ᓄᓇᕗᒻᒥ ᐊᕙᑎᓕᕆᔨᒃᑯᑦ ᑲᑎᒪᔨᖏᑦᑎᒍᑦ ᑐᒃᓯᕋᐅᑦ ᕿᒥᕐᕈᔭᒃᓴᖅ #126079

Sikunnguaq - the likeness or image of ice in maps

ᑐᒃᓯᕋᐅᑕᐅᔪᖅ ᖃᓄᐃᑦᑐᓂᖓ: Amendment

ᐱᓕᕆᐊᕆᔭᐅᔪᒪᔫᑉ ᖃᓄᐃᑦᑐᓂᖓ: Scientific Research

ᐅᓪᓗᖓ ᑐᒃᓯᕋᐅᑎᓕᐊᕖᓂᐅᑉ: 1/28/2025 8:22:19 PM

Period of operation: from 2025-03-04 to 2026-05-20

ᐱᓕᕆᐊᖃᕈᒪᔪᖅ:

Randall Scharien
University of Victoria
3800 Finnerty Road
Victoria British Columbia V8P5C2
Canada
ᐅᖃᓚᐅᑏᑦ: 250-661-1459, ᓱᑲᔪᒃᑯᑦ:

ᑐᓴᐅᒪᔾᔭᒃᓴᑦ

ᖃᓄᐃᑦᑑᑎᓂᒃ ᐱᓕᕆᐊᖃᕐᓂᐊᕆᐊᖓᓐᓂᒃ

ᖃᓪᓗᓈᑎᑐᑦ: Project Background and Objective: This project was initiated by the SmartICE community management committee in Mittimatalik, the self-titled “Sikumiut (people of the ice)”. The Sikumiut includes Elders and youth from Mittimatalik and members from the Mittimatalik Hunters and Trappers Organization, Hamlet Council, Canadian Rangers, Search and Rescue, and Parks Canada. Our international project team is now made up of co-principal investigators from University of Victoria, SmartICE, University College London in the United Kingdom, and the University of Bremen in Germany. Together with the Sikumiut and SmartICE community management committees in Iqaluktuuttiaq, Uqsuqtuuq, and Qikiqtarjuaq, we have co-designed a Nunavut based research plan to make better maps for identifying sea ice features related to safe travel from images and data collected by satellites. Recent changes in sea ice have led to more unpredictable conditions, leading to increased accidents and adverse effects on food security, health and wellbeing, economy, culture, and identity. Warming air temperatures, along with shifting ocean currents and weather patterns, have shortened the length of time in each year when sea ice is stable, affected ice roughness, and produced new cracks and areas of slush buried under surface snow. New tools are needed to complement local travel practices that are grounded in Inuit Qaujimajatuqangit (IQ), to overcome challenges associated with changing and unpredictable travel risks. Images and data collected by satellites, already used for some travel planning, can potentially provide more detailed information about the aspects of sea ice directly related to safe travel. Our objective is to understand how sea ice features related to safe travel can be identified in new satellite technologies, with a focus on a radar-based satellite technology called synthetic aperture radar (SAR) as a key source of sea ice information. Methods: Together with the community management committees in the four participating communities Mittimatalik, Iqaluktuuttiaq, Uqsuqtuuq, and Qikiqtarjuaq, we have identified ice roughness, slush, and ice thickness as priority sea ice features for monitoring with satellite images and data. Our project will conduct field work on sea ice close by to each of the four communities in late March to late May in 2025 and 2026. All field work will be done in close consultation with the SmartICE community management committees, as they rely on project outcomes for local sea ice mapping efforts. SmartICE community operators, some of whom are co-investigators on this project, will also participate in field data collection. All field research associated with our objectives is non-intrusive and observational. We will measure snow and sea ice properties on areas of sea ice nearby to the four participating communities, making day trips from research stations and other accommodations, travelling by snowmobile when conditions are safe. We will carry a small amount of spare gasoline and oil for the snowmobiles and for powering a 2-stroke ice core barrel drive. Data collection includes the use of ice augers and electromagnetic (EM) sensors for ice thickness, ice core barrels for taking ice cores, equipment for measuring snow properties in snow ‘pits’, battery operated temperature sensors for measuring snow and sea ice temperatures, and drones for taking photographs and scanning the surface (LiDAR and EM sensors). There will stationary thermistor-based sensors (ice buoys) installed in the sea ice until they can be removed in the spring. The positions of these ice buoys will be determined by members of the community management committees and will be marked for visibility. All EM and scanning (LiDAR) sensors are low power and do not make intrusive sound. We will have a spill response plan and spill kit, and all waste will be transported back to the communities for proper disposal. Communicating Results: The results will be shared with the participating communities as well as other communities across Nunavut where the Inuit-led, IQ-grounded, Sikumik Qaujimajjuti (“tools to know how the ice is”) system for community ice information sharing has been implemented. Roughness and slush mapping results will be incorporated into the SmartICE Ice Travel Safety Maps, the need for which was first recognized by community management committees. They identified that the ice charts produced by the Canadian Ice Service are primarily designed to support shipping and ice-breaking and are generated at temporal and spatial scales that are inconsistent with on-ice travel. We will use the community management committee meetings in Nunavut communities as the primary means of communicating project results, with other means including our project report to the NRI, and national conferences like ArcticNet. Data will be stored in the Polar Data Catalog and data and results will be made available by request.

ᐅᐃᕖᑎᑐᑦ: Not applicable.

