

# **A High Resolution Multi-Tracer Biogeochemical Study of the Pacific Arctic**

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# Research Expedition Details

Dates: August 17-Sep 6, 2022

Departs from: Nome, AK

Returns to: Nome, AK

Research Area Location: Northern Bering, Chukchi,

Western Beaufort Seas

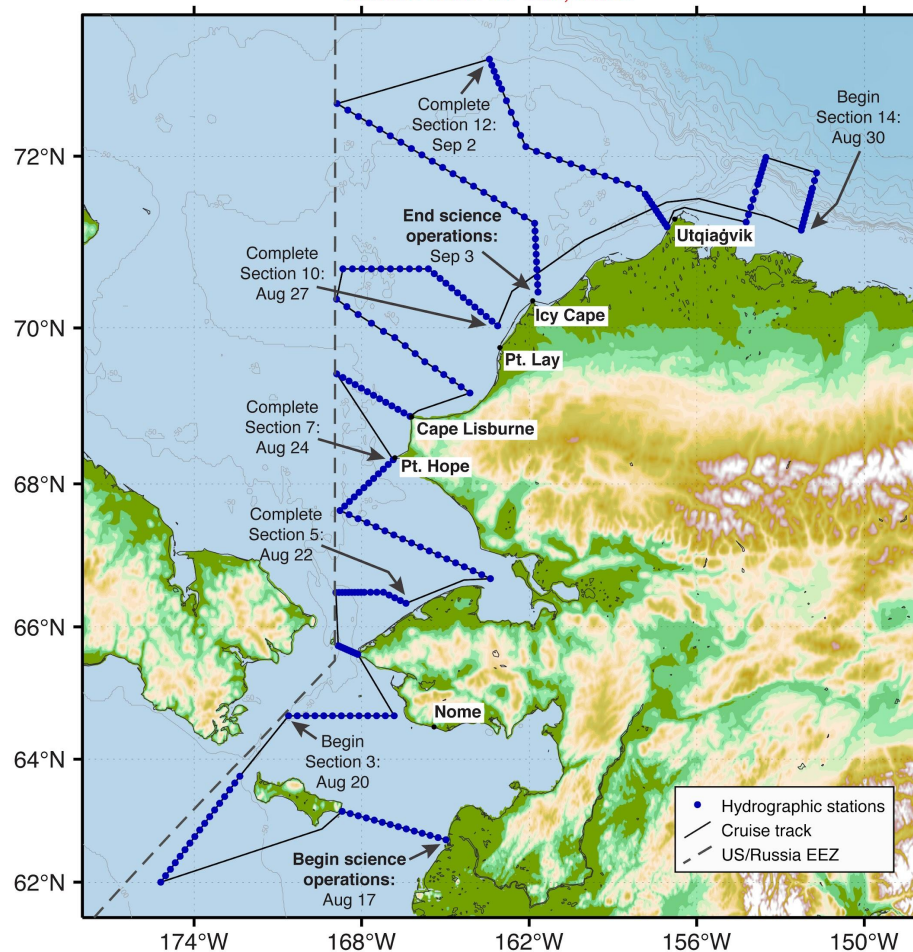
Vessel: R/V Norseman II

Research website: N/A

Project supported by: National Science Foundation

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**2022 HABs cruise Leg 2**  
Nome to Nome: 17 August - 6 September, 2022  
*Version date: 27 Jan, 2022*



# Key Scientific Questions & Motivations

- Productivity on inflow shelves like the Chukchi seems to be increasing significantly: what are the mechanisms supporting this increase?
- How does the biogeochemical setting relate to harmful algal bloom (HAB) distributions?

We will use a suite of productivity tracers that allow us to see where, when, and how much biological productivity has occurred throughout the sampling area. Because we can measure these tracers at very high resolution, we can relate patterns to potential mechanisms that may be important.

# Key Activities & Data to be collected

Measurements include:

- underway sampling of surface seawater including
  - continuous analysis of nutrients (N+ P),
  - particle size spectrum and particle abundance (backscatter)
  - chlorophyll fluorescence, variable fluorescence (Fv/Fm)
  - dissolved gas tracers ( $O_2/Ar$ ) which provide a quantitative measure of net ecosystem productivity
- CTD casts
- water sampling from the rosette (including nutrients; particles; size fractionated chlorophyll; salinity)
- productivity incubations

# Implications & Broader Impacts

Dramatic changes underway in the Pacific Arctic region have the potential to alter ecosystem functioning. By understanding the mechanisms supporting the productivity increases in this region we can better predict if there will be shifts in timing and location, which will ultimately propagate throughout the Arctic foodweb.