Office of Naval Research Arctic Science 2019

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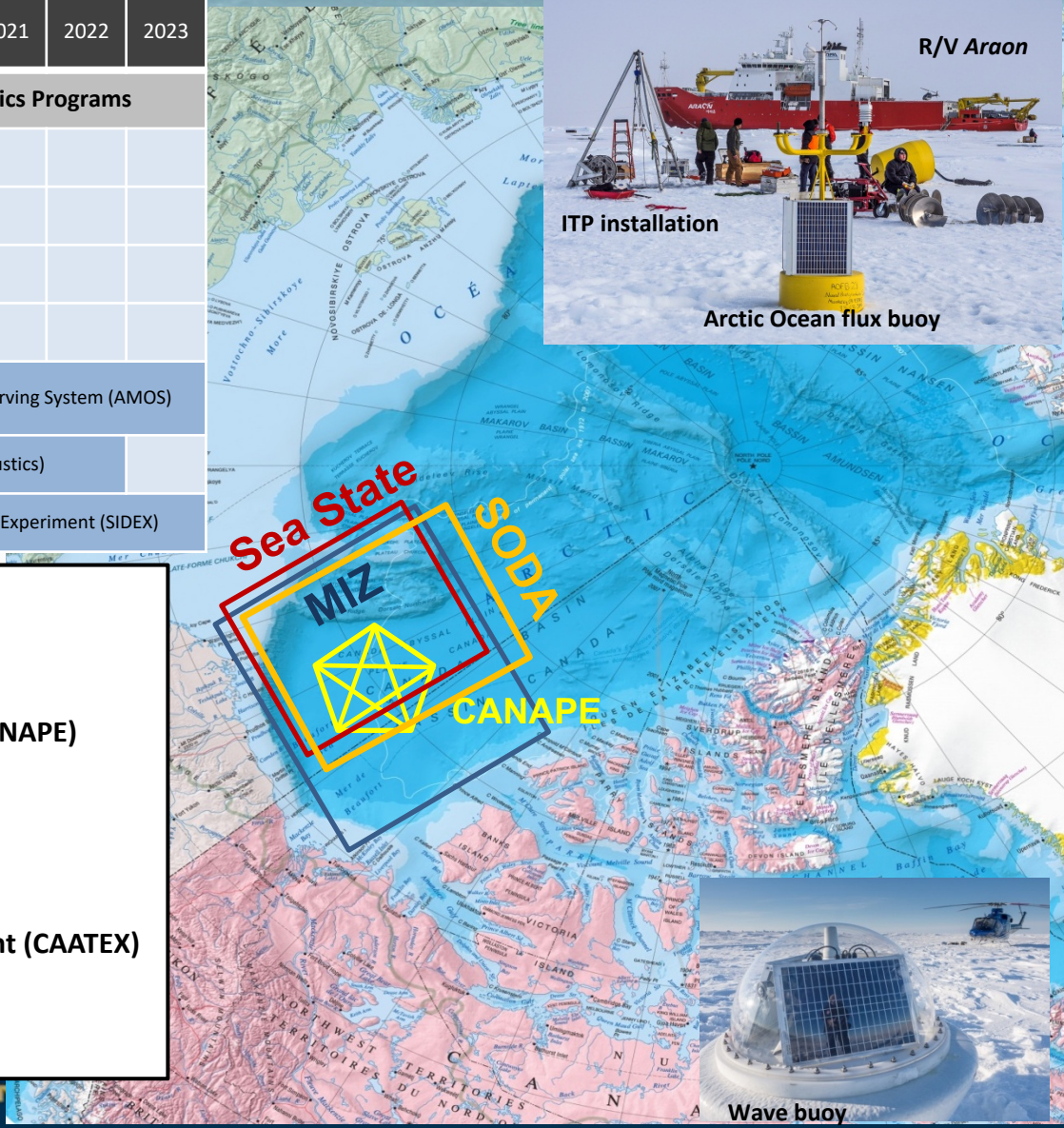
ONR Major Arctic Research Initiatives

