

Integrated analysis of high-resolution autonomous observations in the Pacific Arctic Region

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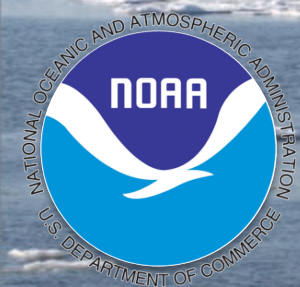
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⁵ NOAA Arctic Research Program



Damage resulting from collision between oil tanker and iceberg in Prince William Sound, AK, January 1994



AK Dept of Environmental Conservation / NCU

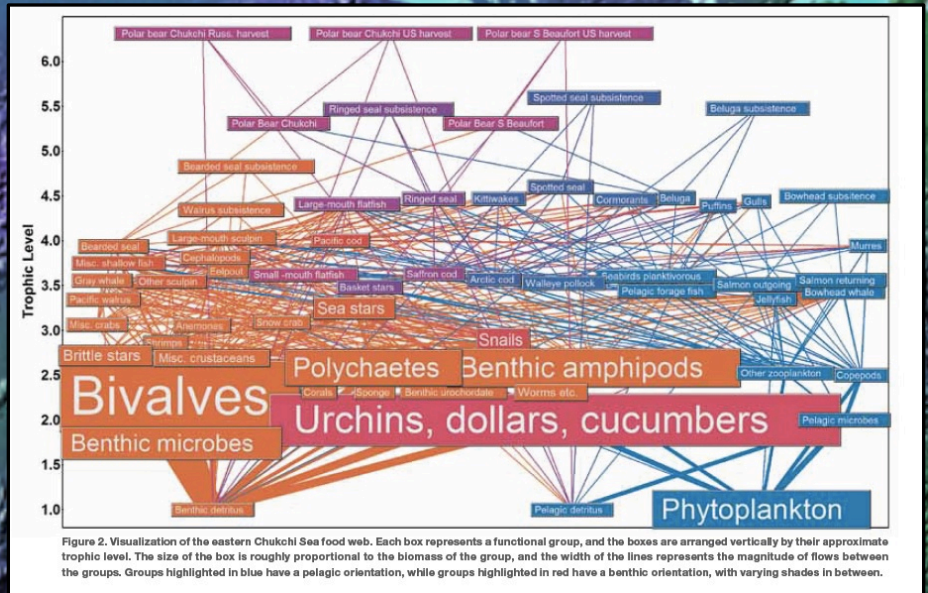


Figure 2. Visualization of the eastern Chukchi Sea food web. Each box represents a functional group, and the boxes are arranged vertically by their approximate trophic level. The size of the box is roughly proportional to the biomass of the group, and the width of the lines represents the magnitude of flows between the groups. Groups highlighted in blue have a pelagic orientation, while groups highlighted in red have a benthic orientation, with varying shades in between.

Vast
Complex
Hazardous

Integrated Environmental Intelligence

GLACIER TO GULF:

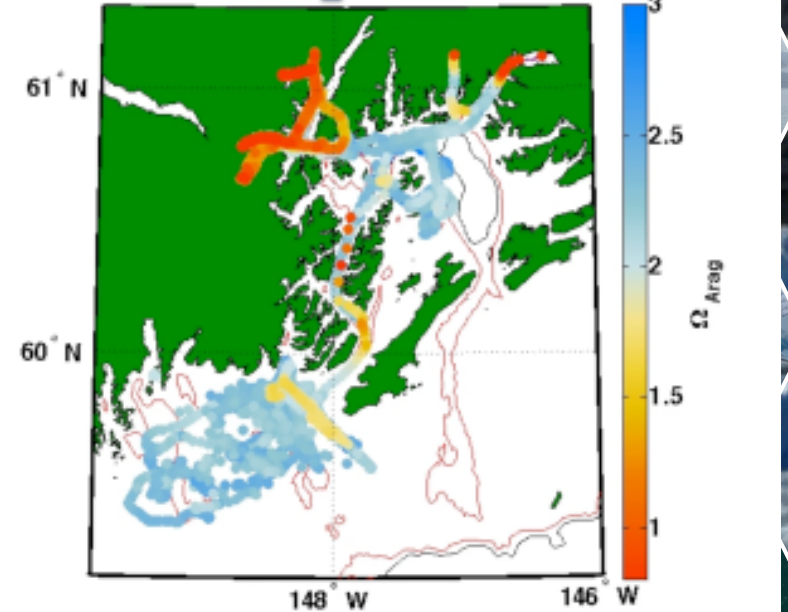
Multi-platform Ocean Acidification Monitoring in Prince William Sound