ᐃᓄᒃᑎᑐᑦ: ᐱᓕᕆᐊᑉ ᐱᓕᕆᐊᕐᑰᐊᓂᒃᓯᒪᔪᑦ ᐊᒻᒪ ᑎᑭᑕᐅᓇᓱᒃᑐᑦᑖᕆᓇ ᐱᓕᕆᐊᒃᓴᖅ ᐱᒋᐊᖅᑎᑕᐅᓚᐅᖅᑐᖅ SmartICE−ᑯᓐᓄᑦ ᓄᓇᓕᖕᓂ ᐊᐅᓚᑦᑎᔨᑦ ᑲᑎᒪᔩᕋᓛᓄᑦ ᒥᑦᑎᒪᑕᓕᖕᒥ, ᓇᖕᒥᓂᖅ ᑕᐃᔭᐅᓪᓗᓂ ᓯᑯᒥᐅᑦ (ᐃᓄᐃᑦ ᓯᑯᒥᑦ). ᓯᑰᒥᐅᑦ ᐃᓚᐅᖃᑕᐅᓪᓗᑎᒃ ᐃᓐᓇᐃᑦ ᒪᒃᑯᒃᑐᓪᓗ ᒥᑦᑎᒪᑕᓕᖕᒥᑦ ᐃᓚᒋᔭᐅᔪᓪᓗ ᒥᑦᑎᒪᑕᓕᖕᒥ ᐊᖑᓇᓱᒃᑐᓕᕆᔨᒃᑯᓐᓂᑦ, Hᐋᒻᒪᓚᒃᑯᑦ ᑲᑎᒪᔨᖏᓐᓂᒃ, ᑲᓇᑕᒥ ᐅᓇᑕᖅᑐᒃᓴᙱᐊᓂᒃ, ᐱᖏᖕᓇᖅᑐᓕᕆᔨᒃᑯᓐᓂ, ᐊᒻᒪ ᒥᕐᖑᐃᖅᓯᕙᓕᕆᔩᑦ. ᓄᓇᕐᔪᐊᕐᒥ ᐱᓕᕆᐊᒃᓴᓕᕆᔨᕗᑦ ᒫᓐᓇ ᐃᓕᓴᐃᔨᖃᓕᖅᑐᑦ ᓯᓚᑦᑐᖅᓴᕐᕕᔾᔪᐊᕐᒥ ᕕᒃᑑᕆᐊᒥ, SmartICE−ᑯᓐᓂᑦ, ᓯᓚᑦᑐᖅᓴᕐᕕᔾᔪᐊᕐᒥ ᓚᓐᑕᓐᒥ ᔫᓇᐃᑎᑦ ᑭᖕᑕᒻ, ᐊᒻᒪᓗ ᓯᓚᑦᑐᓴᕐᕕᒃᔪᐊᖓ ᐳᕆᒪᓐ ᔮᒪᓂᒥ. ᐊᑕᐅᑦᑎᒃᑯᑦ ᓯᑯᒥᐅᑦ ᐊᒻᒪᓗ SmartICE−ᑯᑦ ᓄᓇᓕᖕᓂ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᑲᑎᒪᔩᑦ ᐃᖃᓗᒃᑑᑎᐊᕐᒥ, ᐅᖅᓱᖅᑑᖅ, ᐊᒻᒪᓗ ᕿᑭᖅᑕᕐᔪᐊᖅ, ᐋᖅᑭᒃᓱᖅᑲᑎᒋᓚᐅᖅᑐᒍᑦ ᓄᓇᕗᒻᒥ ᑐᙵᕕᓕᖕᒥᒃ ᖃᐅᔨᓴᕐᓂᕐᒧᑦ ᐸᕐᓇᒍᑎᒥᒃ ᐱᐅᓂᖅᓴᒥᒃ ᓄᓇᙳᐊᓕᐅᕐᓂᕐᒧᑦ ᓇᓗᓇᐃᖅᓯᓂᕐᒧᑦ ᓯᑯᐃᑦ

