# ∖ԵՐ⊃◀∿,ჲლბ<sup>©</sup> SANIKILUAQ, NUNAVUT







∩7<sup>L</sup>Λ<sub>↑</sub> 2023 DECEMBER 2023  $CC^{9}$ לאלא שברים אליס של באיט בישט אליס של בישט אליס

Results of a community survey on environmental forecasting uses and needs

Loce o יb>>'יססי bליחיי>:

Local RESEARCH COORDINATOR:

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JULIA MICKIYUK

באיחואלי: סאפסגטאלי: Full Inuktitut/English bilingual report will be فدر b), نعام >د٠, available in February 2024 at: أر ع١٠٠، ١٥٠ ١ ٩٠ مع. https://straightupnorth.ca/community-wwic-DALC <PAG uses-and-needs/ REPORT PREPARED BY: NATALIE CARTER, CHARLOTTE BUTTLE, GITA LJUBICIC, REGENA SINCLAIR, EMMELIE PAQUETTE Sanikilarmiut Participated  $4^{c}$ Photo: Gita Ljubicic



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Crown-Indigenous Relations and Northern Affairs Canada







Environment and Climate Change Canada





















We wish to acknowledge the 27 **Sanikiluarmiut** who participated in this survey between September and December 2021. Thanks to everyone for their time and sharing their experiences.

Charlie Kudluarok
Davidee Kowcharlie
Eli Kavik
Emily Kattuk
Jack Uppik
Johnny Takatak
Josie Amituk
Lucassie Arragutainaq
Lucy Appaqaq
Niviasia Iqaluq
Samwillie Amagualik
Simieonie Uppik

And 15 Sanikiluarmiut who asked to remain anonymous.

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Crown-Indigenous Relations and Northern Affairs Canada







Environment and Climate Change Canada

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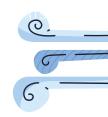




Environment and Climate Change Canada



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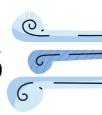
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Photo: Arctic Eider Society

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### **ABOUT THIS PROJECT**

Our research team includes Inuit, northern, and southern researchers who have worked together for many years in Nunavut communities. Over the years we have heard from Nunavummiut (people of Nunavut) that services providing information on weather, water, and ice conditions are not easy to use, access, or understand. We have also heard that the information is not always accurate for local conditions. This, along with increasingly unpredictable weather, and changing sea ice conditions, has made it harder and riskier for Nunavummiut to hunt and travel safely. We developed this project to learn how Nunavummiut are using environmental information to make decisions about safe travel on the land (including water and ice).

Our goal is to help improve the information that is available, and how it is communicated in northern communities. To accomplish this goal, we created a survey to get feedback from communities across Nunavut. Survey questions were developed together with input from all team members, as well as from environmental service providers, Inuit organizations, and northern governments and research organizations.

We work together according to the <u>Aajiiqatigingniq research framework</u>,

outlined by the Aqqiumavvik Society working with Elders from across Nunavut. This framework guides how we make decisions, and build consensus on our research approach and results. Surveys were facilitated by Local Research Coordinators working in their home communities. We also worked together in two collaborative analysis workshops to interpret survey results and decide on key messages for service providers and for Nunavut communities.

Ultimately, we hope that the results of this project will help service providers and decision-makers make their information more relevant and accurate for Nunavummiut, in support of safe travel.