Department of Commerce Silver Medal for Exceptional Service, 2014



Alutiq Pride

Ma
Ma
To



Gliders

Slocum
Glider





ITAE

Innovative Technology for Arctic Exploration



- Build mission capabilities in harsh, vast, complex Arctic environment
- Reduce burdens and risks of ship time
- Smart development: low cost, fast iteration, broad transference

Humidity, AT, PAR, Pressure
LW/SW Radiation Sensor,
Wind Speed / Direction,
GOPRO3+ Camera,
Light

2015: Multi-platform Integrated Chukchi Research Mission



Lab on a Chip (Nitrate)
SBE 37, Eco-Fluorometer,
SUNA (Nitrate),
Accelerometer

5 m Prawler stopper

Prawler

25 m Prawler stopper
Microcat, Eco Fluorometer

27 m T

29 m T

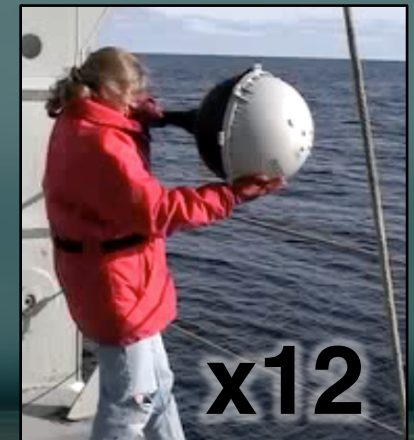
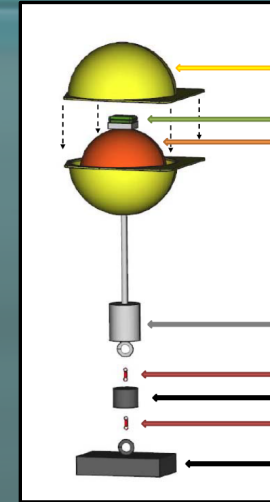
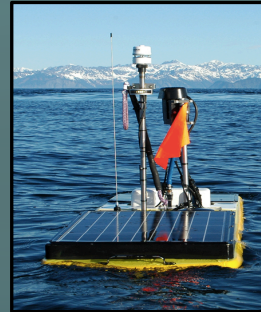
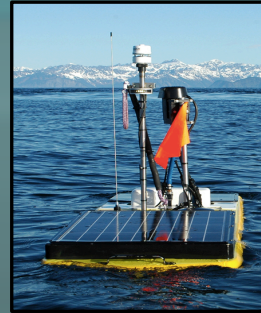
31 m T

