

US Contribution to the SAS – Funded Project

Taking the Pulse of the Arctic Ocean System, from the Shelves to the Pole –the Synoptic Arctic Survey (US Synoptic Arctic Survey Update)

Project Team (PIs)

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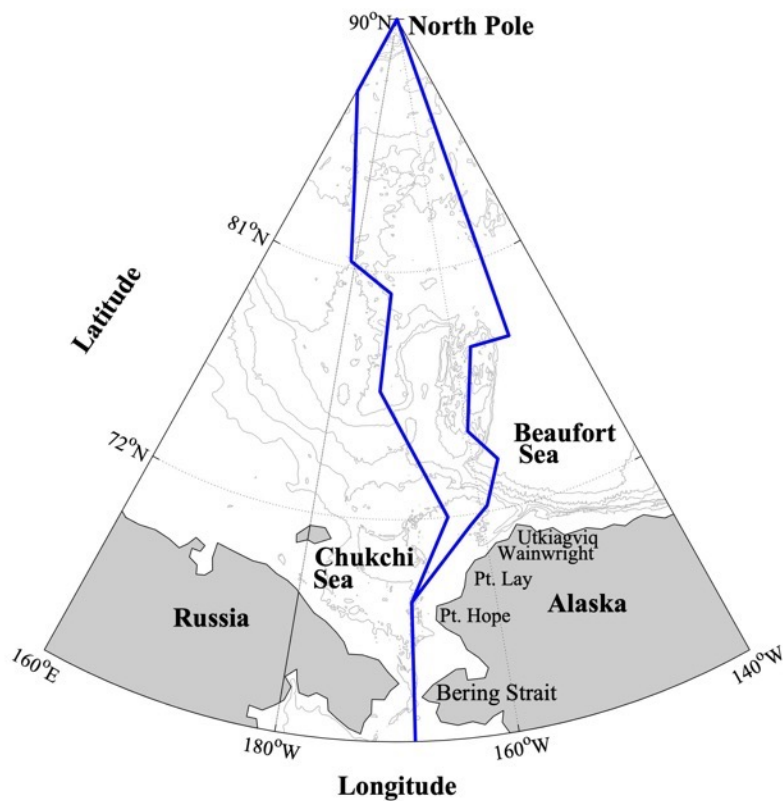


<https://synopticarcticsurvey.w.uib.no/>
<https://www2.whoiedu/site/ussas>

Funded by the U.S. National Science Foundation

Cruise on USCGC Healy in 2022

DRAFT Cruise Track – NOT FINAL!!!



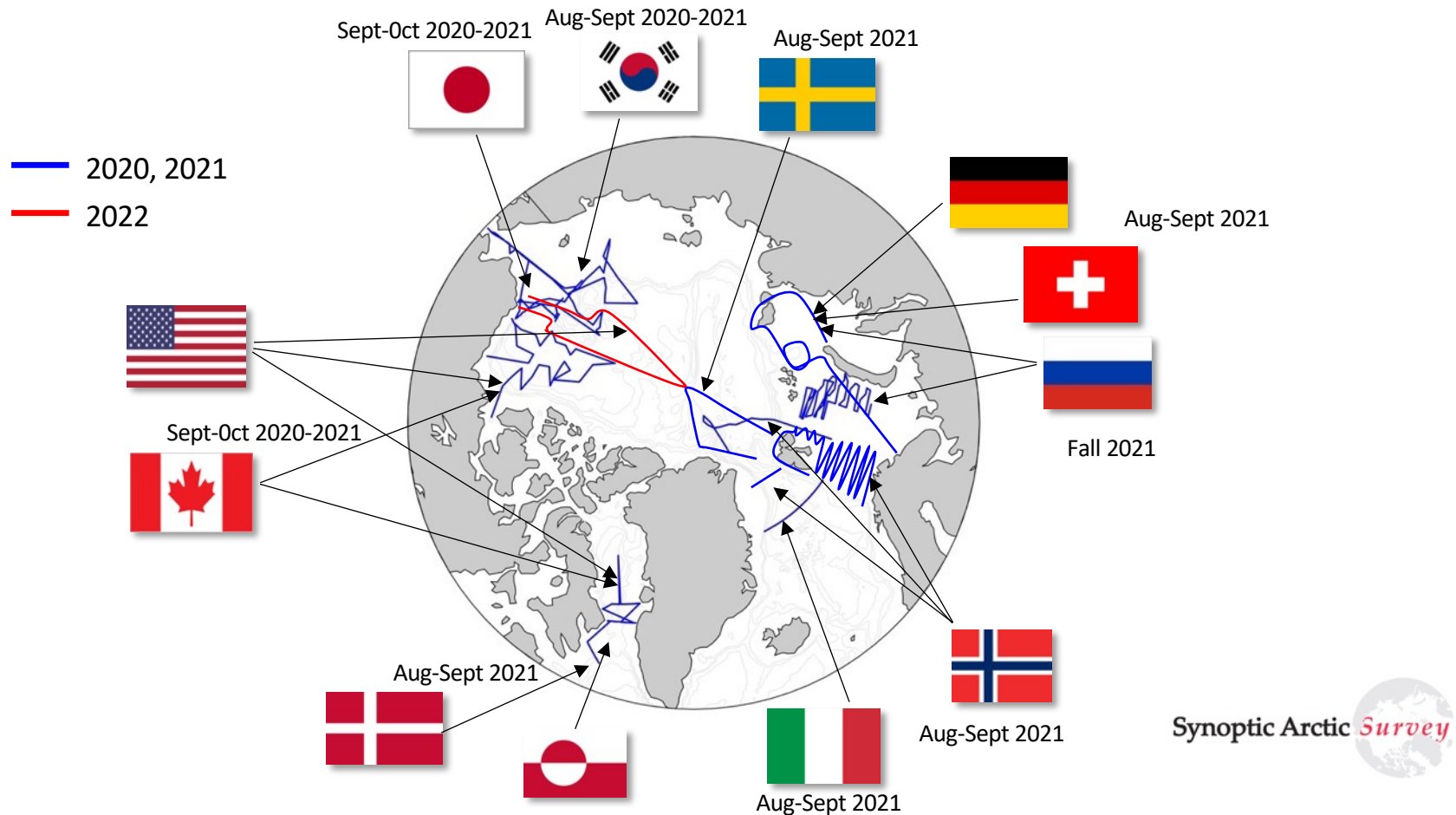
- Late-August 2022
- To/from Dutch Harbor
- ~50-56 days in length



