WEATHER & SOCIETY

Online Workshop
(Focus on Inuit Nunangat)

MARCH 8-10
2022
1 - 4 PM EST
We are grateful to the presenters and all supporting organizations for volunteering their time, sharing their work, and discussing experiences.

Organization and facilitation of this workshop is supported by StraightUpNorth team members:

Natalie Carter, Emmelie Paquette, Alison Perrin, Charlotte Buttle, Jason Carpenter, Regena Sinclair, Breanna Bishop, Alexis Polidoro, Stuart Anderson & McMaster Faculty of Science Technical Support

Workshop Organizer: Gita Ljubicic
McMaster University
ertia.ljubicic@mcmaster.ca

Photos by: Gita Ljubicic
This gathering brings together community members, northern/Inuit organizations, researchers, and service providers. The goal is to learn from diverse experiences, and develop new connections, to tailor environmental services to better meet Inuit community needs.

**WORKSHOP OVERVIEW**

**CONNECTING ZOOM LINKS AND TECH SUPPORT** p. 2

**DAY 1**
**TUESDAY MARCH 8**
User Needs & Community Services
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**DAY 2**
**WEDNESDAY MARCH 9**
Service Providers & Efforts to Tailor Services
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**DAY 3**
**THURSDAY MARCH 10**
Opportunities for Training, Monitoring & Funding
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**RESOURCE LINKS FUNDING OPPORTUNITIES** p. 11
Connecting

1) Check that you have the latest version of Zoom installed (Version 5.9.X)
   Click here to download the Zoom app or web extension.

2) NOTE that all times are in Eastern Standard Time (EST).
   Join the Zoom meeting online (with your computer, tablet, or phone):
   https://mcmaster.zoom.us/j/99436610579?pwd=eVBYaEk4ZnVaSGwwWU9qU2IzNzRRUT09
   OR
   Join the Zoom meeting by phone (audio only):
   One tap mobile: +16132093054,,99436610579#,,,,*805871#
   Dial by your location: +1 587 328 1099, +1 613 209 3054,
                        +1 647 374 4685, +1 778 907 2071,
                        +1 204 272 7920, +1 438 809 7799

3) If possible, have another web browser open on your computer, or have another device handy (tablet or smart phone). We will be using the website www.menti.com as another way for participants to share ideas, ask questions, and provide feedback.

For technical support during the workshop contact:

Stuart Anderson
anders36@mcmaster.ca
(416) 805-0620
**Day 1**
**TUESDAY, MARCH 8, 2022**

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<th>Activity</th>
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<td>1:00-1:30 EST</td>
<td>Welcome, introductions, overview of the day</td>
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<td>1:30-1:50</td>
<td><strong>Presentations</strong></td>
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<td>Nunavummiut uses and needs for weather, water, ice and climate information</td>
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<td>Natalie Carter and Kukik Baker</td>
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<td>Weather and ice on SIKU: Services and tools</td>
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<td>Becky Segal and Andrew Arreak</td>
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<td>1:50-2:30</td>
<td><strong>Breakout 1</strong></td>
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<td>• Brief roundtable introductions including interest in the workshop</td>
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<td>• Main concerns for safe travel in the communities where you live or work</td>
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<td>• Environmental conditions that most affect local travel decisions</td>
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<td>• Sources of environmental information relied on to make decisions</td>
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<td>2:20-2:35</td>
<td><strong>Break</strong></td>
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<td>2:45-3:05</td>
<td><strong>Presentations</strong></td>
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<td>SmartICE real-time monitoring and mapping - Sikumik Qaujimajjuti</td>
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<td>Andrew Arreak, Leanne Beaulieu, Rex Holwell, Lynn Moorman, Becky Segal, and Katherine Wilson</td>
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<td>Harvest and environmental monitoring with InReach</td>
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<td>Brent Puqiqnak, John Bryan Idlout, Stephan Schott, and Emmelie Paquette</td>
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<td>3:05-3:45</td>
<td><strong>Breakout 2</strong></td>
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<td>• Programs/projects in your community or region that you want to share about</td>
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<td>• Programs/projects of interest to apply/adapt to community or regional needs</td>
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<td>• Programs/projects of interest to inform service development</td>
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<td>3:45-4:00</td>
<td><strong>Wrap Up</strong></td>
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Day 2
WEDNESDAY, MARCH 9, 2022

1:00-1:15 EST Welcome, overview of the day

1:15-1:35 Presentations

Understanding and responding to changing sea ice and weather conditions in northern communities
David Atkinson, Armel Castellan, and Adrienne Tivy

C-CORE’s Floe Edge Monitoring Service
John Bennett

1:35-2:20 Breakout 1

- Brief roundtable introductions including roles in supporting the monitoring and distribution of weather, water, ice, and climate (WWIC) information
- Barriers faced as an individual and/or organization in fulfilling this role

2:20-2:35 Break

2:35-2:55 Presentations

A community weather station network in Cambridge Bay, Nunavut
Brent Else

The Meteorological Service of Canada: Review of products and services with a focus on the North
Kristine Confalone, Sara Hoffman, and Tom Zagon

2:55-3:45 Breakout 2

- Community challenges faced when trying to access and interpret online products
- Service provider limitations faced in trying to respond to diverse community needs
- Addressing challenges and limitations to better meet community needs

3:45-4:00 Wrap Up
Day 3
THURSDAY, MARCH 10, 2022

1:00-1:15 EST  Welcome, overview of the day

1:15-1:35  Presentations
Getting more from Windy.com and other weather apps
Rick Thoman

1:35-2:20  Breakout 1
Choose your breakout group.
Choose one of the three breakout groups described below.