33 m T

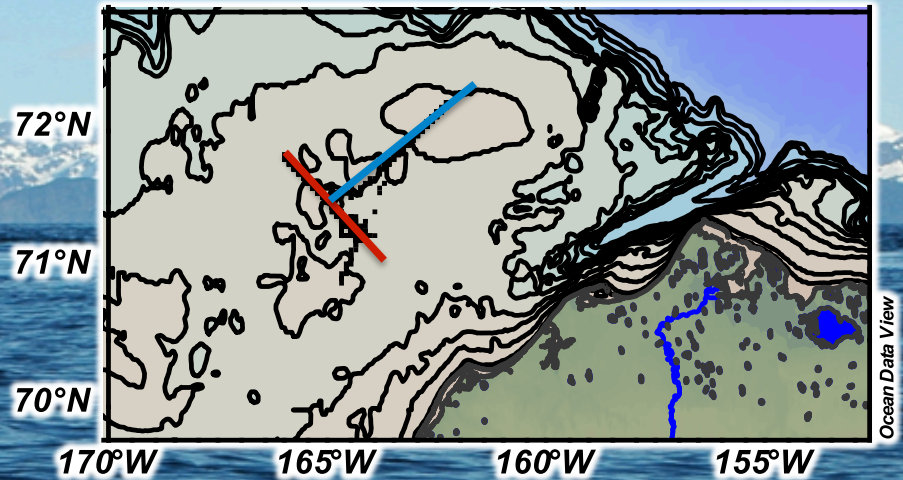
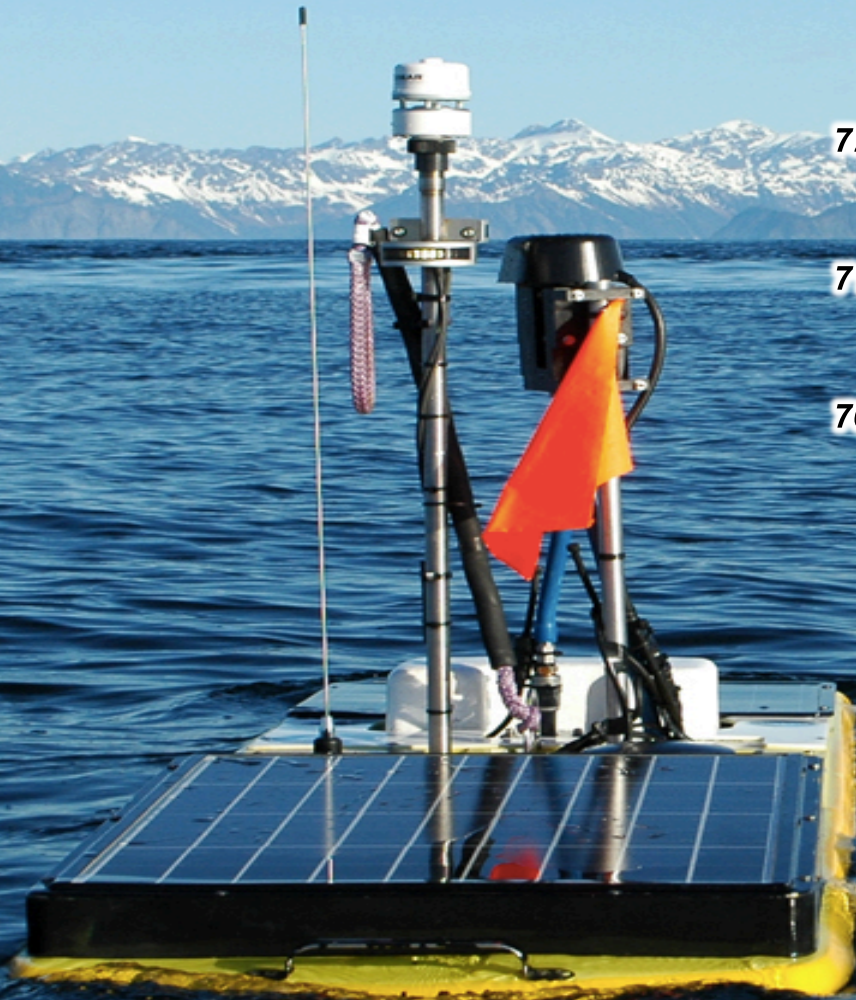
Microcat, Eco Fluorometer