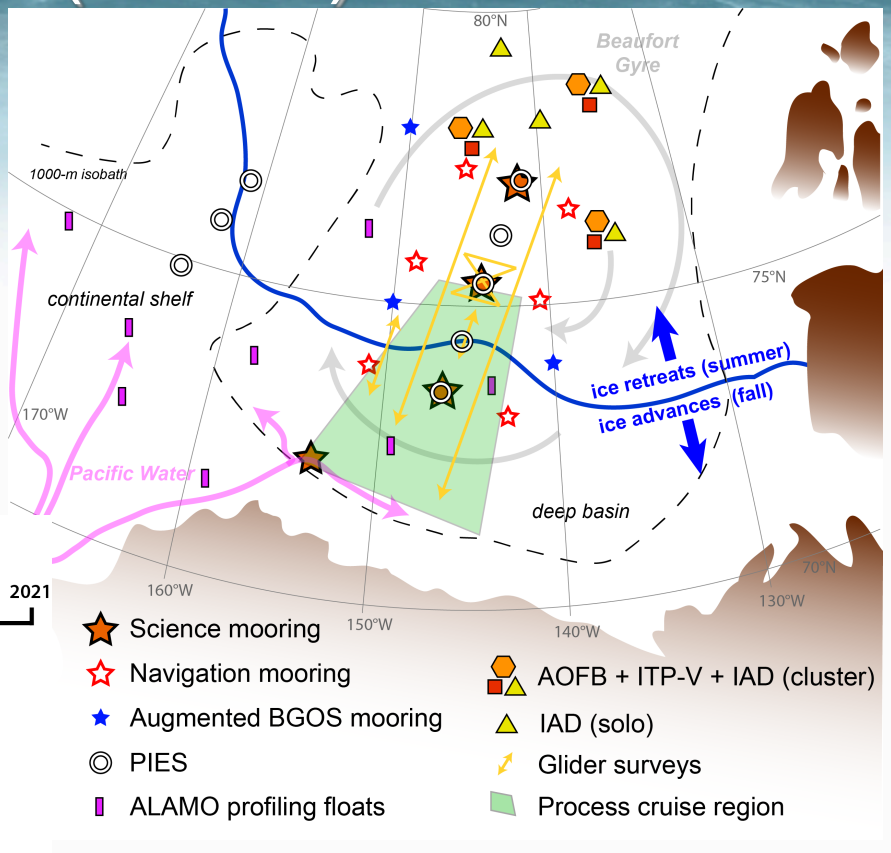
2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Office of Naval Research Arctic and Global Prediction and Acoustics Programs											
Marginal Ice Zone (MIZ)											
	Waves and Sea State										
			CANAPE (acoustics)								
				Stratified Ocean Dynamics (SODA)							
							Arctic Mobile Observing System (AMOS)				
							CAATEX (acoustics)				
							Sea Ice Dynamics Experiment (SIDEX)				

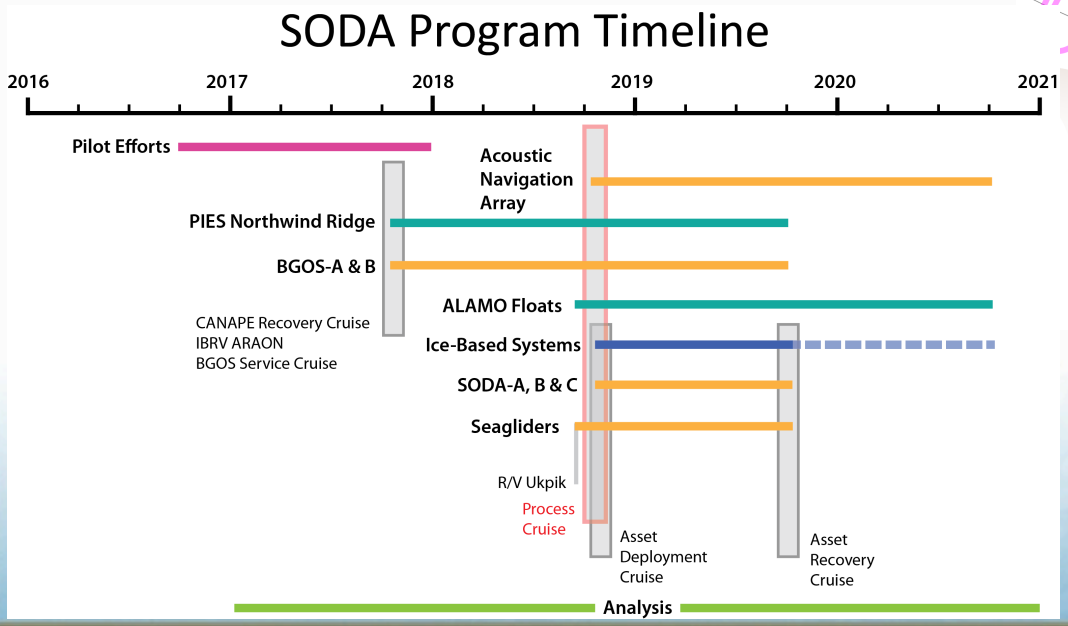
- **Marginal Ice Zone (MIZ) Initiative**
  - *2014 Field Program*
- **Waves and Sea State Initiative**
  - *2015 Field Program*
- **Canada Basin Acoustic Propagation Experiment (CANAPE)**
  - *2015, 2016-2017 Field Programs*
- **Stratified Ocean Dynamics in the Arctic (SODA)**
  - *2017-2019 Field Programs*
- **Arctic Mobile Observing System (AMOS)**
  - *2019-2023 Field demonstrations*
- **Coordinated Arctic Acoustic Tomography Experiment (CAATEX)**
  - *2019-2020 Field Programs*
- **Sea Ice Dynamics Experiment (SIDEx)**
  - *2020-2021 Field Programs*