Training
- Facilitated by SmartICE
- Training ideas to meet community needs

Monitoring
- Facilitated by weather station developers and ECCC
- Monitoring and forecasting ideas to meet community needs

Funding
- Facilitated by CIRNAC
- Funding ideas and opportunities for community-based monitoring and climate change projects

2:20-2:35  Break

2:35-2:55  Presentations
Environmental monitoring with Cryologger weather stations
Derek Mueller and Adam Garbo

SIKU and Indigenous-led research and monitoring projects
Christina Macdonald

2:55-3:45  Breakout 2
Choose your breakout group.
You can stay in the same group as you chose for Breakout 1, or choose another one of the groups described above.

3:45-4:00  Wrap Up
Nunavummiut uses and needs for weather, water, ice and climate information

Natalie Carter  
(McMaster University, Hamilton, ON)  
Kukik Baker  
(Aqqiumavvik Society, Arviat, NU)

Our research team brings together several long-term partnerships between Inuit, northern, and southern researchers. The goal of our project is to help improve weather, water, ice and climate information that is available, and how it is communicated in northern communities. We will present some initial results from surveys conducted in Arviat, Gjoa Haven, Iqaluit, Pond Inlet, and Sanikiluaq. We will provide an overview of what we learned from Nunavummiut about the types of sources they rely on to make travel decisions, how information is accessed, challenges with using available information, and training needs.

Weather and ice on SIKU: Services and tools

Becky Segal  
(Arctic Eider Society and SmartICE, Courtenay, BC)  
Andrew Arreak  
(SmartICE, Mittimatalik, NU)

This presentation will provide an overview of the weather and ice tools and services available on SIKU: The Indigenous Knowledge Social Network. Services include: satellite imagery, SIKU Ice Map, SmartICE data, Ice Posts, Ice Watch, ice terminology, weather stations, traditional place names, and more.
In Gjoa Haven, Nunavut a fishery and food security study led to the collaborative development of a harvest study involving the Gjoa Haven Hunters and Trappers Association (HTA) and researchers at Carleton University. Monitoring applications were specifically designed for use with InReach satellite tracking devices. The project helped to establish direct links with the local Search and Rescue Committee, and several lives were saved because of the real-time tracking of hunter travel and emergency communications with InReach. Harvesters recorded their observations of environmental (marine and weather) conditions and hazards according to what is considered safe, reliable, and cost-effective for sea ice travel. The harvest study will continue for three more years in Gjoa Haven, and a pilot study will start in Taloyoak in 2022. The project extension will enhance connections between the two communities, focusing on biomonitoring, fishery observations, ice and weather conditions, as well as local data stewardship.

**SmartICE real-time monitoring and mapping - Sikumik Qaujimajjuti**

**Andrew Arreak**  
(SmartICE, Mittimatalik, NU)  
**Leanne Beaulieu**  
(SmartICE, Gjoa Haven, NU)  
**Rex Holwell**  
(SmartICE, Nain, NL)  
**Lynn Moorman**  
(SmartICE and Mount Royal University, Calgary, AB)  
**Becky Segal**  
(Arctic Eider Society and SmartICE, Courtenay, BC)  
**Katherine Wilson**  
(SmartICE, Ottawa, ON)

SmartICE staff in Gjoa Haven, Mittimatalik, and Nain are creating near-real time maps of sea ice conditions, in areas of interest to their communities. Ice is described in a manner useful to travelers, using local terminology and sea ice IQ. Our team has co-developed a training program and method to integrate previously documented sea ice IQ and near real time interpretation of radar and optical imagery into safety maps which are distributed to the community weekly. This presentation will include an introduction to the sea ice IQ data collection, integration of this knowledge into the maps, and a demonstration of the remote sensing interpretation and mapping process with ArcGIS Pro.

**Harvest and environmental monitoring with InReach**

**Brent Puqiqnak**  
(Hunters and Trappers Association, Gjoa Haven, NU)  
**John Bryan Idlout**  
(Hunters and Trappers Association, Taloyoak, NU)  
**Stephan Schott** and **Emmelie Paquette**  
(Carleton University, Ottawa, ON)
Since 2005, C-CORE’s Floe Edge Monitoring Service has provided near real-time sea ice imagery and information to Canadian Arctic communities using an online delivery system. The service allows users to access land fast ice products in a timely manner. Through Defence Research and Development Canada’s funding, C-CORE is updating this service to expand our coverage to include all coastal communities in the Canadian Arctic. We aim to improve our overall product suite to provide northern communities with technology-based, innovative tools to help adapt to the consequences of climate change. The updated Floe Edge Monitoring Service will maximize the safety and efficiency of travel on the ice by allowing users to select the shortest route around hazards and minimize travel time, fuel costs, and equipment wear. An expansion such as this requires community consultation, interaction as well as observations.