35 m Acoustic release

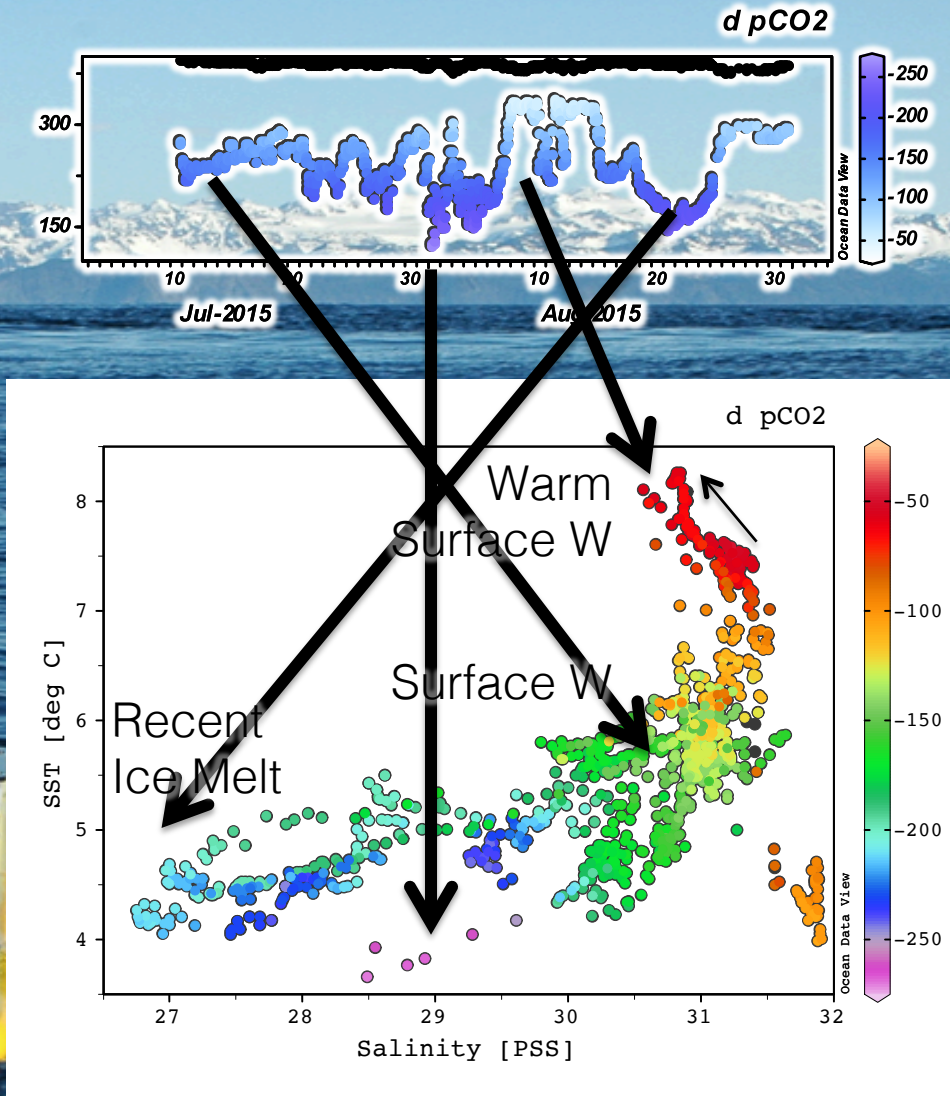