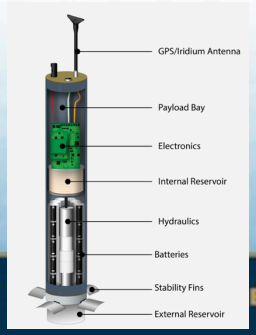
Stratified Ocean Dynamics in the Arctic (SODA)

- 2018-2019, Central Beaufort Sea.
- Understand role of upper ocean in controlling fate of sea ice.
- One year of autonomous sampling (moorings, gliders, ice-tethered sensors).
- September-October cruises (2018, 2019).



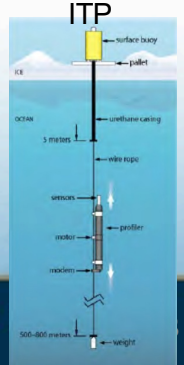


ALAMO Float



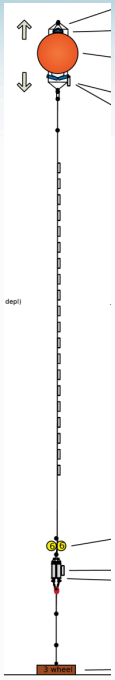
Seaglider

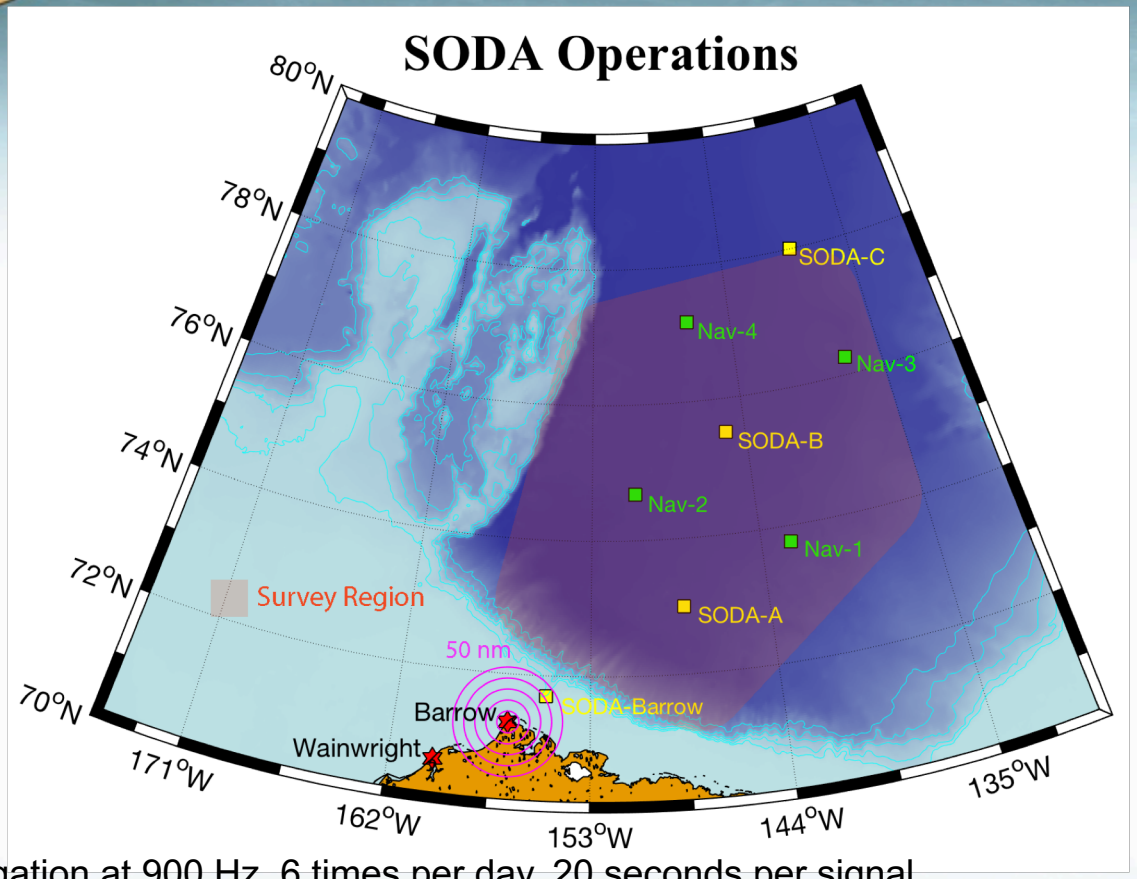
ITP



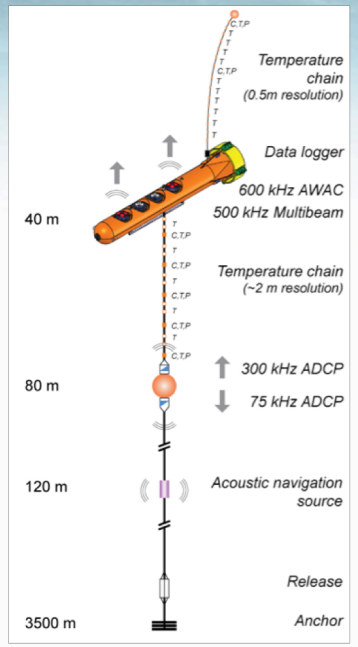
SODA Moorings

SODA-Barrow

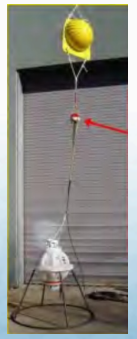




SODA-A/B/C

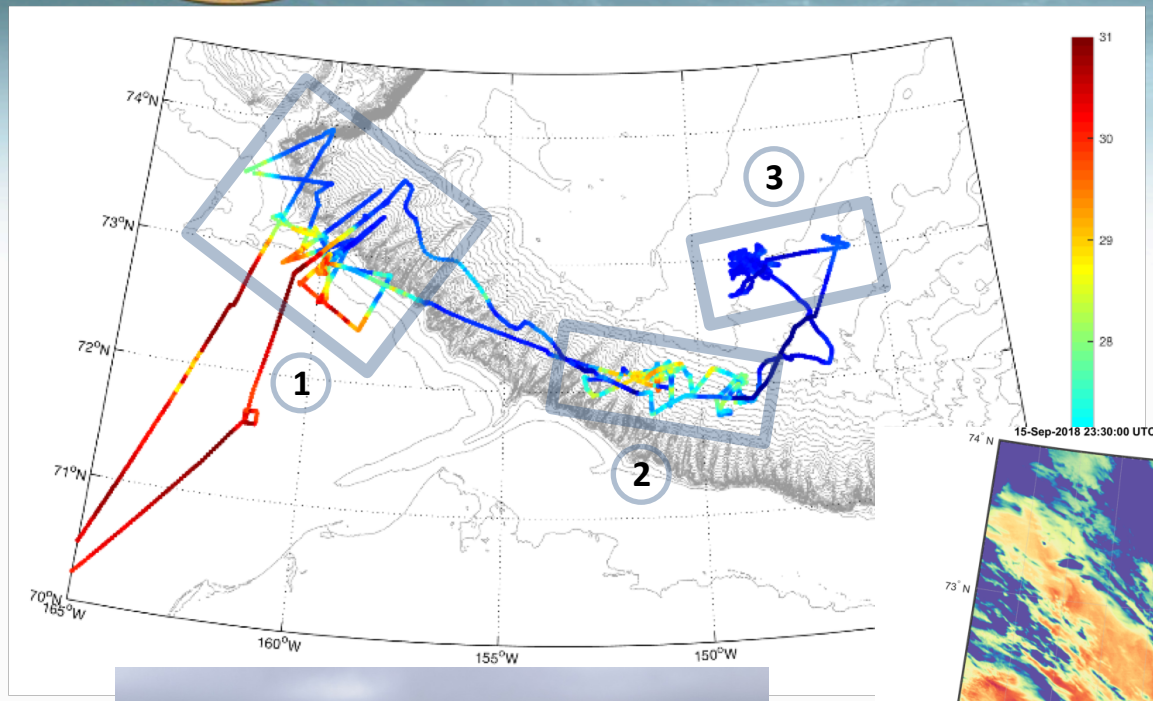


- Navigation at 900 Hz, 6 times per day, 20 seconds per signal.
- Office of Naval Research (ONR) and Naval Undersea Warfare