



NIRB Uuktuutinga Ihivriuqhikhamut #125952

Early Career Training Cruise

Uuktuutinga Qanurittuq: New

Havaap Qanurittunia: Scientific Research

Uuktuutinga Ublua: 4/29/2024 12:46:54 PM

Period of operation: from 2024-07-29 to 2024-08-13

**Havauhikhaq
Ikayuqtinga:** Lauren Juranek
Oregon State University
104 CEOAS Admin Building
Corvallis OR 97331
USA
Hivayautit Nampanga:: 1-206-303-8746, Kayumiktukkut Nampanga::

QANURITTUT

Tukihiannaqtunik havaariyauyumayumik uqauhiyun

Qablunaatitut: Northwest Passage Science and Early Career Training Dr. Laurie Juranek and Dr. Emily Eidam, Oregon State University This project involves marine research and early career scientist training on the USCGC Healy transit of the Northwest Passage from Kugluktuk, Canada to Nuuk, Greenland. We aim to instill best practices in 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. Science research questions: (1) Can we fill gaps in data on Northwest Passage seafloor bathymetry and map navigational hazards? (2) How does transport of water through the Northwest Passage fit into the broader Arctic Ocean circulation? How do water parcels change chemically and physically? (3) How can we improve models of the growth and decay of sea ice based on meteorological, sea ice, and ocean surface condition data? For (1), we propose to fill critical bathymetric gaps, help work toward complete seafloor mapping, and aid navigational hazard identification. We will work with Canadian Researchers from NRCAN and GSC to prioritize mapping locations. We also propose to collect seabed samples to improve an atlas of seabed sediments in development by Canadian researcher Dr. David Mosher. We will use samples to help train early career scientists in sampling methods and allow them to collect benthos, genomic data, and nutrient data. For (2) we will monitor surface seawater while transiting using shipboard sensors, in order to understand how the chemical composition of seawater changes through the region with the flow of ocean currents. We will collect vertical profiles of water column properties as well as water samples to analyze properties including conductivity, temperature, nutrients, and other properties using a ship-based profiler at select sites and using small expendable sensors between stations. Water samples will be stored onboard and returned to individual laboratories for analysis. For (3), we will collect meteorological and ocean surface measurements (drift rates, wind speeds, ocean surface temperature and salinity, light profiles) near sea ice and from an ice-based station. We also plan to collect ice samples if possible by drilling small holes with an auger. We very much hope to build connections with regional hamlets and to reflect their knowledge and interests in our research and training efforts. We plan to visit Kugluktuk and Cambridge Bay this spring to connect with communities before the busy summer season. We also hope to organize a community event in Kugluktuk in late July to facilitate informal knowledge exchange among the community, our science party, and the USCG vessel officers prior to departure. We understand the importance of communicating our findings to local communities, and will plan an in-person follow-up trip in 2025. Data will be shared with the GSC and NRCAN and sent to Indigenous permitting authorities. Data collected in transit will be shared within 6 months of the survey. Data from discrete samples/measurements will be shared within 2 years of the survey (some require processing time).

Uviititut: Etude du Passage du Nord-Ouest et formation de jeunes chercheurs Ce projet s'articule autour d'un projet de recherche et de formation de jeunes chercheurs sur le transit USCGC Healy allant du passage du Nord-Ouest, de Kugluktuk, au Canada, à Nuuk, au Groenland. Nous visons à inculquer les meilleures pratiques dans la gestion des objectifs d'équipes scientifiques interdisciplinaires et à travailler efficacement avec les Gardes Côtes américains, les partenaires internationaux, et les communautés autochtones, pour planifier et exécuter une campagne de recherche et communiquer les résultats aux communautés locales et au grand public. Questions de recherche scientifique : (1) Pouvons-nous combler les lacunes dans les données de bathymétrie des fonds marins du passage du Nord-Ouest et cartographier les dangers pour la navigation ? (2) Comment le transport de l'eau à travers le passage du Nord-Ouest s'intègre-t-il dans la circulation plus large de l'océan Arctique ? Comment les parcelles d'eau changent-elles chimiquement et physiquement ? (3) Comment pouvons-nous améliorer les modèles de croissance et de dégradation de la glace de mer sur la base des données météorologiques, de la glace de mer et de l'océan de surface ? Pour (1), nous proposons de combler les lacunes bathymétriques critiques, de contribuer à la cartographie complète des fonds marins et de faciliter l'identification des dangers pour la navigation. Nous travaillerons avec des chercheurs canadiens de RNCAN et de la CGC pour prioriser les emplacements à cartographier. Nous proposons également de collecter des échantillons de fonds marins pour améliorer un atlas des sédiments des fonds marins en cours d'élaboration par le chercheur canadien David Mosher. La collection des échantillons aidera à former des jeunes chercheurs aux méthodes d'échantillonnage et leur permettre de