-Photo by Steve Roberts

PLANNING DISCUSSIONS ARE ONGOING

Draft cruise track fills in a gap in the SAS coverage



International SAS Cruises (12 Nations)

Planned measurements

- Water column T*, S*, P*, Chl. Fluorescence*, DO*, OBS*, PAR
- Water velocity from ADCP*
- DIC*, DOC*, TA*, POC*, pH* from hydrocasts
- $\delta^{18}\text{O}$ from hydrocasts
- Dissolved O_2 * from hydrocasts
- Nutrients* from hydrocasts
- GPP and NCP* using dissolved gas tracers and O_2/Ar * from flow through seawater
- SAMI pCO₂ and pH* from flow through seawater
- POC*, PIC, TC, PON, $\delta^{15}\text{N}_{\text{PON}}$, $\delta^{13}\text{C}_{\text{POC, PIC}}$, microscopic particle characterization from large volume pumps
- Extracted chlorophyll *a**
- Mesozooplankton abundance and composition*, stable isotopes*, condition, respiration
- Vertical distribution of plankton and particles (including sizes) from VPR
- Sediment community oxygen consumption and nutrient fluxes*
- C. glacialis* mtDNA haplotypes
- Gravimetry*
- Bathymetry including multibeam*
- Underway pH*, SAMI pCO₂,
- Upper water column optics
- Temperature*, salinity*, chlorophyll fluorescence, oxygen*, pCO₂ from flow-through seawater system
- Sediment chlorophyll*, grain size, organic C
- Wind speed and direction, long- and short-wave radiation, air temperature, air humidity, barometric pressure*
- Methane from surface SW and air
- Macrobenthos abundance and biomass*; dominant macrofaunal respiration*

All underway sensors will be operating

How to get involved?

We welcome expressions of interest for additional projects that:

- Are complementary and collaborative to our planned work
- Are consistent with the SAS objectives and core parameters
- Can be accommodated within the planned cruise activities

We do not know if we will have any additional berths available. Planning is still ongoing with the USCG. Expressions of interest need to come in within a week.

If you are interested, contact Carin Ashjian (cashjian@whoi.edu) to discuss your research interests. Additional projects also would need to discuss with the NSF the appropriate contributions to the costs of supporting the cruise.

Examples of research areas open for community contributions

Ice characteristics

Phytoplankton abundance/composition

Primary production (e.g., ^{13}C)

CDOM fluorescence

CFSs and SF₆

Dissolved organic carbon (DOC)

Compound specific stable isotope analyses

Benthic meiofauna and epifauna

Viruses, bacteria, fungi, and archaea

Microzooplankton

Ichthyoplankton

Microplastics

Fish

Ecosystem effects of ocean acidification

eDNA

Additional shipboard atmospheric/meteorological measurements.

Analyses of Healy underway data such as magnetometry, gravimetry, multibeam

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