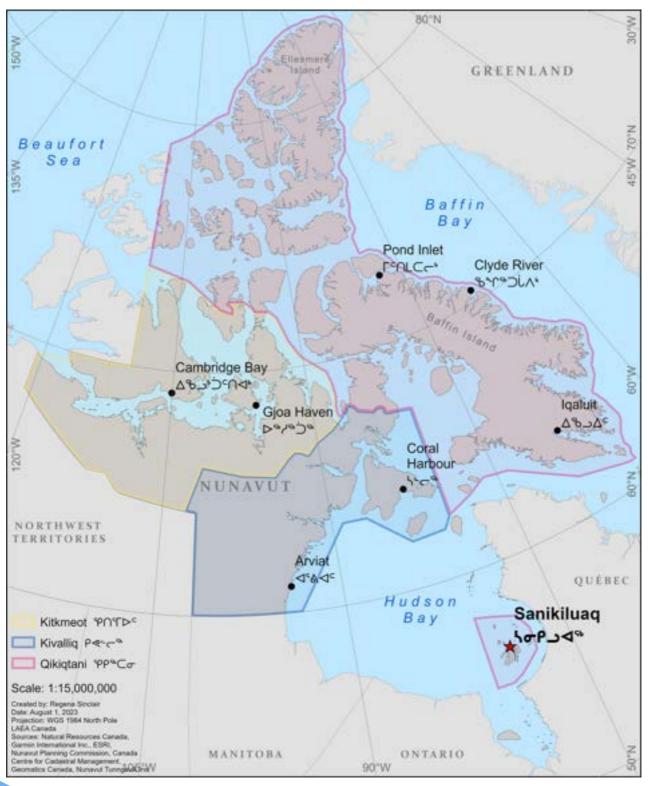
Collaborative analysis workshop in Arviat, Nunavut (October 2021, photo: Gita Ljubicic)

### **PARTNER COMMUNITIES**

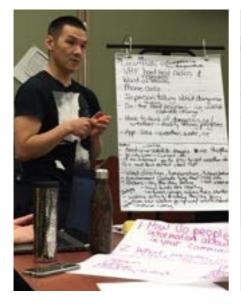
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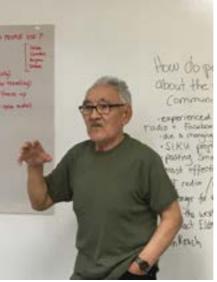
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Our project involved 8 communities in Nunavut: Arviat, Cambridge Bay, Clyde River, Coral Harbour, Gjoa Haven, Iqaluit, Pond Inlet, and Sanikiluaq.















Photos: Natalie Carter and Gita Ljubicic

Training and collaborative analysis workshops with Local Research Coordinators, Elder mentors, and project partners between October 2019 and December 2022.

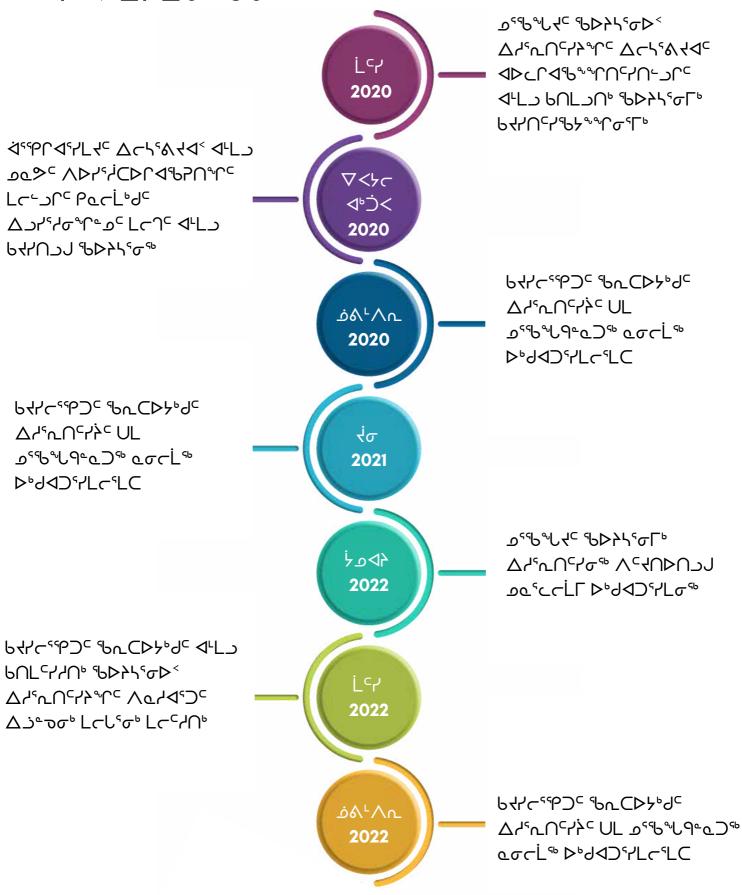
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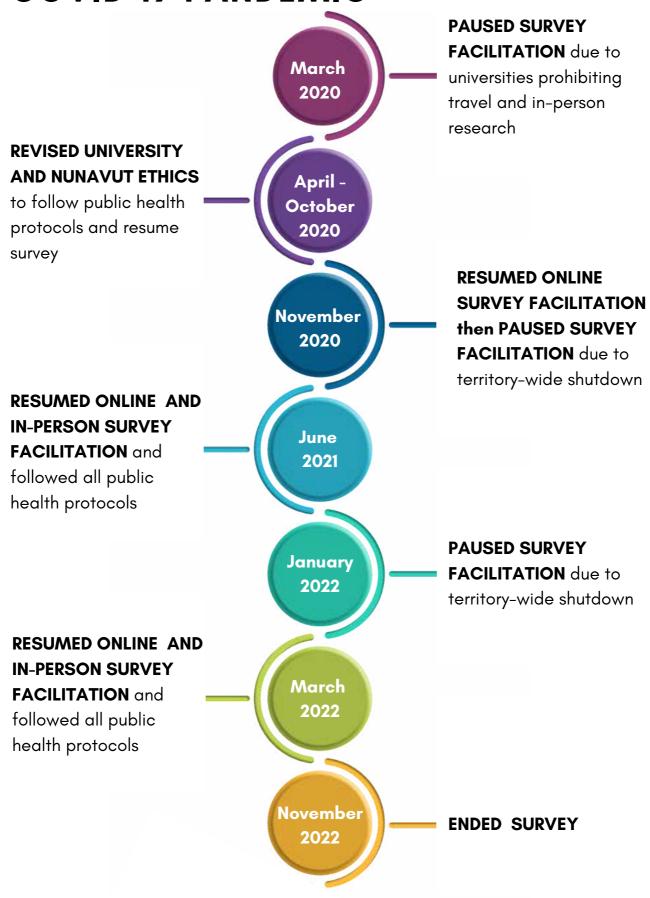
# KEY PROJECT ACTIVITIES (2018 - 2022)