Center (NUWC) undertook a study to assess potential impact on hunting activities.
- The study found that navigation sources had no impact due to distance from hunting areas and the moderate source levels.



Pressure Inverted Echo Sounder (PIES)

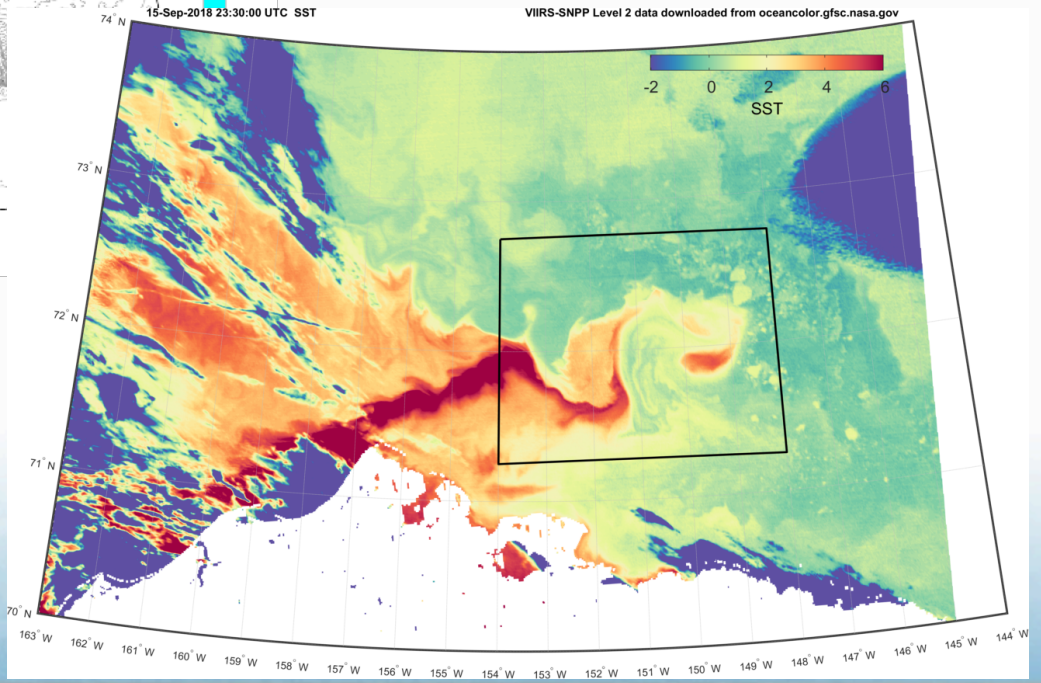
2018 Sikuliaq Process Studies



What happens to heat carried in through Bering Strait?