ᐅᔾᔨᕐᓇᕐᓂᖏᓐᓂᒃ ᐱᔾᔪᑎᖃᖅᑐᓂᒃ ᐊᑦᑕᕐᓇᙱᑦᑐᒃᑯᑦ ᐃᖏᕋᓂᕐᒧᑦ ᐊᔾᔨᓂᑦ ᐊᒻᒪᓗ ᓈᓴᐅᑎᓂᒃ/ᑎᑎᖅᑲᓂᒃ ᑲᑎᑕᐅᔪᓂᒃ ᖃᖓᑦᑕᖅᑎᑕᐅᓯᒪᔪᓄᑦ. ᖃᖓᑦᑎᐊᓕᓴᑦ ᓯᑯᐃᑦ ᐊᓯᔾᔨᖅᐸᓪᓕᐊᔪᑦ ᓇᓗᓇᕐᓂᖅᓴᐅᓕᖅᐳᑦ, ᐱᕿᓗᐊᕿᔾᔪᑕᐅᒃᑲᓂᖅᐸᒃᓗᑎᒃ ᐊᒻᒪ ᐊᒃᑐᐃᓂᕐᓗᒍᑕᐅᕙᒃᓗᑎᒃ ᓂᕆᔭᒃᓴᖃᑦᑎᐊᕐᓂᕐᒧᑦ, ᖃᓄᐃᙱᑦᑎᐊᕈᓯᕐᒧᑦ ᐊᒻᒪ ᐃᓅᑦᑎᐊᕈᓯᕐᒧᑦ, ᒪᑭᒪᔾᔪᑎᓄᑦ, ᐃᓕᖅᑯᓯᕐᒧᑦ, ᐊᒻᒪ ᑭᓇᐅᓂᕐᒧᑦ. ᐅᖅᑰᓯᕙᓪᓕᐊᓂᖓ ᓯᓚᐅᑉ ᐅᖅᑰᓂᖓ, ᐊᒻᒪᓗ ᑕᕆᐅᖅ ᐃᖏᕋᑎᓪᓗᒍ ᐊᒻᒪᓗ ᓯᓚᐅᑉ ᖃᓄᐃᓐᓂᕆᓚᔪᒃᑕᖓ, ᓇᐃᓪᓕᒋᐊᖅᑎᑦᑎᖃᑦᑕᖅᑐᖅ ᐊᑯᓂᐅᓂᖓᓂᒃ ᐊᕐᕌᒍᑕᒫᑦ ᓯᑯᖓ ᑐᙵᑦᑎᐊᖅᑎᓪᓗᒍ, ᓯᑯᖃᕐᓂᖓᓄᑦ ᐊᒃᑐᖅᑕᐅᓯᒪᔪᖅ, ᓄᓖᓂᒃ ᓄᑎᒃᓯᒪᔪᓂᒃ ᐊᒻᒪ ᓴᐅᔭᐅᓯᒪᔪᓂᒃ ᐊᐳᑎᐅᑉ ᖀᖓᓂ. ᓄᓖᓂᒃ ᐱᓕᕆᔾᔪᑎᒃᓴᓂᒃ ᐱᔭᕆᐊᖃᖅᐳᑦ ᐃᑲᔫᑎᒃᓴᓂᒃ ᓄᓇᓕᖕᓂ ᐊᐅᓪᓚᖅᐸᒃᑐᓄᑦ ᐱᓕᕆᔾᔪᓯᓄᑦ ᑐᙵᕕᖃᖅᑐᓄᑦ ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᑐᖃᖏᓐᓂᒃ (IQ), ᐊᓂᒍᖅᑎᓐᓇᓱᒡᓗᒋᑦ ᐊᒃᓱᕈᕐᓇᖅᑐᑦ ᐊᒃᑐᐊᓂᕈᑦ ᐊᓯᔾᔨᖅᐸᓪᓕᐊᔪᓄᑦ ᐊᒻᒪ ᓂᕆᐅᓇᙱᑦᑐᓄᑦ ᐊᐅᓪᓚᕐᓂᐊᕐᓗᓂ ᐊᑦᑕᕐᓇᖅᑐᓄᑦ. ᐊᔾᔨᙵᐊᑦ ᐊᒻᒪ ᑎᑎᕋᖅᓯᒪᔪᑦ ᑲᑎᖅᓱᖅᑕᐅᔪᑦ ᖃᖓᑦᑕᖅᑎᑕᐅᓯᒪᔪᒃᑯᑦ, ᐊᑐᖅᑕᐅᓯᒫᓂᒃᑐᑦ ᐃᓚᖏᓐᓄᑦ ᐊᐅᓪᓚᕐᓂᐊᕐᓗᓂ ᐸᕐᓇᐃᓂᕐᒧᑦ, ᑐᑭᓯᓇᕐᓂᖅᓴᓂᒃ ᑐᑭᓯᒋᐊᒐᒃᓴᖅᑕᖃᑐᐃᓐᓇᕆᐊᓕᒃ ᓯᑯᒃᑯᑦ ᐱᔾᔪᑕᐅᓲᓂᒃ ᐊᑦᑕᕐᓇᙱᑦᑐᒃᑯᑦ ᐊᐅᓪᓚᕐᓂᐊᕐᓗᓂ. ᑐᕌᕆᔭᕗᑦ ᑐᑭᓯᐅᒪᔪᒪᓂᐅᕗᖅ ᖃᓄᖅ ᓯᑯᐃᑦ ᐅᔾᔨᕐᓇᕐᓂᖏᑦ ᐊᒃᑐᐊᓂᓖᑦ ᖁᐊᖅᓵᕐᓇᙱᑦᑐᒃᑯᑦ ᓄᒃᑖᕐᓂᕆᔭᐅᕙᒃᑐᒧᑦ ᓇᓗᓇᐃᖅᑕᐅᔪᓐᓇᕐᓂᖏᓐᓂᒃ ᓄᑖᓂ ᖃᖓᑦᑕᖅᑎᑕᐅᓯᒪᔪᒃᑯᑦ ᐱᓕᕆᔾᔪᑕᐅᕙᒃᑐᓂᒃ, ᑕᐅᑐᒐᒃᓗᐊᑖᕐᓗᑎᒃ ᐅᓇ radar-based ᖃᖓᑦᑕᖅᑎᑕᐅᓯᒪᔪᑎᒍᑦ ᐱᓕᕆᔾᔪᑕᐅᕙᒃᑐᓂᒃ ᐃᒪᓐᓇ ᑕᐃᔭᐅᔪᒥᒃ, synthetic aperture radar (SAR –ᖑᓂᖅᑕᐅᒥᓪᓗᓂ) ᐱᓪᓗᐊᑕᓇᔭᐅᓗᓂ ᑕᑎᐅᑉ ᓯᑰᖓᓄᑦ ᑐᓴᖅᑕᐅᔫᖅᓴᓄᑦ. ᖃᐅᔨᓴᕈᓯᑦᑖᒃᑯᐊᓗ ᓄᓇᓕᖕᓂ ᐊᐅᓚᑦᑎᔨᐅᔪᑦ ᑲᑎᒪᔨᕋᓛᖏᑦ ᑎᓴᒪᐅᔪᑦ ᐃᓚᐅᔪᑦ ᒥᑦᑎᒪᑕᓕᒃ, ᐃᖃᓗᒃᑑᑎᐊᖅ, ᐅᖅᓱᖅᑑᖅ, ᕿᑭᖅᑖᕐᔪᐊᖅ, ᓇᓗᓇᐃᖅᓯᓯᒪᔪᒧᑦ ᓯᑯᖃᓗᐊᕐᓂᖓᓂᒃ, ᓯᑰᑉ ᐃᔾᔪᓂᖓᓂᒃ, ᐊᒻᒪᓗ ᓯᑯᐃᑦ ᐃᔾᔪᓂᖏᑦ ᓯᕗᓪᓕᐅᔾᔭᐅᓗᑎᒃ ᓯᑯᐃᑦ ᐊᑐᖅᑕᐅᓂᖏᓐᓄᑦ ᖃᐅᔨᓴᕐᓂᕐᒧᑦ ᖁᒻᒨᐊᒃᑎᑕᐅᓯᒪᔪᒃᑯᑦ ᐊᔾᔨᓐᖑᐊᓂᒃ ᐊᒻᒪᓗ ᑎᑎᕋᖅᓯᒪᔪᓂᒃ.ᐱᓕᕆᐊᕗᑦ ᐱᓕᕆᓂᐊᖅᐳᑦ ᓯᓚᒥ ᐱᓕᕆᓗᑎᒃ ᓯᑯᒥ ᐊᑐᓂ ᑎᓴᒪᓄᑦ ᓄᓇᓕᖕᓄᑦ ᒫᔾᔨ ᐊᒃᐸᖅᑎᓪᓗᒍ ᒪᐃ ᓄᕐᖑᐊᓄᑦᑎᑭᓪᓗᒍ ᐊᕐᕌᒍ 2025 ᐊᒻᒪ 2026. ᓯᓚᒥ ᐱᓕᕆᓂᓕᒫᑦ ᐱᓕᕆᐊᖑᓂᐊᖅᐳᑦ ᐅᖃᖃᑎᖃᑦᑎᐊᕐᓗᑎᒃ SmartICE–ᑯᑦ ᓄᓇᓕᖕᓂ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᑲᑎᒪᔨᕋᓂᒃ, ᐊᑐᓚᓇᒋᐊᖃᕐᓂᖏᓐᓄᑦ ᐱᓕᕆᐊᖑᔪᓄᑦ ᖃᓄᐃᓕᖓᓕᕐᓂᕆᔭᐅᔪᓂᒃ ᓄᓇᓕᖕᓂ ᓯᑯᓄᑦ ᓄᓇᙳᐊᓕᕆᓂᕐᒧᑦ ᐱᓇᔾᔭᑕᐅᔪᓄᑦ. SmartICE–ᑯᑦ ᓄᓇᓕᖕᓂ ᐊᐅᓚᑦᑎᔩᑦ, ᐃᓚᖏᑦ ᖃᐅᔨᓴᖅᑎᐅᖃᑕᐅᓪᓗᑎᒃ ᑖᔅᓯᒥᖓ ᐱᓕᕆᐊᒥᒃ, ᐃᓚᐅᓂᐊᕐᒥᔪᑦ ᐱᓕᕆᕝᕕᖏᒥ ᖃᕆᓴᐅᔭᒃᑯᑦ ᑎᑎᕋᖅᓯᒪᔪᓂᒃ ᑲᑎᖅᓱᐃᔪᓂᒃ. ᓯᓚᒥ ᖃᐅᔨᓴᕐᓂᓕᒫᑦ ᐊᒃᑐᐊᓂᓖᑦ ᑐᕌᒐᓕᓴᑦᑎᓐᓄᑦ ᐸᕝᕙᓐᓂᖏᑦᑐᑦ ᐊᒻᒪ ᑕᐅᑐᒃᑕᐅᔪᑦ. ᖃᐅᔨᓴᕐᓂᐊᖅᑐᒧᑦ ᐊᐳᑎᓂᒃ ᓯᑯᓂᓪᓗ ᓯᑯᓂᒃ ᖃᓂᕆᔭᙱᓂᑦ ᑎᓴᒪᓄᑦ ᓄᓇᓕᖕᓄᑦ, ᐅᓗᐃᓐᓇᕐᒧᑦ ᐊᐅᓚᖃᑦᑕᕐᓂᖅ ᖃᐅᔨᓴᕝᕙᓂᒃ ᐊᒻᒪᓗ ᐊᓯᖏᓐᓂᒃ ᑐᔪᕐᒥᕙᓂᒃ, ᐃᖏᕋᖃᑦᑕᕐᓗᑎᒃ ᓯᑷᒃᑯᑦ ᐊᑦᑕᓇᖏᑉᐸᑕ. ᒥᑭᑦᑐᒥᒃ ᐅᖅᓱᒥᒃ ᐱᓯᒪᓂᐊᖅᑐᒧᑦ ᓯᑷᓄᑦ ᐊᒻᒪᓗ ᐃᑯᒪᖅᑯᑎᓕᐅᕐᓗᑕ ᒪᕿᖓᓂᒃ ᐃᑯᒪᓕᖓᓄᑦ ᓯᑷᖓᓂᒃ ᖃᑦᑕᐅᔭᕐᓂᒃ. ᑎᑎᕋᖅᓯᒪᔪᑦ ᑲᑎᑕᐅᔪᑦ ᐃᓚᖃᖅᐳᑦ ᐊᑐᕐᓂᕐᒥᒃ ᓯᑯᓂᒃ ᐊᒃᓴᓗᐊᓂᒃ ᐊᒻᒪᓗ ᑕᐃᔭᐅᔪᖅ electromagnetic-ᒥᒃ (EM) ᖃᐅᔾᔭᔪᑎᓂᒃ ᓯᑯᐃᑦ ᐃᔾᔪᓂᖏᓐᓄᑦ, ᖃᑦᑕᐅᔭᕐᔪᐊᓄᑦ ᓂᓚᖕᓄᑦ, ᐱᖁᑎᓄᑦ ᐆᒃᑐᕋᕐᓂᕐᒧᑦ ᐊᐳᑎᑦ 'ᐃᓗᐃᑦᑐᒦᑦᑐᑦ', ᐹᑕᕇᑦ ᐊᐅᓚᑕᐅᔪᑦ ᐆᓇᕐᓂᖓᓄᑦ ᖃᐅᔾᔭᔪᑎᑦ ᐆᒃᑐᕋᐅᑎᓄᑦ ᐊᐳᒻᒧᑦ ᓯᑯᒨᓗ ᐆᓇᕐᓂᖓᓄᑦ, ᐊᒻᒪ ᖁᓕᒥᒌᕋᕇᓖᑦ ᐊᔾᔨᓕᐅᕆᓂᕐᒧᑦ ᖄᖓᓂᒃ (LiDAR ᐊᒻᒪ EM ᖃᐅᔾᔭᔪᑎᑦ). ᐃᓕᓯᔪᖃᕐᓂᐊᖅᑐᖅ ᐆᓇᖅᓯᕙᓪᓕᐊᔪᒥᒃ ᖃᐅᔨᓭᑎᒥᒃ (SmartBUOYs) ᐃᓕᔭᐅᓗᑎᒃ ᓯᑯᒥ ᑭᓯᐊᓂ ᐲᖅᑕᐅᔪᓇᖅᓯᒃᐸᑕ ᐅᐱᕐᙵᒃᑯᑦ. SmartBUOYs–ᑯᑦ ᓯᑯᒦᑎᑕᐅᕙᒃᐳᑦ ᑐᑭᒧᐊᒃᑎᑕᐅᓗᑎᒃ SmartICE–ᑯᑦ ᓄᓇᓕᖕᓂ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᑲᑎᒪᔨᕋᓄᑦ ᓇᓗᓇᐃᒃᑯᑎᖅᑕᐅᓯᒪᓗᑎᒡᓗ ᑕᑯᒃᓴᐅᔪᓇᕐᓂᖏᓐᓂᒃ. ᑕᒪᕐᒥᒃ EM–ᖑᔪᑦ ᐊᒻᒪ ᐊᔾᔨᓕᐅᕈᑎᑦ (LiDAR) ᖃᐅᔾᔭᔪᑎᑦ ᐊᑦᑎᒃᑐᒦᑉᐳᑦ ᐊᒻᒪ ᓂᐱᑭᖅᓗᑎᒃ. ᑕᒪᕐᒥᑦᑎᐊᖅ ᐊᑐᓚᒃᓴᐅᔪᓐᓂᖅᑐᑦ ᖃᐅᑕᒫᑦ ᑐᕝᒃᑯᑦ ᐱᓕᕆᐊᖑᕝᑐᓂᑦ ᓄᓇᓕᖕᓄᐊᖅᑕᐅᖃᑦᑕᕐᓂᐊᖅᐳᑦ ᓈᒻᒪᒃᑐᒃᑯᑦ ᐃᒋᑕᐅᖃᑦᑕᕐᑯᓪᓗᒋᑦ.ᑐᓴᐅᒪᑎᑦᑎᓂᕐᒧᑦ ᖃᓄᐃᓕᖓᓕᕐᓂᕆᔭᐅᔪᑦᖃᐅᔨᒪᔭᐅᓕᖅᑐᑦ ᐊᒥᖅᑳᕈᑕᐅᓂᐊᖅᐳᑦ ᐃᓚᐅᔪᓄᑦ ᓄᓇᓕᖕᓄᑦ ᐊᒻᒪᓗᑦᑕᐅᖅ ᐊᓯᖏᓐᓄᑦ ᓄᓇᓕᖕᓄᑦ ᓄᓇᕗᓕᒫᒥ ᑕᒪᒃᑯᐊ ᐃᓄᐃᑦ–ᐊᐅᓚᑕᐅᔪᑦ, ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᑐᖃᖏᑦ–ᑐᙵᕕᖏᑦ, ᓯᑯᒥᒃ ᖃᐅᔨᒪᔩᑦ (ᐊᑐᓚᒃᓴᐃᑦ ᖃᐅᔨᒪᔪᓕᖓᒃᑯᑦ ᖃᓄᖅ ᓯᑯᖃᑎᒋᖕᒪᖕᒋᑦ) ᐊᑐᖅᑕᐅᕙᒃᑐᖅ ᓄᓇᓕᖕᓂ ᓯᑯᒧᑦ ᑐᓴᖅᑕᐅᔫᒃᓴᓄᑦ ᐊᒥᖅᑳᖃᑎᖃᕐᓂᖅ ᐊᑐᓕᖅᑎᑕᐅᔪᖅ. ᒪᓂᕋᐅᓂᖏᑦ ᐊᒻᒪ ᓄᓇᖑᐊᑦ ᖃᓄᐃᓕᖓᓂᖏᑦ ᐃᓚᓕᐅᔾᔭᐅᓂᐊᖅᑐᑦ SmartICE Ice Travel Safety–ᐆᑉ ᓄᓇᙳᐊᓄᑦ, ᐱᑕᖃᓇᐊᖃᕐᓂᖓ ᐃᓕᓴᕆᔭᐅᖅᑳᓚᐅᖅᑐᖅ ᓄᓇᓕᓐᓂᑦ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᑲᑎᒪᔨᕋᓄᑦ. ᓇᓗᓇᐃᖅᓯᓚᐅᖅᐳᑦ ᓯᑯᐃᑦ ᑎᑎᕋᖅᓯᒪᔪᑦ ᓴᓇᔭᐅᔪᑦ ᑲᓇᑕᒥ ᓯᑯᓕᕆᔨᒃᑯᓐᓂ ᐋᖅᑭᒃᑕᐅᓯᒪᓪᓗᐊᑦᑕᕐᓂᖏᓐᓂᒃ ᐃᑲᔫᑕᐅᓇᓱᒃᓗᑎᒃ ᐊᐅᓚᖅᑎᑦᑎᔾᔪᑎᓄᑦ ᐊᒻᒪ ᓯᑯᓄᑦ ᐃᖏᕋᔾᔪᑕᐅᓂᓄᑦ ᐃᖏᕋᔾᔪᑕᐅᓂᖑᓪᓗᑎᓪᓗ ᐱᓕᕆᐊᖑᓚᐅᑲᐃᓇᖅᑐᓄᑦ ᐊᒻᒪ ᐃᓂᒋᕚᒃᑕᖏᓐᓄᑦ ᐊᔾᔨᒌᒃᐸᙱᕐᓗᑎᒃ ᓯᑯᒃᑯᑦ ᐊᐅᓪᓚᖅᐸᒃᑐᓄᑦ. ᐊᑐᕐᓂᐊᖅᑐᒍᑦ ᓄᓇᓕᓐᓂᑦ ᐊᐅᓚᑦᓯᓂᕐᒧᑦ ᑲᑎᒪᔨᕋᑦ ᑲᑎᒪᓂᖏᓐᓂᑦ ᓄᓇᕗᒻᒥ ᓄᓇᓕᓐᓂᑦ ᐱᔾᔪᑕᐅᓗᐊᖅᑐᓂᑦ ᑐᓴᐅᒪᖃᑦᑕᐅᑎᓂᕐᒥᑦ ᐱᓕᕆᐊᓂᑦ ᖃᓄᐃᓐᓂᐅᔪᓂᑦ, ᐊᓯᐊᒍᑦᑕᐅᖅ ᐱᖃᓯᐅᑎᓪᓗᓂᑦ ᐱᓕᕆᐊᒃᓴᑦᑎᓐᓄᑦ ᐅᓂᒃᑲᓕᐊᕗᑦ ᓄᓇᕗᒻᒥ ᖃᐅᔨᓴᖅᑐᓕᕆᔾᔪᑎᓄᑦ, ᐊᒻᒪ ᑲᓇᑕᒥᑦ ᑲᑎᒪᓂᐅᔪᓄᑦ ᓲᕐᓗ ArcticNet-ᑯᑦ. ᑎᑎᕋᖅᓯᒪᔪᑦ ᑐᖅᑯᖅᑕᐅᓂᐊᖅᑐᑦ Polar–ᔪᖅ ᑎᑎᕋᖅᓯᒪᔪᑦ ᖃᐅᔨᓴᖅᑕᐅᓂᑯᑦ ᐊᒻᒪ ᑎᑎᕋᖅᓯᒪᔪᑦ ᖃᐅᔨᓴᖅᑕᐅᓂᑯᐃᑦ ᐊᒻᒪ ᖃᐅᔨᓴᐅᔪᑦ ᐊᑐᐃᓐᓇᕈᖅᑎᑕᐅᓂᐊᖅᑐᑦ ᑐᒃᓯᕋᖅᐸᑕ.