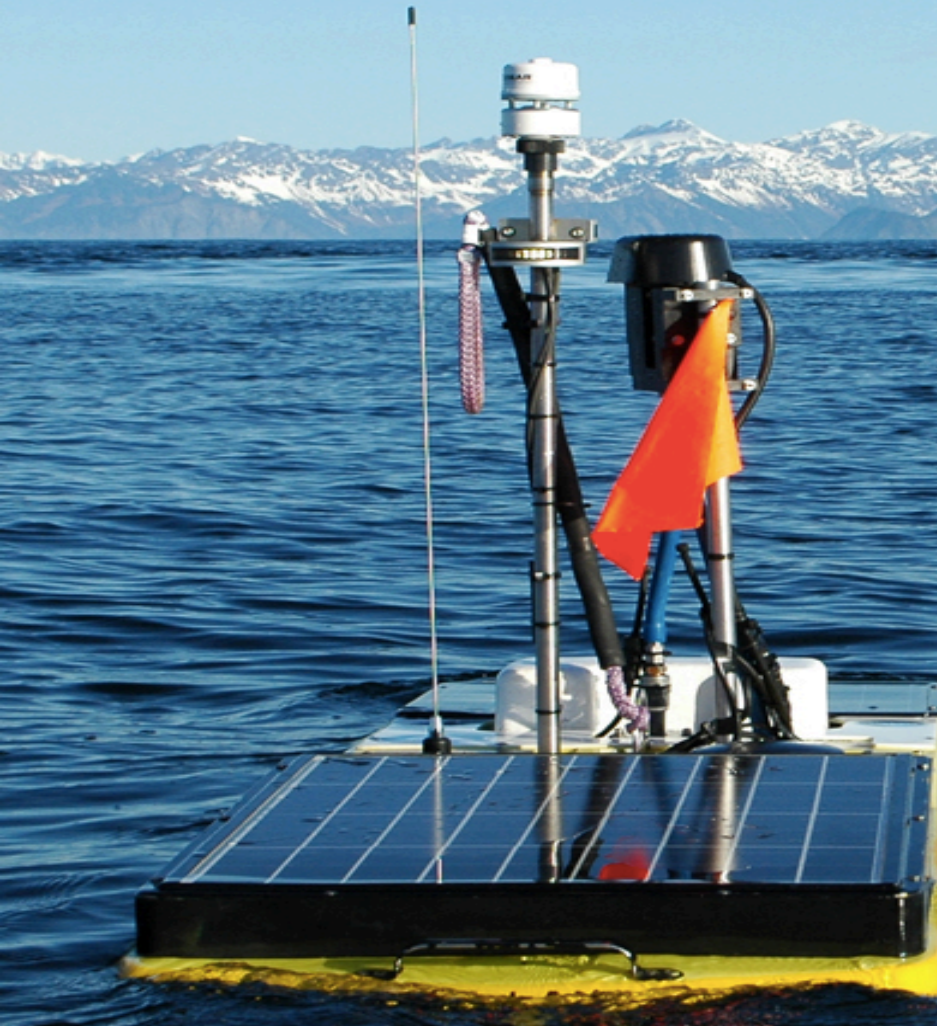
42 m Anchor