Timeline	Activities
December 2018	<ul> <li>collaborative project planning meeting at ArcticNet conference in Ottawa, Ontario</li> </ul>
January – November 2019	<ul> <li>collaborative survey development (involving our project proposal team, Local Research Coordinators, and a number of external reviewers)</li> <li>this led to survey questions, wording, and options that were much more clear, relevant, and accessible for Nunavummiut</li> <li>it also means results can be more meaningful and impactful to researchers, northerners, and policymakers</li> </ul>
October – November 2019	<ul> <li>training sessions with Local Research Coordinators near Montreal, Quebec and in Iqaluit, Nunavut</li> </ul>
December 2019 - March 2020	<ul> <li>Local Research Coordinators facilitated surveys in their home communities</li> </ul>
March 2020	<ul> <li>surveys put on hold due to the COVID-19 pandemic (see page 4. for more details)</li> <li>we started working together on a plan for how to safely continue the project</li> </ul>
June 2021	<ul> <li>Local Research Coordinators restarted survey facilitation</li> <li>this could only happen after public health and research license/ethics restrictions allowed it, and with local community organizations' support</li> <li>Local Research Coordinators also followed up with some earlier participants to clarify answers</li> </ul>
October 2021	• collaborative analysis workshop in Arviat, Nunavut
November 2022	Local Research Coordinators stopped facilitating surveys in their home communities
December 2022	<ul> <li>collaborative analysis workshop in Paris, Ontario,</li> <li>presentations of refined results at ArcticNet conference in Toronto, Ontario</li> </ul>

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# SURVEY TIMELINE DURING THE COVID-19 PANDEMIC



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To access a Nunavut-wide report, and other community reports, please visit:

https://straightupnorth.ca/community-wwic-uses-and-needs/



# SURVEY FACILITATION BY LOCAL RESEARCH COORDINATORS

In total, 19 Local Research Coordinators were involved in the project, and they completed 360 surveys across 8 communities in Nunavut.