Inuinnaqtun: Havaaghainut Naunaiyautit InirumayailluHavaaghat hapkua aullaqtitauhimayut taapkunannga SmartICE nunallaarnit atannguyait katimayiralaangit Mittimatalingmi, inmikkut-attiqhimayuq "Sikumiut (inuit hikumiutat)". Talvani Sikumiut ilauyut Iniqnirit inulrammiillu Mittimatalingmit katimayiniklu Mittimatalingmi Anguniaqtit Naniriaqtuqtillu Katimayiit, Haamlatkut Katimayiit, Kanatami Anguniaqtit Ikayuqtit, Qiniqhiayit Annaktillu, taapkualu Pulaaqtarviit Kanatami. Nunaqyuaqmi havaaptingnit havaqativut tajja ikayuqtigiiktunik-ihivriuqhiyilluanik Ilihaqpaalliqvianit Victoria-mi, SmartICE, Ilihaqpaalliqviat London-mi United Kingdom-mi, Ilihaqpaalliqviallu Bremen, Germany-mit. Havaqatigiighutik taapkualu Sikumiut SmartICE nunallaarnit atannguyait katimayiralaangit Iqaluktuuttiaqmi, Uqhuqtuuq, Qikiqtaryuaq, ikayuqtigiitkumik-hanaqatauhimayut Nunavunmi tunngavilingmik qauyihaiyit parnaiyautainik taimaa nakuutqiyanik nunauyaliuriamik ilittuqhariamik taryum hikua qanurininganiinik ilauyughat amirnaittumik aullaaqtut piksaliuqhimayunit naunaitkutanillu katitiqhimayut qilangmi piksaliurutinit. Qangahaaq aallannguqhimayunit taryum hikuanit naahurinnaiqpalliayuq, talvuuna amigaiqpalliayut iririnautit huliyuqaraangat naahurinnaittunik ihuilutiniklu niqighailliurniqmut, aanniaqtailiniqmut inuuhiqattiarniqmullu, manighiurniqmut, ilitquhinut, ilittuqhitinullu. Uqquuhivalliayuq anuri, ahiagullu hanguvalliayut taryum harvait hilaplu aallannguqtarniit, naihivaalliutauyuq hivitunianik upluqhiuttikkut ukiuq tamaat taryuq amirnaiqviat, ihuilutauyut piqaluyangnit maniilruit, nutaaniklu