ARCTIC CARBON WAVE GLIDER

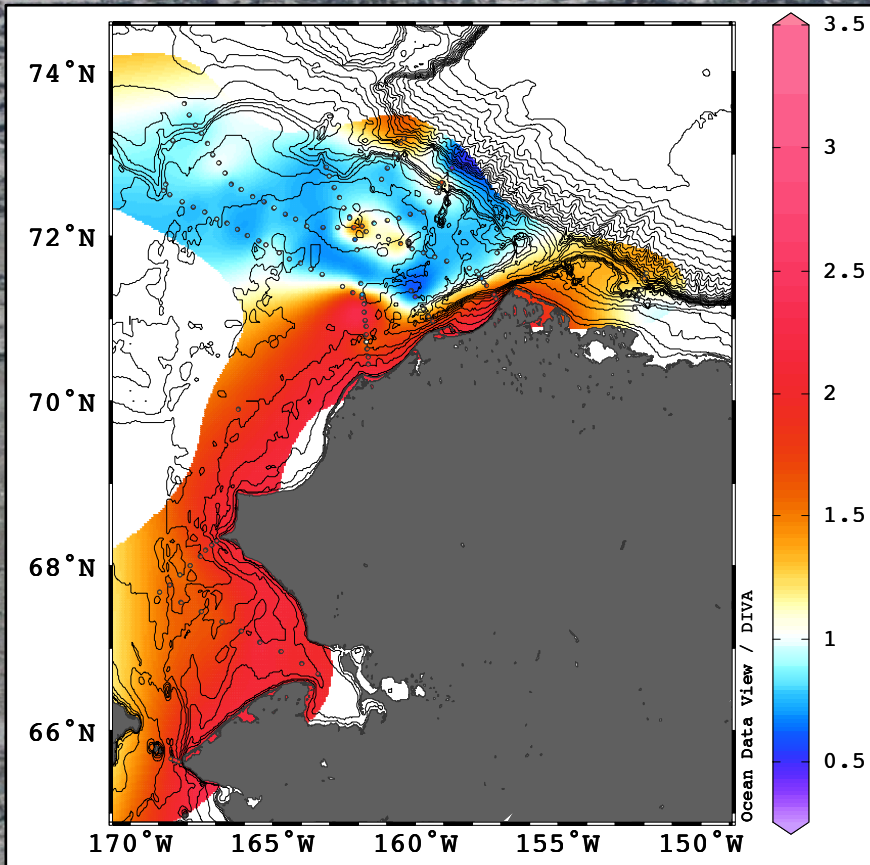


ARCTIC CARBON WAVE GLIDER

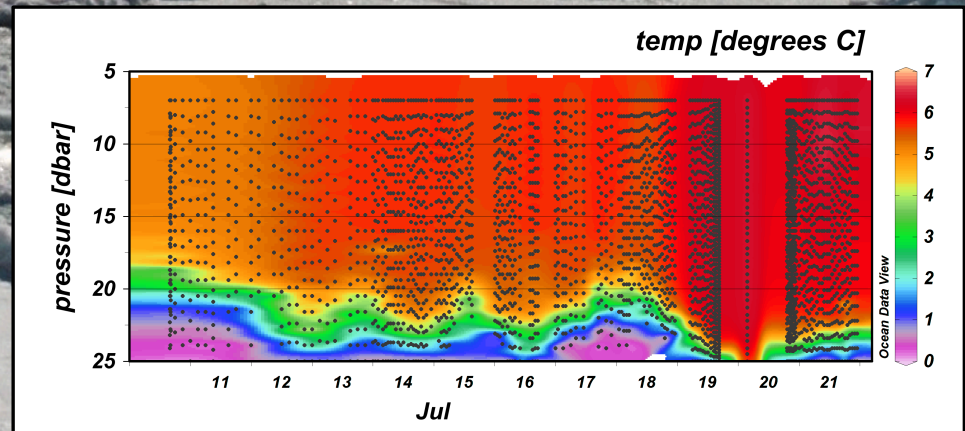
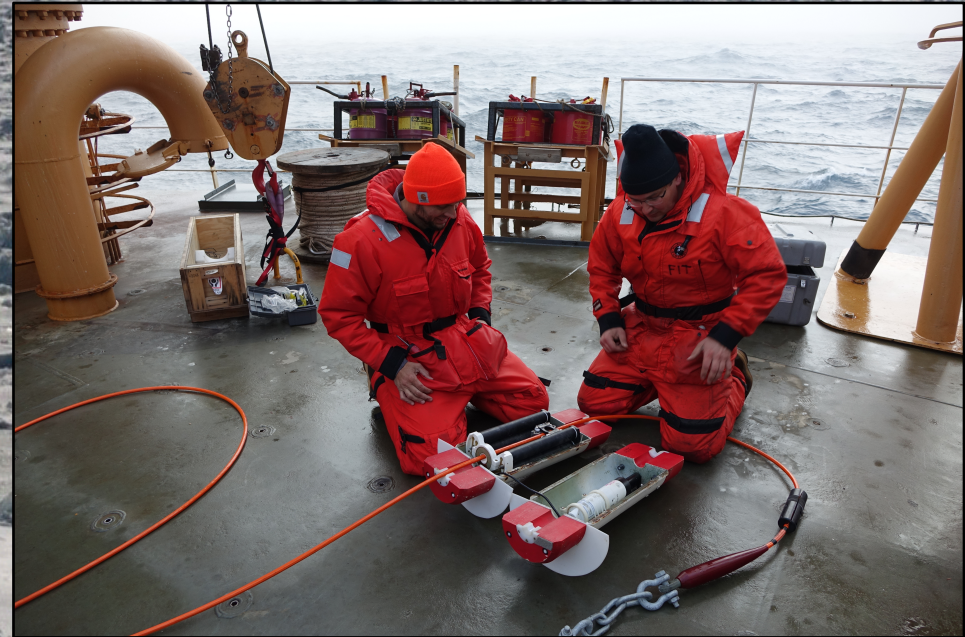


At least 40% of the Chukchi Sea benthos is exposed to bottom waters that are corrosive to CaCO_3 during summertime.