Three focus areas:

1. Shelfbreak and slope.
2. Coastal current
3. Remnant ice edge



2018 Healy Mooring Deployments

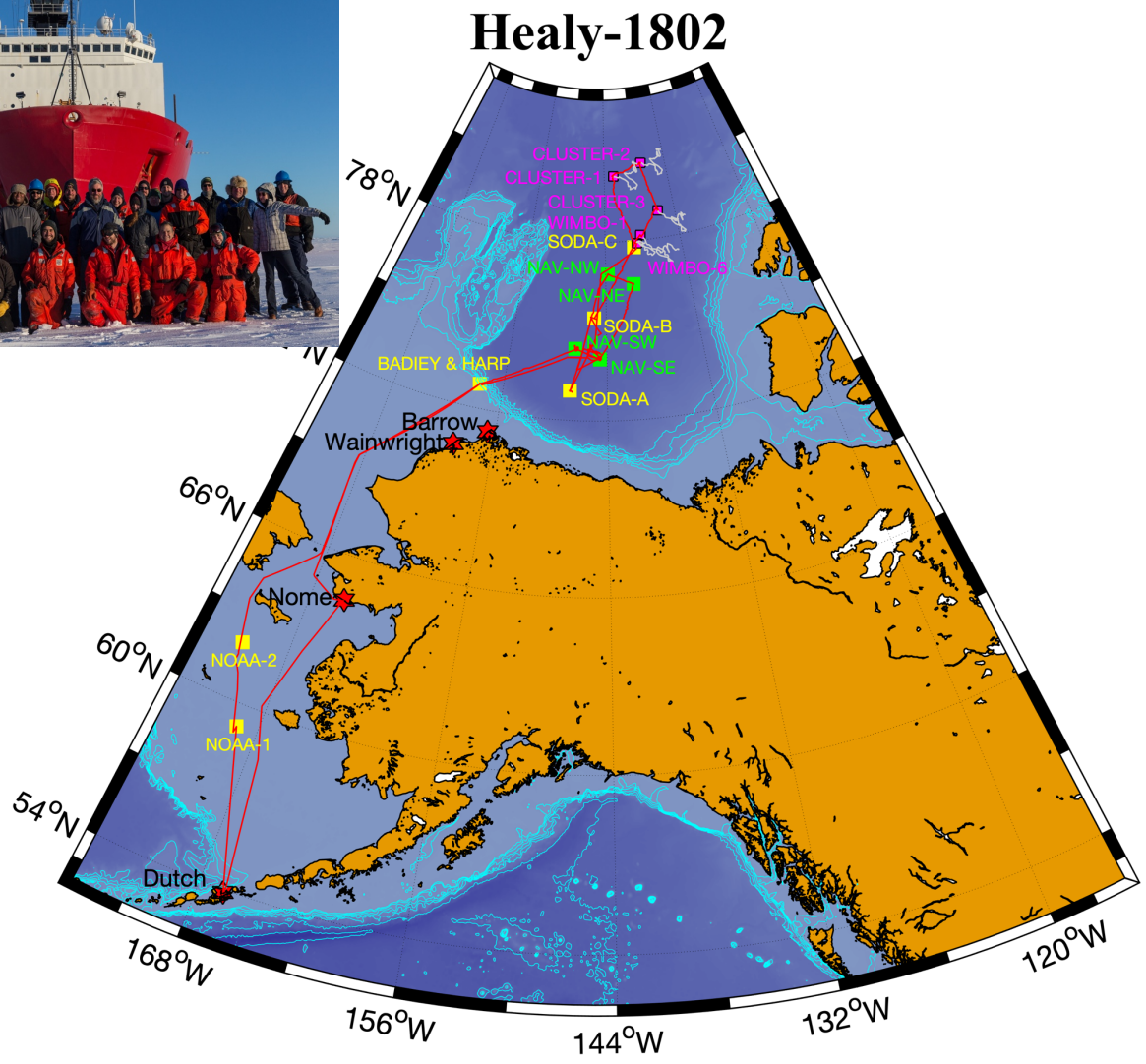
Deployed/Recovered

- (3) Science moorings
- (4) Nav moorings
- (3) Ice-based clusters (WINBO, AOFB, ITP)
- (2) WIMBO
- (2) AMOS buoys
- (2) Seagliders, (3) SGX gliders
- (1) Acoustic mooring
- Recovered (1) Harp and (1) NOAA mooring