ainniqaqtut amiriyaghallu imaq aputim ataani. Nutaat hanalrutit ihariagiyauyut ilauyughat nunallaarmiunut aullaayuktunik maliktuivaktut Inuit Qauhimayatuqainnik (IQ), ayuqnaiqpaalliriamik ayuqhautauvaktut ilauyut aallannguqtaqtumut naahurinnaittumullu aullaaqtunut amirnautit. Piksautit naunaitkutallu katitiqhimayut qilangmiittukkut piksaliutikkut, atuqtauliqtut tajja ilanginnut aullaaqtut parnaiyautainut, naunaiqpaalliqviunginnaliklu qanurininganiinik taryum hikua ilauyunik amirnaittumik aullaaqtunut. Iniqhiyumayugut taimaa ilihimattiariamik qanuq taryum hikua pitquhiit ilauyut amirnaittumik aullaaqtunut ilitturiyaulaariaghait nutaanit qilangmiittukkut alruyaqtuqtukkut, ihumagilluaqhugu paqititjutikkut-tunngavilik qilangmiittukkut alruyaqtuqtut taiyauvaktuq hanayauhimayut piksautinik paqititjutik (SAR) hikumut naunaiqviulluangupluni.HavauhiitHavaqatigiplugit taapkua nunallaarni atannguyait katimayiralaat talvani hitamanit ilauyunit nunallaarnit Mittimatalik, Iqaluktuuttiaq, Uqhuqtuuq, Qikiqtaryuaqlu, ilitturihimaliqtaqqut hikum maniilruit, hikuilruit, hikuplu hilingnia irininaqtutut hikum pitquhiinik munariyaaghat qilangmiittukkut piksautikkut naunaitkutakullu. Havaaptingnit hikumi havakpangniaqtut qanilrumi tamangnit hitamanit nunallaarnit Qiqailruq nungutinnagu nungunnuaqtumut Qiqaiyaluarviami 2025 2026-milu. Hikumi havaaghait iniqtauvangniat katimatjutaulutik taapkualu SmartICE nunallaarni atannguyait katimayiralaangit, naahurivagamigit havaaghainit iniqtauhimayut nunallaarnit taryum hikuanik nunauyaliuriamik. SmartICE nunallaarnit aulapkaiyit, ilangi ikayuqtiuplutik ihivriuqhiyilluanguyut havaaghanit hapkunani, ilauniaqtullu hikumi naunaitkutanik katitiriyunik.Tamangnik hikumi qauyihaiyut ilauyut havaaptingnut kuinginnautaittut naunaiyautikaffuuplutik. Qauyiharniaqtaqqut hilingnia aputik taryuplu hikuata pitquhit taryum hikuanit haniani tamangnik hitamauyut nunallaat, upluq tamaat aullaaqlutik qauyihaqviinit ahinillu nayugainit, aullaaqhutik sikiitukkut amirnaitpat aullaariamik. Mikiyumik kaassiliiqmik uhiniaqhimayut uqhuqhamiklu sikiituqnut ingilrutituriamiklu 2-stroke-mik hikumik ikuutaqmik. Naunaitkutanik katitiriyut atuqpangniat hikumik ikuutanik alruyaqtuqtuniklu nipitaqtukkut (EM) qauyihautikkut hikum hilingnianik, hikum ikuutarniinik, ingilrutinik qauyihautighat aputim pitquhiinik aputim “hitiinit”, paatulikkut ingilrayut niklamaniqmik qauyihautit qauyihariamik aputim taryuplu hikua niklamaniit, halikaaptanguillu piksaliuriamik ihivriuriamiklu qaanga (LiDAR EM-niklu qauyihautit). Havakviqarniat niklamanianik-qauyihautinik (SmartBUOY) iliuraqtauyunik taryum hikuanit ahivaqtaulutik upinngaghami. Taapkua SmartBUOY-nguyut qakugunnguraangat aullaqtitauvaktut hikumi ataani pitquhimayaitut SmartICE nunallaarnit atannguyat katimayiralaangit naunaitkutaliqhimayughallu takunnariamik. Tamangnik EM-nguyut ihivriuqhitillu (LiDAR) qauyihautit huangautituqpallaayuittut kuinginnaqtumiklu nivyaayuittut. Tamangnik iqqakuit upluqmit havaanginnit agyaqtauvangniat nunallaarnut ihuaqtukkut iqqakuqtauyughat.

