Public Registry - Project Proposals

Proposal Status: Conformity Determination Issued

Overview Documents
Project Overview

Type of application: New

Proponent name:

Lauren Juranek

Proponent company:

Oregon State Unviersity

Project Description:

This project involves marine research and on the USCGC Healy transit of the Northwest Passage from Kugluktuk, Canada to Nuuk, Greenland. The following is a summary of cruise objectives. Training - an important part of this cruise is training early career scientists to take on leadership roles in conducting ship-based field investigations in the Arctic. We aim to instill best practices in safe and inclusive science, managing objectives of interdisciplinary science teams, and working effectively with the US Coast Guard, international partners, and Indigenous communities in planning and executing a cruise and communicating results broadly to local communities and the public. Mapping - We propose to take advantage of the HEALY's transit from Kugluktuk to Nuuk in order to fill critical bathymetric gaps and add to the growing effort of complete seafloor mapping. We will work with Canadian Researchers from NRCAN and GSC to identify off-track locations to incorporate in order to provide a more complete map of the Northwest Passage. Seabed sampling - We propose to collect seabed grab samples and relatively short (<10 m) core samples in order to improve an atlas of seabed sediments currently in development by Canadian researcher Dr. David Mosher. We will also use samples to support training of early career scientists in sampling methods and allow them to collect benthos, genomic data, and nutrient data. Underway data - We will collect additional passive underway data including flow-through dissolved oxygen, total dissolved gas pressure, fluorescence, backscatter, pCO2, gravimetry, meteorological data, and ocean current velocity data. We will also deploy several xCTD devices to obtain additional

underway temperature and salinity data during transits. CTD and water sampling - we will collect vertical CTD hydrocasts with mounted sensor suite and water sampling at select sites. Planned CTD stations are designed to measure the physical transport of water masses, nutrients, and other dissolved compounds (including microplastics) through the Northwest Passage. CTD sensor suite includes temperature, salinity, dissolved oxygen, and chlorophyll fluorescence. Water collection at select sites will be stored onboard and returned to individual laboratories for analysis of water isotopes (d18O), dissolved gasses including oxygen (O2), methane (CH4), nutrient content, microplastics, RNA/DNA, and phytoplankton pigments. We very much hope to build connections with Northern communities along our route and to reflect their knowledge and interests in our scientific research and training efforts. We plan to visit 2-3 communities along our route this spring to connect with communities in advance of the busy summer season. We also are working to organize a community event in Kugluktuk to facilitate informal knowledge exchange among the community, a subset of our science party, and the USCG vessel officers prior to departure. We understand the importance of communicating our findings back to local communities after the work is done. We will make a plan to report back with communities we visit.

Project Schedule

Start Date:

2024-08-01

End Date:

2024-08-16

Project Map

List of project geometries:

Id Geometry Location Name
11465 polyline nominal cruise track (subject to ice conditions)
11391 point potential sampling location 1
11392 point potential sampling location 2
11393 point

potential sampling location 3

[11394](#)

point

potential sampling location 4

[11395](#)

point

potential sampling location 5

[11396](#)

point

potential sampling location 6

[11397](#)

point

potential sampling location 7

[11398](#)

point

potential sampling location 8

[11399](#)

point

potential sampling location 9

[11400](#)

point

potential sampling location 10

[11401](#)

point

potential sampling location 11

[11402](#)

point

potential sampling location 12

[11403](#)

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potential sampling location 13

[11404](#)

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potential sampling location 14

[11405](#)

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potential sampling location 15

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potential sampling location 16

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potential sampling location 17

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potential sampling location 19

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potential sampling location 58

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potential sampling location 59

[11450](#)

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potential sampling location 60

[11451](#)

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potential sampling location 61

[11452](#)

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TC10

[11453](#)

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TC11

[11454](#)

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TC12

[11455](#)

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TC13

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TC14

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TC15

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TC16

[11459](#)

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TC17

[11460](#)

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TC18

[11461](#)

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TC19

[11462](#)

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TC20

[11463](#)

point

TC21

[11464](#)

point

Barrow Strait

NPC Planning regions:

No Approved Plan

North Baffin

Project Land Use and Authorizations

Project Land Use:

Marine-Based Activities

Ice-breaking

Marine-Based Activities

Scientific Research

Licensing Agencies:

Nunavut Research Institute

Nunavut Impact Review Board

Material Use

Equipment:

Type
Quantity
Type
Use

Equipment	Quantity	Dimensions	Purpose / Notes
3.5 KHz echosounder	1	attached to ship	seabed imaging
USCGC Healy	1	128 m	Research vessel
multibeam echo sounder	1	attached to ship	bathymetric data collection
CTD	1	2m x 1 m	Collect seawater property data throughout the water column
XCTD	30	0.3 m length	Collect temperature and salinity data while underway
Shipboard sensors for seawater properties	5	attached to vessel	Sensors measure temperature, salinity, dissolved oxygen, total dissolved gas pressure, and chlorophyll fluorescence
acoustic scattering	1	attached to vessel	echo sounder to detect biomass in water (fish finder) at 18KHz and 38 KHz
Acoustic doppler current profiler	2	attached to vessel	measure ocean current velocity
gravimeter	1	attached to vessel	measure Earth's gravity field

Fuel Use:

Type

Container		
Capacity		
Use		

Diesel

1

12202915

vessel has diesel electric propulsion and carries all the fuel it needs

Hazardous Material and Chemical Use:

Type		
Container		
Capacity		
Use		

ethanol

1

1

preservative for plant pigment samples

Mercuric Chloride

1

1

Preservative for samples collected to measure seawater pH and alkalinity for ocean acidification studies.

Water Consumption:

Daily Amount (m^2)		
Retrieval Method		
Retrieval Location		

0

Waste and Impacts

Environmental Impacts:

No anticipated environmental impacts. The vessel complies with all international waste management guidelines and is self-contained with respect to waste. Vessel management plan is appended in the Documents section

Waste Management:

Waste Type		
Quantity Generated		
Treatement Method		
Disposal Method		

No data found