



NIRB Uuktuutinga Ihivriughikhamut #125695

Geology Research in Baffin Bay : REDUCING RISK TO COASTAL COMMUNITIES AND OFFSHORE INFRASTRUCTURES CAUSED BY MARINE GEOHAZARDS AND SEISMICITY

Uuktuutinga Qanurittuq: New

Havaap Qanurittunia: Scientific Research

Uuktuutinga Ublua: 5/10/2022 11:07:14 AM

Period of operation: from 0001-01-01 to 0001-01-01

Piumayaat Angirutinga: from 0001-01-01 to 0001-01-01

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QANURITTUT

Tukihiannaqtunik havaariyaumayumik uqauhiyun

Qablunaatitut: Project: Geology Research in Baffin Bay : REDUCING RISK TO COASTAL COMMUNITIES AND OFFSHORE INFRASTRUCTURES CAUSED BY MARINE GEOHAZARDS AND SEISMICITY Alexandre Normandeau, Natural Resources Canada The proposed expedition would take place in August or September 2022, depending on vessel availability. The expedition is part of the Geological Hazards in Baffin Bay Activity within the Public Safety Geoscience (PSG) Program of the Geological Survey of Canada, which began in 2012, and is partly funded by NRCan, CIRNAC and ArcticNet. To date, the activity has resulted in research expeditions in 2013 (NPC 148842, NIRB 13YN021) and 2018 (NPC 148842, NIRB 13YN021) and in 2019 (NPC 149732), as well as community engagement meetings in 2013, 2014, 2015, 2016, and 2019. Information collected during this project will help support community and government decisions on use of offshore areas and provide communities with better knowledge for improving public safety. The proposed research expedition would take place in and around the community of Grise Fiord. The major goals of this proposed research for 2022 would be: -To investigate the stability of the seabed in fjords near Grise Fiord. New imagery of the seabed shows that submarine landslides have occurred in several locations. Baffin Bay experiences a number of earthquakes and iceberg groundings which can trigger submarine landslides. Our research will help to determine the risk for a large submarine landslide happening in the future. -Coring and mapping of coastal environments would allow us to collect evidence of past tsunamis affecting the shoreline, similar to the 2017 Greenland tsunami. In addition, digging in coastal areas may take place using shovels to observe if tsunamis have occurred in the past near the villages. During this type of expedition, we typically collect seabed sediment samples (2 m long gravity cores), seafloor photographs and video, information about the shape of the seabed, and sub-bottom imaging. These instruments will be the same as those used during the 2013, 2018 and 2019 expeditions. The research would take place onboard the Government of Nunavut vessel Nuliajuk. If this project is accepted, the research ship is available in August or September. Research results will be reported back during community visits after the conclusion of the field season or directly following the cruise and will be made publicly available. Results will also be presented at workshops in the North, at science conferences (ArcticNet) and will result in publications in various scientific journals, reports and plain language documents over the months and years following the project.

Uiviititut: Projet : Recherche géologique dans la baie de Baffin : RÉDUIRE LES RISQUES POUR LES COMMUNAUTÉS CÔTIÈRES ET LES INFRASTRUCTURES OFFSHORE CAUSÉS PAR LES RISQUES GÉOLOGIQUES MARINS ET LA SÉISMICITÉ Alexandre Normandeau, Ressources naturelles Canada L'expédition proposée aurait lieu en août 2022, selon la disponibilité des navires. L'expédition fait partie de l'activité Risques géologiques dans la baie de Baffin du programme Géosciences de sécurité publique (PSG) de la Commission géologique du Canada, qui a débuté en 2012 et est en partie financée par RNCan, RCAANC et ArcticNet. À ce jour, l'activité a donné lieu à des expéditions de recherche en 2013 (NPC 148842, NIRB 13YN021) et 2018 (NPC 148842, NIRB 13YN021) et en 2019 (NPC 149732), ainsi qu'à des réunions d'engagement communautaire en 2013, 2014, 2015, 2016, et 2019. Les informations recueillies au cours de ce projet aideront à appuyer les décisions communautaires et gouvernementales sur l'utilisation des zones extracôtières et fourniront aux communautés de meilleures connaissances pour améliorer la sécurité publique. L'expédition de recherche proposée aurait lieu dans et autour de la communauté de Grise Fiord. Les principaux objectifs de cette recherche proposée pour 2022 seraient : - D'étudier la stabilité du fond marin dans les fjords près de Grise Fiord. De nouvelles images du fond marin montrent que des glissements de terrain sous-marins se sont produits à plusieurs endroits. La baie de Baffin connaît un certain nombre de tremblements de terre et d'échouements d'icebergs qui peuvent déclencher des glissements de terrain sous-marins. Nos recherches aideront à déterminer le risque qu'un grand glissement de terrain sous-marin se produise à l'avenir. -Le carottage et la cartographie des environnements côtiers nous permettraient de recueillir des preuves de tsunamis passés affectant le littoral, similaires au tsunami du Groenland de 2017. De plus, des fouilles dans les zones côtières peuvent avoir lieu à l'aide de pelles pour observer si des tsunamis se sont produits dans le passé près des villages. Au cours de ce type d'expédition, nous recueillons généralement des échantillons de sédiments du fond marin (carottes gravitaires de 2 m de long), des photographies et des vidéos du fond marin, informations sur la forme du fond marin et imagerie du sous-fond. Ces instruments seront les mêmes que ceux utilisés lors des expéditions 2013, 2018 et 2019. La recherche se déroulerait à bord du navire Nuliajuk du gouvernement du Nunavut. Si ce projet est accepté, le navire de recherche est disponible en août ou septembre. Les résultats de la recherche seront rapportés lors des visites communautaires après la fin de la saison sur le terrain ou directement après la croisière et seront rendus publics. Les résultats seront également présentés lors d'ateliers dans le Nord, lors de conférences scientifiques (ArcticNet) et donneront lieu à des publications dans diverses revues scientifiques, des rapports et des documents en langage simple au cours des mois et des années suivant le projet.