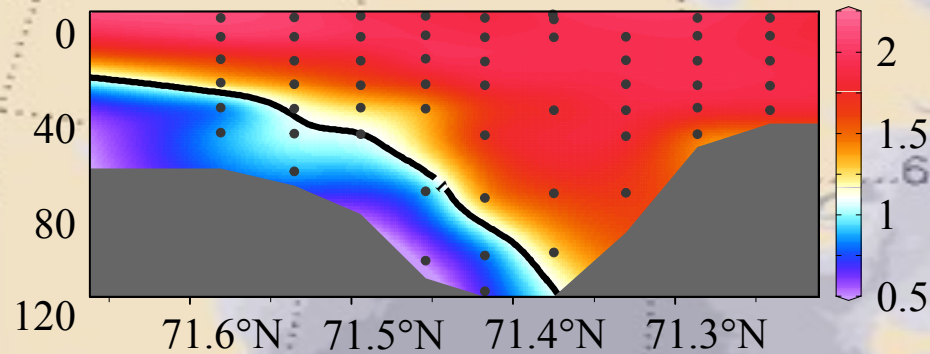
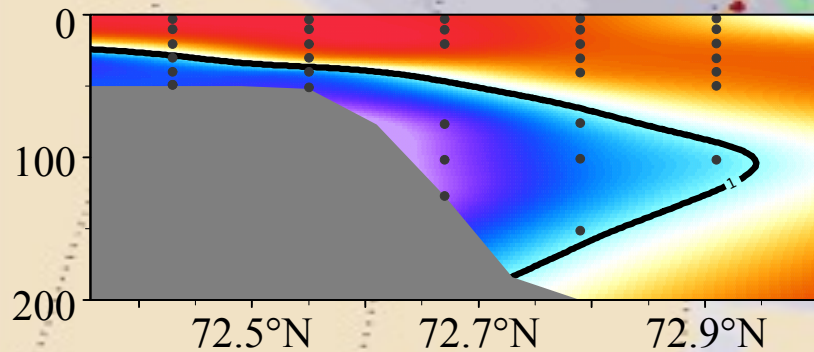
N. Bates, Pers. Comm.