Personnel

Personnel on site: 6

Days on site: 53

Total Person days: 318

Operations Phase: from 2025-03-04 to 2026-05-20

ᐱᓕᕆᐊᕆᔭᐅᓂᐊᖅᑐᑦ

ᓇᒥ	ᖃᓄᐃᑦᑑᒥᑦ ᐱᓕᕆᐊᖃᕐᓂᐊᖅᐸ	ᑭᑯᑦ ᓄᓇᖁᑖᓂ	ᑐᓴᐅᒪᔭᒃᓴᑦ ᓄᓇᐅᑉ ᖃᓄᖅ ᐊᑐᖤᐅᓚᐅᖅᓯᒪᔭᕆᐊᖓᓂᒃ	ᐃᑦᓴᕐᓂᑕᖃᕐᕕᐅᕙᓚᐅᖅᐸ ᐃᓄᙵᓄᑦ ᓇᓖᖅᑕᐅᖃᑦᑕᕐᓂᑰᕙᓗ ᑕᐃᑦᓱᒪᓂᑐᖃᐅᓕᖅᑐᖅ	ᖃᓂᓐᓂᖅᐹᖅ ᓄᓇᓕᕐᔭᐅᔪᖅ ᐊᒻᒪᓗ ᓴᐳᒻᒥᒃᔾᕕᐅᕙᓗ ᓱᓇᓄᑦ
Ikaluktutiak	Scientific/International Polar Year Research	Marine	n/a	n/a	We will be conducting research on the sea ice in Dease Strait off the coast of Cambridge Bay approximately 10 to 50 km from the community. Guidance from local authorities will be needed to avoid known pathways/trails on the sea ice used by residents.
Uqsuqtuuk	Scientific/International Polar Year Research	Marine	n/a	n/a	We will be conducting research on the sea ice in Rasmussen Basin off the coast of Gjoa Haven approximately 10 to 50 km from the community. Guidance from local authorities will be needed to avoid known pathways/trails on the sea ice used by residents.
Mittimatalik	Scientific/International Polar Year Research	Marine	n/a	n/a	We will be conducting research on the sea ice in Eclipse Sound off the coast of Pond Inlet approximately 5 to 50 km from the community. Guidance from local authorities will

					be needed to avoid known pathways/trails on the sea ice used by residents.
Qikiqtarjuaq	Scientific/International Polar Year Research	Marine	n/a	n/a	We will be conducting research on the sea ice south of Qikiqtarjuaq approximately 5 to 30 km from the community. Guidance from local authorities will be needed to avoid known pathways/trails on the sea ice used by residents.