Local Research Coordinators invited community members to participate based on certain criteria. Specifically, we wanted to learn about uses and needs of weather, water, ice, and climate information and services from community members who were actively travelling on the land (including water and ice) in the last three years (since 2017). This included men and women of all ages and experience levels, and they could be experienced hunters, seasonal travellers, or people who just like to get out on the land.

Local Research Coordinators facilitated the surveys in English or Inuktut based on participant preference. They used Qualtrics survey software to enter responses on iPads. They facilitated the survey in a community office or in participants' homes, based on individual comfort level. Some participants did the survey on their own using an online survey link, when COVID-19 pandemic public health restrictions prevented in-person surveys. Participants were compensated for their time. We obtained research ethics and license approvals before we started the survey.

For this report, we present the results based on survey answers from a total of 27 Sanikiluarmiut = 100%.



For more information about this report and the larger study please contact:

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Natalie Carter, McMaster University, carten7emcmaster.ca

Gita Ljubicic, McMaster University, gita.ljubicic@mcmaster.ca

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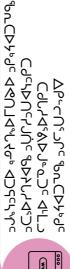
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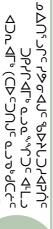
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# KEY MESSAGES FOR SERVICE PROVIDERS

workshops, Local Research Coordinators developed At the 2021 and 2022 collaborative analysis twelve key messages tor service providers:

that is specific to communities Provide more tide information





ease of interpretation Create colour-coded visuals for

online environmental products Reduce number of pages and sites to go to when accessing



Need more weather stations in key hunting areas

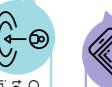


SERVICE XEY



information (update more often) Need more real time weather

**MESSAGES FOR PROVIDERS** 



Faster and more affordable internet InReach/SPOT subscriptions) (address cost and subsidize northern



Expand support for community

programs and leadership

term forecast and more detailed wind information), leads to trust in products Continue to work on accuracy (short

Create forecast products that are easy to interpret and use (colour coded visuals)





services and programs Increase awareness of local

Increase the number of VHF repeaters and cell towers (address calling for help)





Make ice charts and satellite for tutorials) images simpler to use (add links

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### **KEY MESSAGES FOR COMMUNITIES**

At the 2022 collaborative analysis workshop, Local Research Coordinators developed seven key messages for community organizations:



# UNDERSTANDING THE NUMBERS IN THIS REPORT

### **PARTICIPANTS**

Participants = everyone (all 27 people) who did this survey in Sanikiluaq

### RESPONDENTS

### Respondents = only the participants who answered follow-up questions

There are some questions in the survey that not everyone answered. Participants who answered "no" to a question would skip to the next section. But participants who answered "yes" to the same question would be asked some *related follow-up questions*. When we show the results to follow-up questions, we call this group of participants "**respondents**", because they were the ones who answered the question.

### Respondents = only the participants who completed maps

Some participants did not complete travel maps (due to technical issues and other reasons). When we show the maps, we call this group of participants "**respondents**", because they were the ones who completed maps.

In this example from p. 20, 63% of the participants said "yes I can call for help if I get stranded on the land".

### **CONTACTING OTHERS FOR HELP**



If Sanikiluarmiut *participants* get stranded or have an accident on the land, 63% (out of a total of 27) can call for help.

Of the 17 *respondents* who can call for help, most would call a **family** member (83%), or **local search and rescue** (47%), and some would call a **friend** (35%) for help.

Only the participants who said "Yes, I can call for help", were asked the follow-up question, "Who, can you call for help?" This smaller group of participants who answered the follow-up question are called **respondents**. So the percent shown for respondents are out of the total who answered the question, and not the total of participants.

# UNDERSTANDING THE NUMBERS IN THIS REPORT

### **PERCENT**

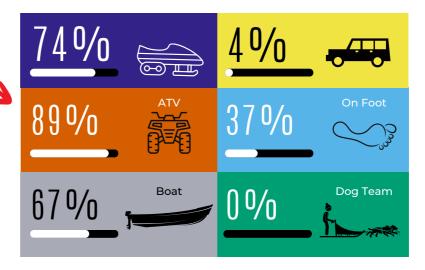
### 100% = all 27 participants

Most of the survey results in this report are shown as % (percent) where 100% means all 27 participants in Sanikluaq who completed the survey.