Hulilukaarutit

| Inigiya | Hulilukaarut Qanurittuq | Nunannga Qanurittaakhaanik | Initurlinga qanuritpa | Initurlinga utuqqarnitat unaluuniit Ingilraaqnitat Uyarannguqtut akhuurninnga | Qanitqiyauyuq qanitqiamut nunallaat kitulluuniit ahiruqtaliyainnit nuna |
|-------------|---|-------------------------------|--------------------------|--|--|
| Grise Fiord | Scientific/International Polar Year Research | Marine | N/A | N/A | Grise Fiord |
| Grise Fiord | Marine Based Activities | Marine | N/A | N/A | Grise Fiord |

Nunaliin Ilauyun, Aviktuqhimayuniitunullu Ikayuuhiarunguyun

| Nunauyuq | Atia | Timiuyuq | Upluani Uqaqatigiyaungmata |
|-----------|------------|----------------------|-------------------------------|
| Ausuittuq | Terry Noah | Ausuittuq Adventures | 2022-05-09 |

Angiuttauvaktunik

Naunaiqlugu nunanga talvani havauhikhaq ittuq:

North Baffin

Angiuttauvaktunik

| Munariniqmut Ayuittiaqtuq | Angirutinga Qanurittuq | Tadja Qanurittaakhaanik | Ublua Tuniyauyuq/Uuktuqtuq | Umikvikhaa Ublua |
|--|---------------------------|------------------------------|-------------------------------|------------------|
| Nunavunmi Ihivriuqniqmut Timiqutigiyanga | N/A | Applied, Decision Pending | | |

Project transportation types

| Transportation Type | Qanuq Atuqtauniarmangaa | Length of Use |
|------------------------|-------------------------------------|---------------|
| Air | Canadian North or First Air flights | |

Project accomodation types

Nunauyuq

Alaanut,

Ihuaqutivaluin Atuqtauyukhan

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

| Hanalrutit Qanurittuq | Qaffiuyut | Aktikkulaanga – Qanurittullu | Qanuq Atuqtauniarmangaa |
|-----------------------|-----------|------------------------------|--------------------------|
| Gravity corer | 1 | 6' X 4" | Collect sediment samples |
| R/V Nuliajuk | 1 | 62' | Research Vessel |
| Multibeam echosounder | 1 | attached to ship | Seabed imaging |
| 3.5 kHz echosounder | 1 | attached to ship | Seabed imaging |

Qanurittuq Urhuqyuaq unalu Qayangnaqtut Hunavaluit Aturninnga

| Qanurittuq urhuqyuaq hunavaluit aturninnga: | Urhuqyuaq Qanurittuq | Qaffiuyut qattaryut | Qattaryuk Aktikkulaanga | Atauttimut Qaffiuyut | Ilanga | Qanuq Atuqtauniarmangaa |
|---|----------------------|---------------------|-------------------------|----------------------|--------|--|
| Hydraulic oil | hazardous | 1 | 3 | 3 | Liters | for ship operations |
| Diesel | fuel | 1 | 0 | 0 | Liters | Fuel for ship (self-contained on vessel) |

Imaqmik Aturninnga

| Ubluq qanuraaluk (m3) | Aturumayain imavaluin utiqittagaani qanuq | Atulirumayain imavaluin utiqittagani humi |
|-----------------------|--|---|
| 14 | Desalinization by reverse-osmosis onboard ship | Offshore |

Iqqakuq

Ikkakunik Munakgiyauyunik

| Havauhikhaq Hulilukaarut | Qanurittuq Iqqakut | Ihumagiyauyuq Qanuraaluktut Atuqtait | Qanuq Iqqakuurniarmangaa | Halummaqtirarnirutikhan piyutin |
|-----------------------------|-----------------------------|--|--|------------------------------------|
| Marine Based Activities | Anaagun (inuin anaaguin) | N/A | Not disposed of in Nunavut waters. Contained on RV Nuliajuk | All waste stored on board |

Avatiliriniqmut Ayurhautingit:

No anticipated environmental impacts

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

The vessel is a 20m vessel that will conduct seabed survey operations and sediment coring operations in Grise Fiord. The vessel will operate on a 24h schedule, with sediment coring during daytime and seabed surveys during night time. There will be 2 scientist on board and 6 crew members. Members of the Grise Fiord community will be invited to come on board during the scientific cruise to exchange on science objectives and results. All other vessel requirements will follow the requirement from the Government of Nunavut as it is a GN research vessel.