ᓄᓇᕗᑦ ᐃᓕᑕᖅᑕᑕᓂᖓ ᓄᓇᓕᓪᓗ ᐊᐱᵇᑐᖅᓯᒪᑕᕐᓂᖓᓄᑦ ᐃᑲᔪᑕᑕᔪᓐᓇᖅᑐᑦ

ᓄᓇᕗᑦᑏᖅ	ᐊᑎᑦ	ᑲᑐᔾᔨᐊᖅᑎᑎᑦᑏᖅ	ᖁᓕᓪᓗ ᑐᓴᖅᑎᑕᑕᓚᐊᖅᓯᓂᖅ
ᐃᖅᓗᓵᐧᑐᑉᓯᐊᖅ	Beverly Maksagak	Ekaluktutiak Hunters and Trappers Organization (EHTO)	2024-12-16
ᖁᑭᖅᑕᕐᔪᐊᖅ	David Iqqaqsaq	Ikirmiut (SmartICE Community Management Committee)	2024-12-20
ᒥᕐᑎᒪᑕᓂᐧ	Andrew Arreak	Sikumiut (SmartICE Community Management Committee in Mittimatalik)	2024-10-03
ᐃᖅᓗᓵᐧᑐᑉᓯᐊᖅ	Angela Gerbrandt	Municipality of Cambridge Bay	2024-12-15

ᓚᐃᓴᓐᓰᑦ ᐱᒧᓐᓇᐅᑏ ᐊᓐᒋᖅᑕᐅᓯᒪᔪᑦ

ᓇᒦᒋᐊᓐᒋᓐᓂᒃ ᐱᓕᕆᐊᕆᕝᕕᐅᓂᐊᖅᑐᑦ ᑎᑎᕋᕐᓗᒋᑦ:

ᓚᐃᓴᓐᓰᑦ ᐱᒧᓐᓇᐅᑏ ᐊᓐᒋᖅᑕᐅᓯᒪᔪᑦ

ᒐᕙᒪᒋᔭᐅᔫᑉ ᐊᕝᒃᑐᖅᓯᒪᐅᕐᓂᙵᓐᓂ ᒪᓕᒐᕐᓅᙵᔪᓂᒃ ᐱᕐᑯᔭᕐᓅᙵᔪᓂᒻᒧ ᑲᒪᔩᑦ ᐱᔪᓐᓇᐅᑎᑖᕈᑎᓂᒃ ᓚᐃᓴᓐᓯᓄᒻᒧ ᑳᔨᒃᑲᐃᔫᑦ	ᖃᓄᐃᑦᑐᓪᓚᕆᐅᕙ ᓚᐃᓴᓐᓯᑖᕈᑕᐅᔪᖅ ᐱᔪᓐᓇᐅᑎᑖᕈᑕᐅᔪᖅ ᐊᓐᒋᖅᑕᐅᔪᕐᔫᓐᓃᑦ	ᒫᓐᓇ ᖃᓄᐃᓕᖓᕙ	ᐅᓪᓗᒥ ᑐᓂᔭᖅ/ ᑐᒃᓯᖅᑑᑕᐅᓚᐅᖅᓯᒪᔪᖅ	ᑭᒡᓕᖅᑲᕐᕕᖓᒐ
ᓄᓇᕗᒥ ᖃᐅᔨᓴᖅᑐᓕᕆᔩᒃᑯᑦ	An application for a Nunavut scientific research license was made on 2024-12-19.	Applied, Decision Pending		
ᕿᑎᕐᒥᐅᑦ ᐃᓄᐃᑦ ᑲᑐᔾᔨᖃᑎᒌᒃᑯᓐᒋᑦ	As KIA represents the Inuit people of the Kitikmeot Region of Nunavut, we will meaningfully engage with KIA and Kitikmeot Inuit before, during and after the research has taken place.	Not Yet Applied		
ᐃᓄᐃᑦ ᑲᑐᔾᔨᖃᑎᒌᒃᑯᓐᒋᑦ	As the regional Inuit association for the Qikiqtani Region of Nunavut, we will meaningfully engage with QIA and Qikiqtani Inuit during all stages of the research.	Not Yet Applied		

Project transportation types

Transportation Type	ᓱᓇᒧᑦ ᐊᑐᒐᐅᓂᐊᖅᐸ	Length of Use
Air	The project team members located in southern communities will take commercial flights to travel to and from the project communities.	
Water	Field teams will travel on the sea ice by snowmobile, to and from field sites on a daily basis when field based activities are taking place.	

Project accomodation types

ᓄᓇᓕᒋᔭᖅ

ᐊᑐᒐᐅᓂᐊᖅᑐᖅ

ᐱᕐᑯᑦ ᐊᖏᔪᖅ ᐊᑐᖅᑕᐅᓂᐅᓴᔪᖅ ᐃᓚᖃᓯᐅᑎᓗᒋᑦ ᐃᑰᑕᐃᑦ, ᒥᒡᓗᐊᕈᑏᑦ, ᖃᖓᑕᓲᖅ, ᓄᓇᓯᐅᑦ ᐊᓯᖏᒡᓗ

ᐊᖏᔪᖅ ᐱᕐᑯᑦ ᐊᑐᒐᐅᓂᐊᖅᑐᖅ ᖃᓄᐃᑦᑑᓂᖓ	ᖃᑦᓯᐅᕙᑦ	ᐊᖏᓂᖏᑦ - ᐳᖅᑐᓂᖏᑦ	ᓱᓇᒧᑦ ᐊᑐᒐᐅᓂᐊᖅᐸ
Snowmobile	12	2m x 1.5m x 1.5m	Access to field sites from project communities in 2025.
Snowmobile	8	2m x 1.5m x 1.5m	Access to field sites from project communities in 2026.
Surveying drone	4	373mm x 101mm x 298mm (unfolded)	Mapping sea ice surface roughness. Take off weight is less than 250g.
Surveying drone (LiDAR)	1	45cm x 45cm x 25cm	Mapping sea ice surface roughness using LiDAR technology.
EM-31	4	145cm x 38cm x 23cm	Geonics EM-31 electromagnetic induction (EM) device for measuring the apparent conductivity of sea ice and water, for inferring the sea ice thickness. Operates at 9.8 kHz.
GEM-2	2	183cm x 12.5cm x 10cm	Geophex Ltd. multi-frequency eletromagentic sensor for measuring the apparent conductivity of sea ice and water, for inferring sea ice and slush/snow thickness.
Thermistor-based stationary sensor (ice buoy)	4	40cm x 15cm x 240cm	SmartBUOYs that provides vertically spaced measurements of air, snow, sea ice, and water temperature, for monitoring changes in snow and ice thickness over time.
Ice coring system	4	128cm x 23cm x 7cm	Kovacs Mark II coring system to retrieve 9cm diameter sea ice cores up to 1m long.
Ice thickness kit	4	60cm x 40cm x 25cm	2 augur flights (50cm each), a 50cm extension rod, a handbrace, and an ice thickness measuring tape. Dimensions are for the kit when everything is dismantled and packed.
Snow pit kit	4	58cm x 22cm x 35cm	Each kit contains a foldable shovel, ruler, snow grain card, density sampler, battery operated temperature probe, brush, cloth, and notebook. Used for documenting snow grain and snow layer

			properties.
Engine drive	4	55cm x 38cm x 32cm	Kovacs 2-stroke core barrel engine drive for powering the Kovacs ice coring systems.
GNSS receiver	1	13cm x 13cm x 14cm	Emlid Reach RTK GNSS Receiver for positioning.
Hydraprobe snow sensor	2	38cm x 8cm x 30cm	Battery operated probe for measuring moisture and electrical conductivity of snow for remote sensing studies. Dimensions are for the probe and logger case. Actual sensing probe is 5.7cm long. Made by Stevens.
SLF snow sensor	1	4.5cm x 9cm x 4cm	SLF Snowpro-17 uses a capacitive sensor for measuring snow density in snow pits.