Sometimes participants could choose more than one answer, so totals in some figures don't add to 100%.

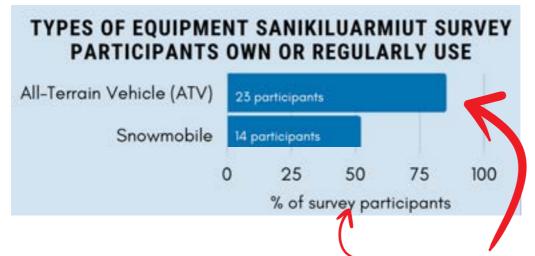
In this example **from p. 12**, participants could choose more than one method of transportation.

# METHODS OF TRANSPORTATION SURVEY PARTICIPANTS USE TO TRAVEL ON THE LAND



### **COUNTS**

Count = the number of participants giving that answer



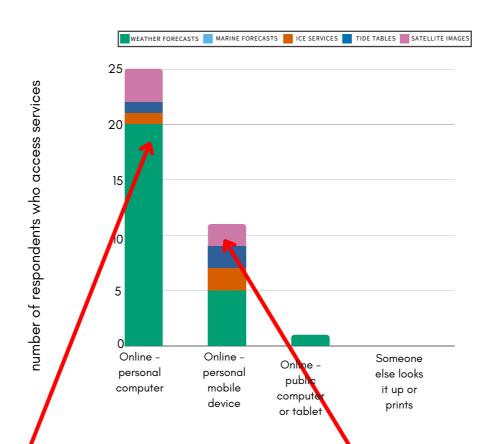
Some of the charts show the results in percent and the **count** (actual number) of participants who gave that answer. In this example **from p. 11**, ATVs are owned or regularly used by 85% of participants (23 participants).

# UNDERSTANDING THE NUMBERS IN THIS REPORT (CONTINUED)

### **RESPONDENTS**

Respondents = only the participants who use forecasting products

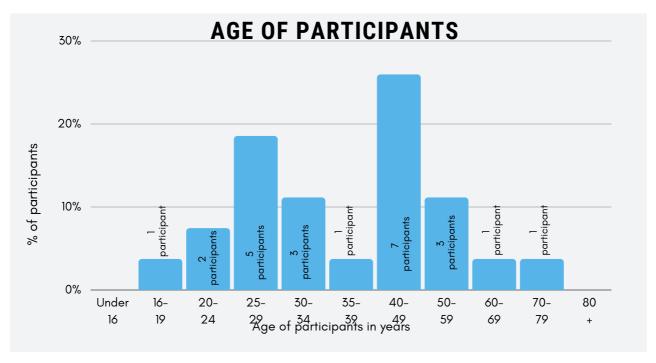
# WAYS THAT SANIKILUARMIUT RESPONDENTS ACCESS POLAR SERVICES



Some participants did not use every type of environmental forecasting information (i.e. weather forecasts, marine forecasts, ice services, tide tables, satellite images).

In this example from **p. 28**, of the respondents who access weather forecasts, 20 of them go on online using a personal computer to access weather forecasts. Of the respondents who access satellite images, 2 of them access satellite images online using a personal mobile device.

## SANIKILUARMIUT SURVEY PARTICIPANT DEMOGRAPHICS



Survey participants ranged in age from 16 to 79 years, with the highest proportion (19%) being between 40-49 years old. No one under the age of 16 or 80 years and older, participated in the survey.

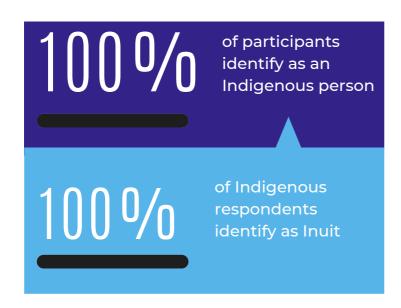


30% of participants identify as female



70% of participants identify as male

Some participants identify as female (30%), and most identify as male (70%).



All participants identify as an Indigenous person, and as Inuit.