Total Person days: 1200

Operations Phase: from 2024-07-29 to 2024-08-13

Hulilukaarutit

Inigiya	Hulilukaarut Qanurittuq	Nunannga Qanurittaakhaanik	Initurlinga qanuritpa	Initurlinga utuqqarnitat unaluuniit Ingilraaqnitat Uyarannuqtut akhuurningga	Qanitqiyauyuq qanitqiamut nunallaat kitulluuniit ahiruqtaiyainnit nuna
nominal cruise track (subject to ice conditions)	Scientific/International Polar Year Research	Marine	n/a	n/a	Science party plans to board via small boat transfer based out of Kugluktuk, all other activities are well offshore of communities
potential sampling location 1	Scientific/International Polar Year Research	Marine	n/a	n/a	All potential sampling locations are offshore and at a distance from communities

Nunaliin Ilaayun, Aviktuqhimayuniitunullu Ikayuuhiarunguyun

Nunauyuq	Atia	Timiuyuq	Upluani Uqaqatigiyaungmata
Ikaluktuttiaq	email sent to Mia Otokiak re: potential participation as community rep on cruise	Nunavut Impact review board	2024-02-11
Kugluktuk	multiple phone calls to Grant at Kikiak Contracting re: help with Kugluktuk logistics	Kikiak contracting	2024-04-05
Ikaluktuttiaq	Emails to David Hik at CHARS re: locating knowledge expert to sail on training cruise	Canadian High Arctic Research Station	2024-03-25
Kugluktuk	email sent to Larry Adjun	Kugluktuk Angoniatit Association - Hunters & Trappers Organization	2024-05-02

Angiuttauvaktunik

Naunaiqlugu nunanga talvani havauhikhaq ittuq:

Angiuttauvaktunik

Munariniqmut Ayuittiaqtuq	Angirutinga Qanurittuq	Tadja Qanurittaakhaanik	Ublua Tuniyauyuq/Uuktuqtuq	Umikvikhaa Ublua
Nunavunmi Ihivriuqniqmut Timiqutigiyanga	will be submitting NRI application for this project very soon	Not Yet Applied		

Project transportation types

Transportation Type	Qanuq Atuqtauniarmangaa	Length of Use
Water	Transit and Research via US Coast Guard cutter Healy	

Project accomodation types

Nunauyuq

Alaanut,

Ihuaqutivaluin Atuqtauyukhan

Hanalrutit atuqtaunahuat (ukuallu ikuutat, pampiutainnik, tingmitinik, akhaluutinik, hunaluuniit)

Hanalrutit Qanurittuq	Qaffiuyut	Aktikkulaanga – Qanurittullu	Qanuq Atuqtauniarmangaa
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

Qanurittuq Urhuqyuaq unalu Qayangnaqtut Hunavaluit Aturningga

Qanurittuq urhuqyuaq hunavaluit aturningga:	Urhuqyuaq Qanurittuq	Qaffiuyut qattaryut	Qattaryuk Aktikkulaanga	Atauttimut Qaffiuyut	Ilanga	Qanuq Atuqtauniarmangaa
Diesel	fuel	1	12202915	12202915	Gallons	vessel has diesel electric propulsion and carries all the fuel it needs
ethanol	hazardous	1	1	1	Liters	preservative for plant pigment samples
Mercuric Chloride	hazardous	1	1	1	Liters	Preservative for samples collected to measure seawater pH and alkalinity for ocean acidification studies.
Hydrochloric acid	hazardous	1	1	1	Liters	processing plant pigment and micro plastic samples
Sulfuric acid	hazardous	1	0.5	0.5	Liters	Analyzing oxygen samples
Sodium hydroxide (base)	hazardous	1	0.5	0.5	Liters	analyzing oxygen samples

Imaqmik Aturningga

Ubluq qanuraaluk (m3)	Aturumayain imavaluin utiqittagaani qanuq	Atulirumayain imavaluin utiqittagani humi
0		

Iqqakuq

Ikkakunik Munakgiyauyunik

Havauhikhaq Hulilukaarut	Qanurittuq Iqqakut	Ihumagiyauyuq Qanuraaluktut Atuqtait	Qanuq Iqqakuurniarmangaa	Halummaqtirarnirutikhan piyutin
Scientific/International Polar Year Research	Ikulalaaqtun iqqakuuvaluin	0	All solid waste will be stored onboard for shoreside disposal in Nuuk, Greenland.	Healy garbage management plan attached in supplemental documents

Avatiliriniqmut Ayurhauingit:

no predicted environmental impacts associated with this activity.

Additional Information

SECTION A1: Project Info

SECTION A2: Allweather Road

SECTION A3: Winter Road

SECTION B1: Project Info

SECTION B2: Exploration Activity

SECTION B3: Geosciences

SECTION B4: Drilling

SECTION B5: Stripping

SECTION B6: Underground Activity

SECTION B7: Waste Rock

SECTION B8: Stockpiles

SECTION B9: Mine Development

SECTION B10: Geology

SECTION B11: Mine

SECTION B12: Mill

SECTION C1: Pits

SECTION D1: Facility

SECTION D2: Facility Construction

SECTION D3: Facility Operation

SECTION D4: Vessel Use

SECTION E1: Offshore Survey

SECTION E2: Nearshore Survey

SECTION E3: Vessel Use

SECTION F1: Site Cleanup

SECTION G1: Well Authorization

SECTION G2: Onland Exploration

SECTION G3: Offshore Exploration

SECTION G4: Rig

SECTION H1: Vessel Use

SECTION H2: Disposal At Sea

SECTION I1: Municipal Development

Qanurittuq Ittunik Avatinga: Avatingalluanga

Our activities will not impact the physical environment. We will collect small quantities of seabed for sediment analysis. We will collect small quantities of seawater for a suite of analyses designed to understand micro plastics, microscopic plants, and nutrients in seawater. Our ship-based sensor measurements will provide information on seafloor depth and potential navigational hazards in areas that are not well mapped.

