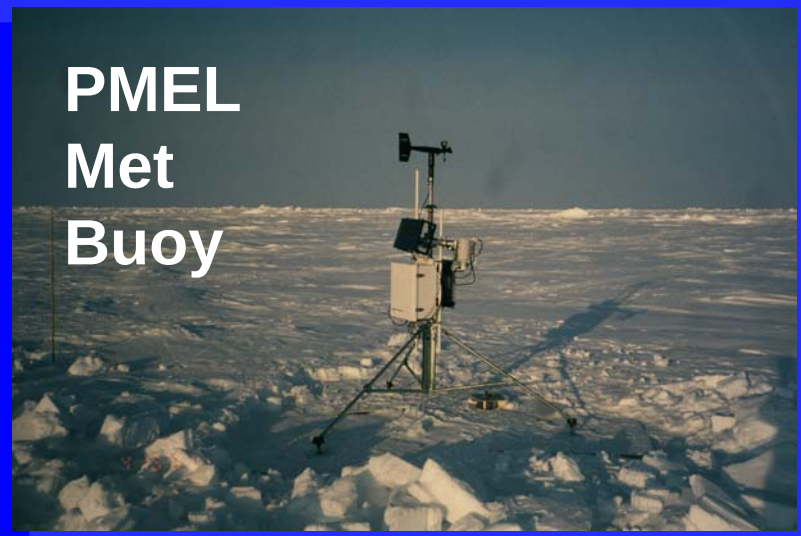
- Surface atmospheric and ice properties
- Simple to deploy, preferably air-drop
- Light (multiple buoys/tasks per flight)

AWI IABP buoy being deployed during NPEO 2000 hydrro survey

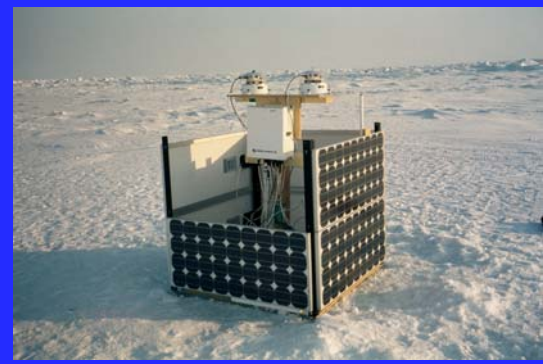
NPEO Automated Drifting Station

J-CAD Ocean/Met Buoy

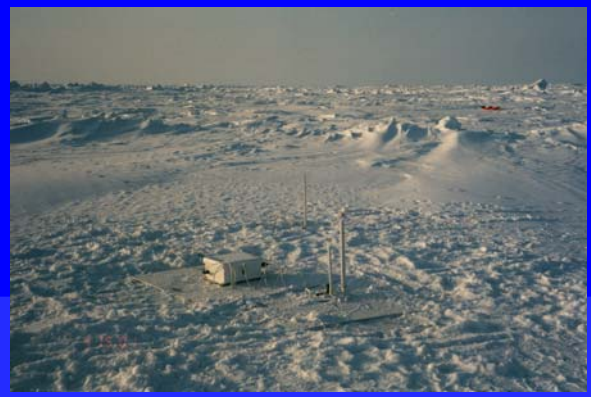




PMEL Radiometer Buoy



CRREL/PMEL Ice Mass Buoy



Takazawa, Shimada, Overland, Perovich, Richter-Menge, McPhee

CONCLUSIONS:

- Ice-tethered platform are playing an important part in SEARCH.
- Their use must be combined in an operationally harmonious way with other observing methods to achieve the required dimensional mix of measurements.
- An in-depth study of the time and space scales of phenomena (modes of variability) is needed, including implications for sampling frequency, spatial domain, spacing and accuracy of the observing system needed to detect and quantify changes.