We will present an overview of work in the Western Arctic to identify and respond to Indigenous people’s needs for weather and ice information. The work is in direct response to community requests for better sea ice information, training on how to use information that is currently available on the internet, and development of a working relationship with federal weather and ice forecasting services to co-develop new products. We will provide a few examples from the Meteorological Service of Canada’s (MSC) response to specific requests in the Inuvialuit communities of Sachs Harbour, Ulukhaktok and Tuktoyaktuk. We will describe the establishment and use of a closed Facebook group page: Hilaakput. Participants in Hilaakput are elected by their community as a representative and are responsible for requesting information from the MSC to assist hunting activities. Hilaakput helps the the MSC to respond directly to requests and provide ongoing forecasts on problematic weather events. The Hilaakput group is also used by community representatives to distributing information in their home community as well as report feedback to the MSC.

C-CORE’s Floe Edge Monitoring Service

John Bennett
(C-CORE, Ottawa, ON)
This presentation will provide an overview of three weather stations that have been set up near Cambridge Bay, NU (30 Mile, Melbourne Island, and Qikiqtarjuaq Island). These stations send weather information to the internet every hour, and are available to the community through a project website as well as on SIKU.

The Meteorological Service of Canada: Review of products and services with a focus on the North

Kristine Confalone (Monitoring and Data Services, MSC/ECCC, Toronto, ON)
Sara Hoffman (Edmonton Weather Office, MSC/ECCC, Edmonton, AB)
Tom Zagon (Canadian Ice Service, MSC/ECCC Ottawa, ON)

The Meteorological Service of Canada (MSC) is a branch of Environment and Climate Change Canada (ECCC). The MSC maintains a Canada-wide observation network that monitors air, water and ice. The MSC is the government department responsible for providing warnings of severe weather, public weather forecasts, aviation forecasts, and sea ice charts and forecasts. In this presentation we will provide a quick overview of MSC networks, products and services, focusing on the North.
In the past decade many non-governmental providers of weather computer models have appeared on the Internet, ranging from simple smartphone apps to sophisticated technical information targeted toward professional meteorologists. A few of these private vendors have garnered a significant user base in the Arctic and beyond. This presentation will provide some background on the opportunities and limitations of popular weather apps such as Windy.com. The goal of this presentation is to help the general user better understand what information is being provided, so they can in turn make more informed decisions with the help of these information sources.

The Cryologger weather station (https://cryologger.org/) uses low-cost, open-source hardware and software to provide a robust, cost-effective and user-friendly platform for the collection of long-term weather measurements in real time. Carleton University has recently partnered with the Municipality of Igloolik to establish a weather station monitoring network that will help inform travel safety decisions and can be easily deployed and maintained. Community members will determine weather station locations and how travel safety information will be displayed. We will train local technicians to maintain these stations and hope that others in Nunavut and beyond can deploy their own Cryologger weather monitoring networks to better understand and adapt to the changing climate in their communities.

This presentation will provide an overview of how to set up a project in SIKU: The Indigenous Knowledge Social Network, including data privacy and stewardship settings. Examples of how organizations and communities in the north are using SIKU to support their projects will be shared, along with information about how the Arctic Eider Society (AES) and SIKU can support your community climate action projects.
Resources

- **Alaska Center for Climate Assessment and Policy**
- **Aqqiumavvik Society**
  - Ujjiqsuinig Young Hunters Program
- **Arctic Eider Society**
  - SIKU: The Indigenous knowledge social network
- **C-CORE**
  - Polar View Floe Edge Service
- **Community weather station network in Cambridge Bay, NU**
  - Outreach video
- **Cryologger weather station**
  - Water and Ice Research Laboratory
  - Automatic Weather Station Github
- **Environment and Climate Change Canada**
  - Meteorological Service of Canada
  - Canadian Ice Service
  - Canada Centre for Climate Services
- **Indigenous Climate Monitoring Toolkit**
- **Ittaq Heritage and Research Centre**
  - Clyde River Weather Network
- **Polar Prediction Project**
- **SmartICE**
- **StraightUpNorth Research**
  - Understanding Inuit Community Uses and Needs for Weather, Water, Ice, and Climate Information and Services

Funding Opportunities

**CIRNAC Climate Change Preparedness in the North Program**

**Environment and Climate Change Canada Indigenous Partnerships**

**Indigenous Climate Monitoring toolkit**
(Sustainability and Funding)

**Indigenous Climate Hub**
Thank you for participating!

We would appreciate hearing your feedback

To send comments or questions please email Natalie Carter