Qanurittuq Ittunik Avatinga: Inuuhimayunut Avatinga

Our intended route has been planned to avoid protected critical habitat for marine mammals, including the Northwester polynya. We will avoid all areas with noted marine mammal presence. We are seeking to employ a local knowledge expert from Kugluktuk or other Nunavut community who will assist with marine mammal sightings to avoid impacts.

Qanurittuq Ittunik Avatinga: Inungit-maniliurutingit Avatinga

Miscellaneous Project Information

documents provided for Healy's garbage management, sewage management, and chemical and hazardous waste management plans

Naunaiyainiq ukuninga Ayurhautingit unalu Piumayaat Ikiikliyuumiutinahuarutit

No anticipated environmental impacts. The vessel complies with all international waste management guidelines and is self-contained with respect to waste.

Tamatkiumayunik Ihuikgutivaktunik

Impacts

Ilitariyauniq Avatiliriniqmut Ayurhauingit

	PHYSICAL	Designated environmental areas	Ground stability	Permafrost	Hydrology / Limnology	Water quality	Climate conditions	Eskers and other unique or fragile landscapes	Surface and bedrock geology	Sediment and soil quality	Tidal processes and bathymetry	Air quality	Noise levels	BIOLOGICAL	Vegetation	Wildlife, including habitat and migration patterns	Birds, including habitat and migration patterns	Aquatic species, incl. habitat and migration/spawning	Wildlife protected areas	SOCIO-ECONOMIC	Archaeological and cultural historic sites	Employment	Community wellness	Community infrastructure	Human health
Havakvinga																									
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aulapkaininnga																									
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Piiqtauniq																									
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(P = Nakuuyuq, N = Nakuungittut unalu mikhilimaittuq, M = Nakuungittut unalu mikhittaaqtuq, U = Naluyayuq)

Havaariyauyukhamut Nayugaa



List of Project Geometries

1	polyline	nominal cruise track (subject to ice conditions)
2	point	potential sampling location 1
3	point	potential sampling location 2
4	point	potential sampling location 3
5	point	potential sampling location 4
6	point	potential sampling location 5
7	point	potential sampling location 6
8	point	potential sampling location 7
9	point	potential sampling location 8
10	point	potential sampling location 9

11	point	potential sampling location 10
12	point	potential sampling location 11
13	point	potential sampling location 12
14	point	potential sampling location 13
15	point	potential sampling location 14
16	point	potential sampling location 15
17	point	potential sampling location 16
18	point	potential sampling location 17
19	point	potential sampling location 18
20	point	potential sampling location 19
21	point	potential sampling location 20
22	point	potential sampling location 21
23	point	potential sampling location 22
24	point	potential sampling location 23
25	point	potential sampling location 24
26	point	potential sampling location 25
27	point	potential sampling location 26
28	point	potential sampling location 27
29	point	potential sampling location 28
30	point	potential sampling location 29
31	point	potential sampling location 30
32	point	potential sampling location 31
33	point	potential sampling location 32
34	point	potential sampling location 33
35	point	potential sampling location 34
36	point	potential sampling location 35
37	point	potential sampling location 36
38	point	potential sampling location 37
39	point	potential sampling location 38
40	point	potential sampling location 39
41	point	potential sampling location 40
42	point	potential sampling location 41
43	point	potential sampling location 42
44	point	potential sampling location 43
45	point	potential sampling location 44
46	point	potential sampling location 45
47	point	potential sampling location 46
48	point	potential sampling location 47
49	point	potential sampling location 48
50	point	potential sampling location 49
51	point	potential sampling location 50
52	point	potential sampling location 51
53	point	potential sampling location 52
54	point	potential sampling location 53

55	point	potential sampling location 54
56	point	potential sampling location 55
57	point	potential sampling location 56
58	point	potential sampling location 57
59	point	potential sampling location 58
60	point	potential sampling location 59
61	point	potential sampling location 60
62	point	potential sampling location 61
63	point	potential sampling location 61
64	point	potential sampling location 62
65	point	potential sampling location TC12
66	point	potential sampling location TC13
67	point	potential sampling location TC14
68	point	potential sampling location TC15
69	point	potential sampling location TC16
70	point	potential sampling location TC17
71	point	potential sampling location TC18
72	point	potential sampling location TC19
73	point	potential sampling location TC20
74	point	potential sampling location TC21
75	point	potential sampling location 63