Bates, unpublished data

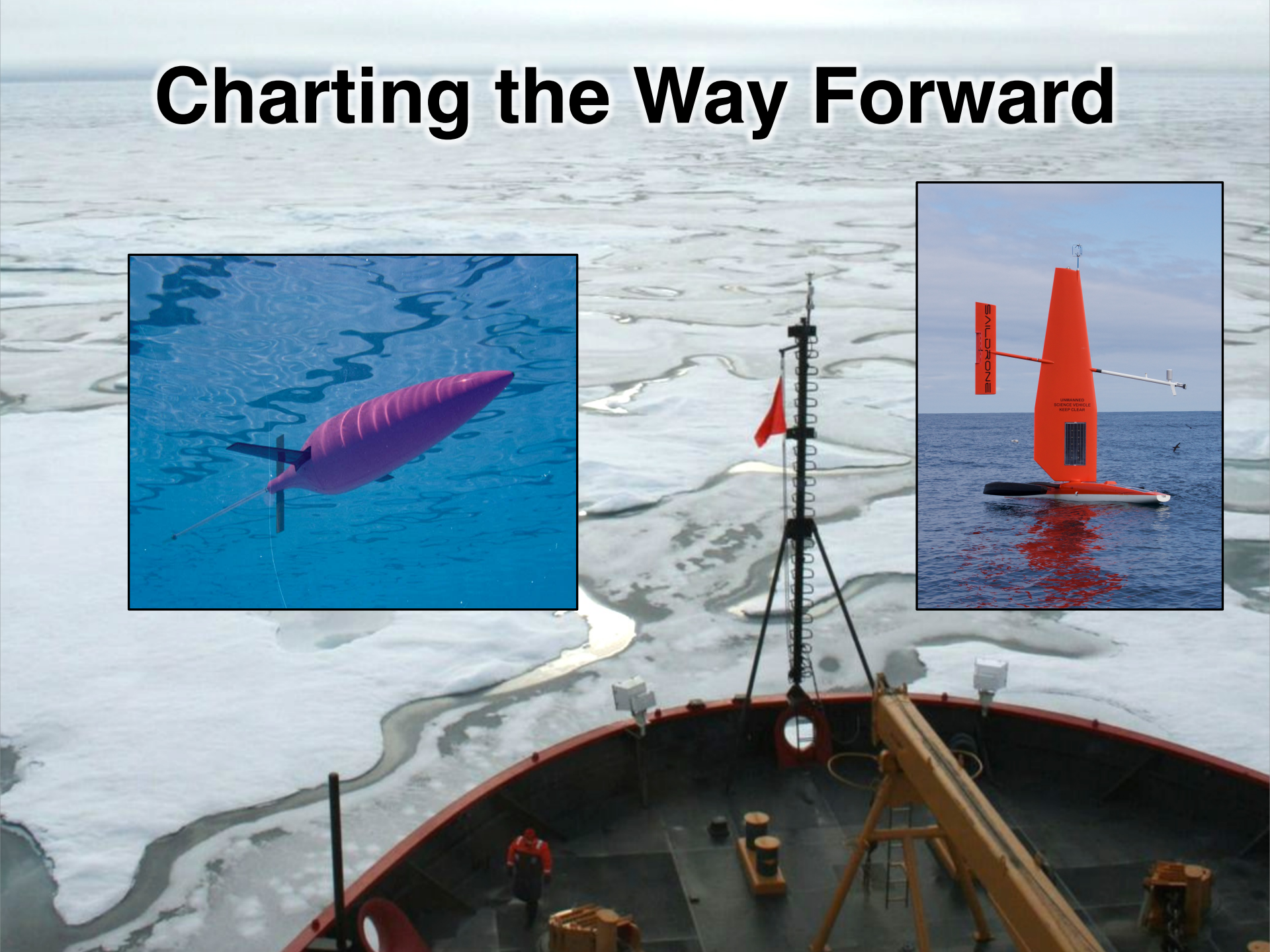
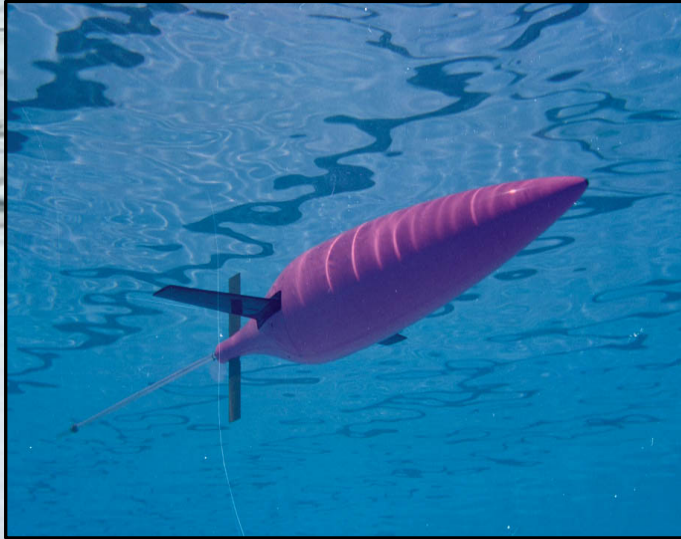


12 Drifters 30m Drogues



SST -2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12

Charting the Way Forward





ITAE

Innovative Technology for Arctic Exploration



OUR DEVELOPMENT TEAM:

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- Cooperative Institute for Marine Resources Studies, Oregon State University
- National Oceanography Centre, University of Southampton
- Officers and crew, USCGC Healy and NOAA Ship Oscar Dyson



QUESTIONS?