Shipboard Measurements

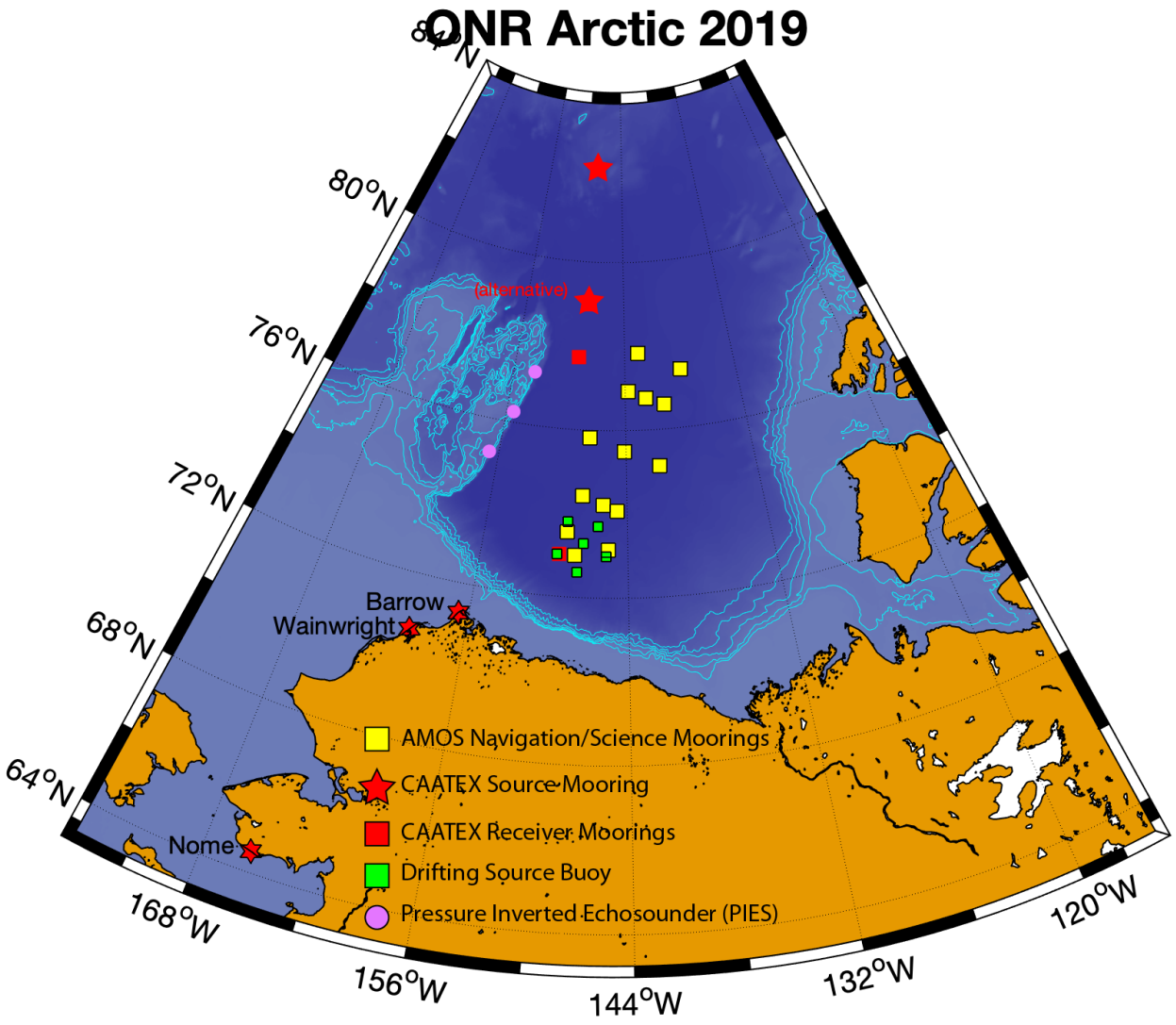
- UCTD surveys
- Underway measurements

Instruments (and data!) will be recovered in autumn 2019.



Proposed SODA-AMOS-CAATEX Activity USCGC Healy 2019

- AMOS navigation sources transmit at 900 Hz for 8 sec, 185 dB, 6 times per day.
- Drifting source buoys transmit at 900-1000 Hz for 60 sec, 185 dB, 6 times per day.
- The CAATEX source transmits at 34 Hz for 15 min, 195 dB, once every 3 days.
- Office of Naval Research (ONR) & Naval Undersea Warfare Center (NUWC) conducted study of potential impact on hunting activities and found no change in conclusions from the previous year.



More Information

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