SECTION H2: Disposal At Sea

N/A

SECTION I1: Municipal Development

Qanurittuq Ittunik Avatinga: Avatingalluanga

Qanurittuq Ittunik Avatinga: Inuuhimayunut Avatinga

Qanurittuq Ittunik Avatinga: Inungit-maniliurutingit Avatinga

Miscellaneous Project Information

Naunaiyainiq ukuninnga Ayurhautingit unalu Piumayaat Ikikliyuumiutinahuarutit

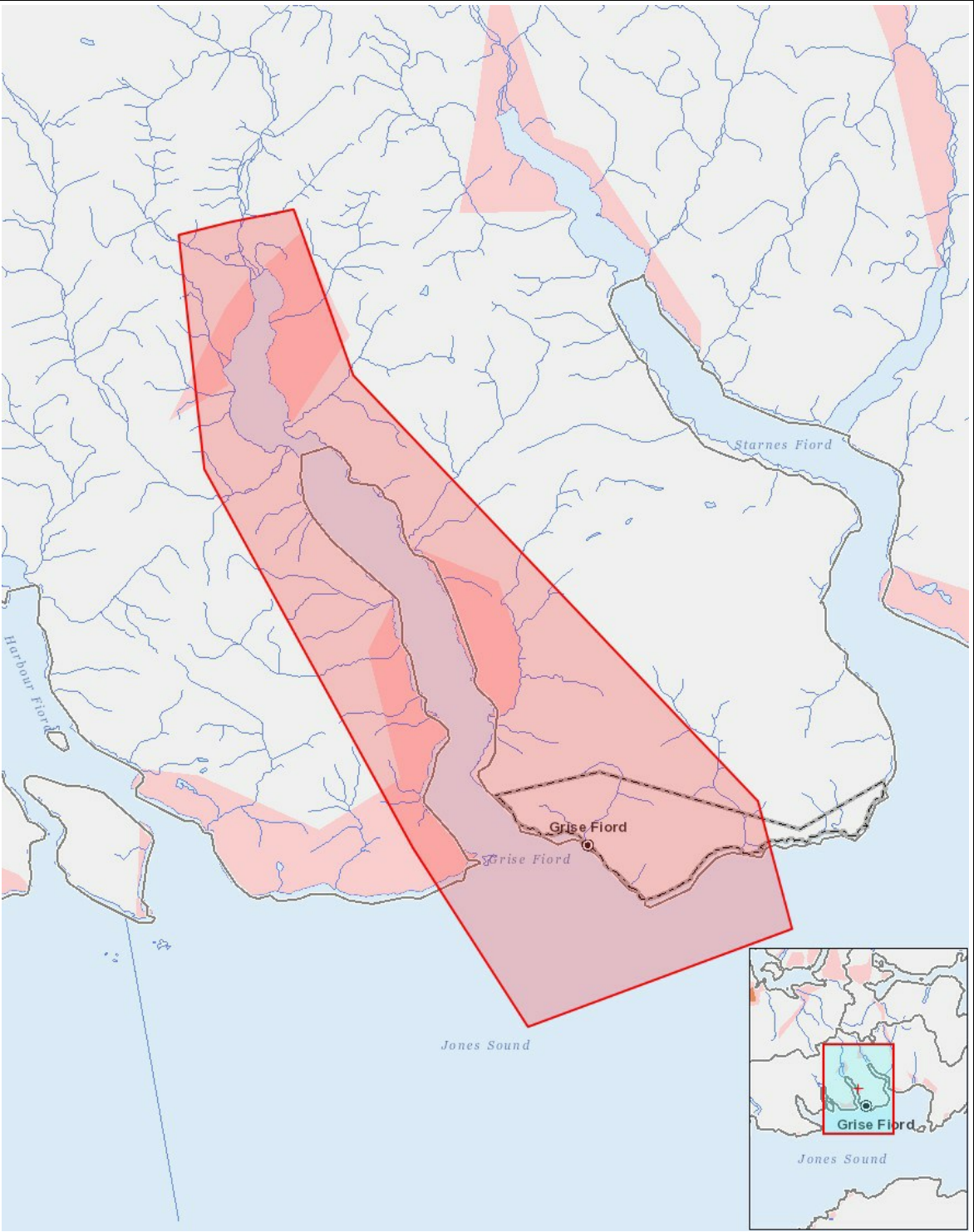
Tamatkiumayunik Ihuikgutivaktunik

Impacts

Ilitariyauniq Avatiliriniqmut Ayurhautingit

| | 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 = Naluyauyuq)



List of Project Geometries

| | | |
|---|---------|-------------|
| 1 | polygon | Grise Fiord |
|---|---------|-------------|