ᑎᑎᕋᐅᓯᕆᓗᒍ ᐅᖅᓱᒃᓴᐃᑦ ᐊᑦᑕᓇᖅᑐᖅᑕᓅᓪᓗ ᐊᑐᖅᑕᐅᓂᐊᕐᓂᖏᑦ

ᓱᓇᒧᑦ ᐅᖅᓱᒃᓴᕐᒥᐊᖅ ᐊᑐᒐᐅᓂᐊᖅᐸ	ᖃᓄᐃᑦᑐᓪᓚᕆᐅᕙ ᐅᖅᓱᒃᓴᕐᒥᐊᖅ	ᖃᑦᓯᐅᕙᑦ ᐅᖅᓱᒃᓴᖃᐅᑏᑦ	ᐆᒃᓱᐅᑉ ᐃᒪᖃᖅᑎᕆᔪᓐᓇᕐᓂᖓ	ᑲᑎᓪᓗᒍ	ᐆᒃᓱᐃᑦ ᐊᒥᓱᓂᖏᑦ	ᓱᓇᒧᑦ ᐊᑐᒐᐅᓂᐊᖅᐸ
Gasoline	fuel	4	20	80	Liters	Powering snowmobiles

ᐃᒪᖅ ᐊᑐᖅᑕᐅᔪᒫᖅᑐᖅ

ᐅᓪᓗ ᑕᒫᖅ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᖅ	ᖃᓄᖅ ᐃᒥᖅᑕᖃᑦᑕᕐᓂᐊᖅᐸᑦ	ᓇᑭᑦ ᐃᒥᖅᑕᖃᑦᑕᕐᓂᐊᖅᐸᑦ
0		

ᐊᖏᑕᑯᑦ

ᐊᖏᑕᑯᓕᖅᓂᐊᖅᓂᖅ

ᐱᓕᕆᐊᖃᕆᐅᔪᒪᔪᒍᑦ ᐱᓕᕆᐊᖃᕆᐅᓂᐊᖅᑐᖅ	ᖃᓄᐅᐃᑦᑐᖅ ᐊᖏᑕᑯᖅ	ᖃᓄᐅᑎᒋ ᐊᖏᑕᑯᑦ ᓴᖅᑭᐊᓂᐊᖅᑐᓕᕆᐅᕗᑦ	ᖃᓄᐅᖅ ᐊᖏᑕᖅᑕᐅᓂᐊᖅᐸ	ᓴᓗᒻᒪᖅᓴᐅᑎᖏᓴᖏᓐᓂᐅᓂᐊᖅᑐᑦ
Information is not available				

ᐊᐸᑎᒥᐅᑕᓂᑐᑦ ᐊᖏᑐᖅᑕᐅᓱᒪᔪᑦ

Sea ice sites will be visited daily by snowmobile and daily field sampling involves measuring snow and sea ice properties while on the sea ice. There will be trampling around the sites when accessing them and small snow pits and ice core holes. Holes will be drilled in the sea ice to deploy ice buoys and their marking flags. Small snow and sea ice samples will be bagged daily and brought back to the research station or hotel accommodation and melted to measure for salinity. The water amount will be small enough that it will be dumped down the sink when done. Mitigation: The research stations or hotels will be handling all waste removal. Fueling of snowmobiles will take place daily at the research station or at retail services in the community that have their own fuel storage/containment/spill kits available if necessary. Efforts will be made to limit the snowmobile tracks and trampling at sites, and to restore the sites as they were before activities took place.

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

ᒫᓐᓇ ᐊᕙᑎᐅᑉ ᖃᓄᐃᑦᑐᓪᓚᕆᐅᓂᖓ: ᓄᓇᐅᑉ ᖃᓄᐃᑦᑑᓂᖓ

ᒫᓐᓇ ᐊᕙᑎᐅᑉ ᖃᓄᐃᑦᑐᓪᓚᕆᐅᓂᖓ: ᐆᒪᔪᖅᑕᖃᕐᓂᖓ

ᒫᓐᓇ ᐊᕙᑎᐅᑉ ᖃᓄᐃᑦᑐᓪᓚᕆᐅᓂᖓ: ᐃᓄᓕᕆᓂᕐᒨᖓᔪᑦ-ᐱᕙᓪᓕᐊᔪᓕᕆᓂᕐᒨᖓᔪᑦ

Miscellaneous Project Information

ᓇᓗᓇᐃᖅᑕᐅᓂᖏᑦ ᐊᒃᑐᖅᑕᐅᓯᒪᔪᑦ ᖃᓄᐃᑦᑑᓂᖏᑦ ᐸᓚᐅᒥᔾᔪᓯᖅᑕᐅᓂᐊᕐᓂᖏᓪᓗ

Cumulative Effects

Impacts

ᓇᓗᓇᐃᖅᑕᐅᓂᖏᑦ ᐊᕙᑎᒥᐅᑕᓅᑦᑐᑦ ᐊᒃᑐᖅᑕᐅᓯᒪᔪᑦ

	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
ᓴᓇᓂᖅ																									
-		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-
ᐅᔭᖅᑕᕐᓂᖅ																									
Scientific/International Polar Year Research		-	-	-	-	-	P	-	-	-	-	-	-		-	-	-	-	-		-	-	P	-	-
ᐃᓗᑦᑎᕆᓂᖅ																									
-		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-

(P = ᐊᑲᐅᓈᕈᑎᔪᓐᓇᖅᑐᑦ, N = ᐊᑲᐅᙱᑦᔪᑕᐅᔪᓐᓇᖅᑐᑦ ᐸᓚᐅᒥᔅᓯᔪᖅᑐᖅᑕᐅᔪᓐᓇᙱᑦᑐᒃᑯ, M = ᐊᑲᐅᙱᑦᔪᑕᐅᔪᓐᓇᖅᑐᑦ ᐸᓚᐅᒥᔅᓯᔪᖅᑐᖅᑕᐅᔪᓐᓇᖅᑐᒃᑯ, U = ᖃᐅᔨᒪᓐᓇᙱᑦᑐᖅ)

ᓇᒋᒪᖏᓗᖅ ᐱᓕᕆᐊᒃᑲᐅᔪᖅ

List of Project Geometries

1	polygon	Ikaluktutiak
2	polygon	Uqsuqtuuk
3	polygon	Mittimatalik
4	polygon	Qikiqtarjuaq