# SANIKILUARMIUT PARTICIPANT DEMOGRAPHICS (CONTINUED)

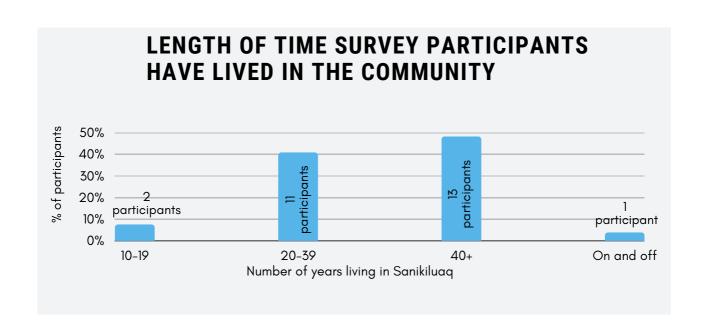


Participants were asked about which languages they speak.

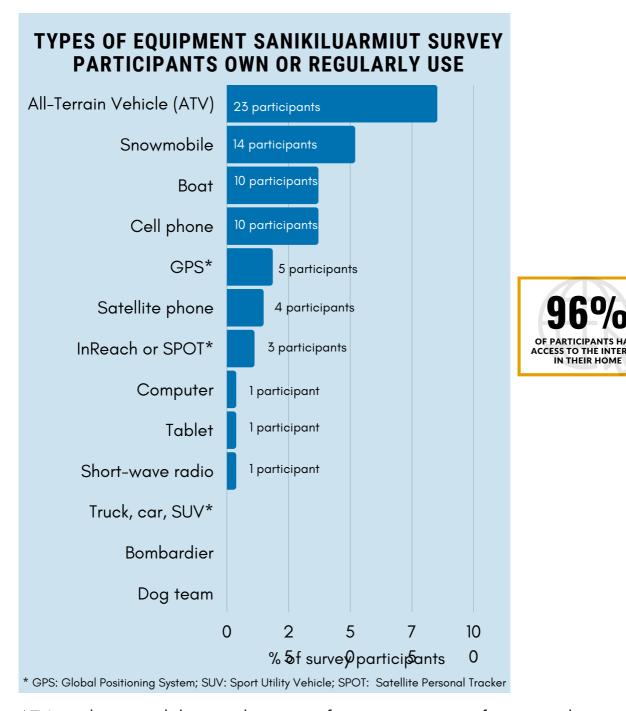
All participants speak English and Inuktitut.

It is important to understand how long participants have lived in Sanikiluaq as this relates to (although does not necessarily determine) how much experience they have with travel on the land, water, or ice.

Most participants (89%) have lived in Sanikiluaq for 20 or more years.



### TRAVEL EQUIPMENT

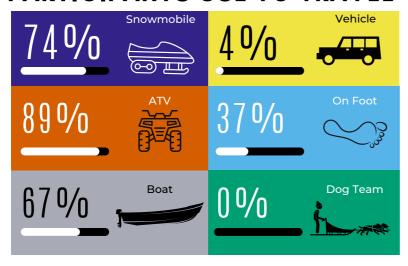


ATVs and snowmobiles are the types of equipment most often owned or regularly used by participants, followed by boats, and cell phones.

Most (96%) participants have access to the internet in their home. This is important to know because it affects what kinds of environmental forecast information they might be able to access.

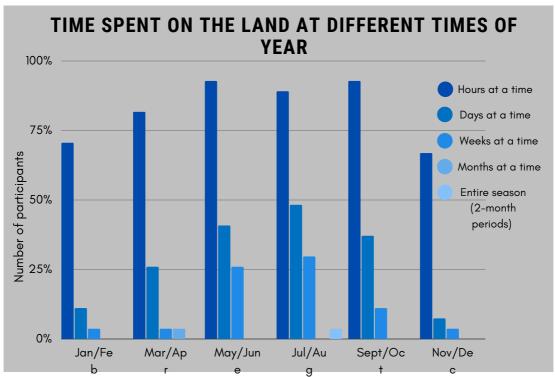
### TRAVEL HABITS

# METHODS OF TRANSPORTATION SURVEY PARTICIPANTS USE TO TRAVEL ON THE LAND



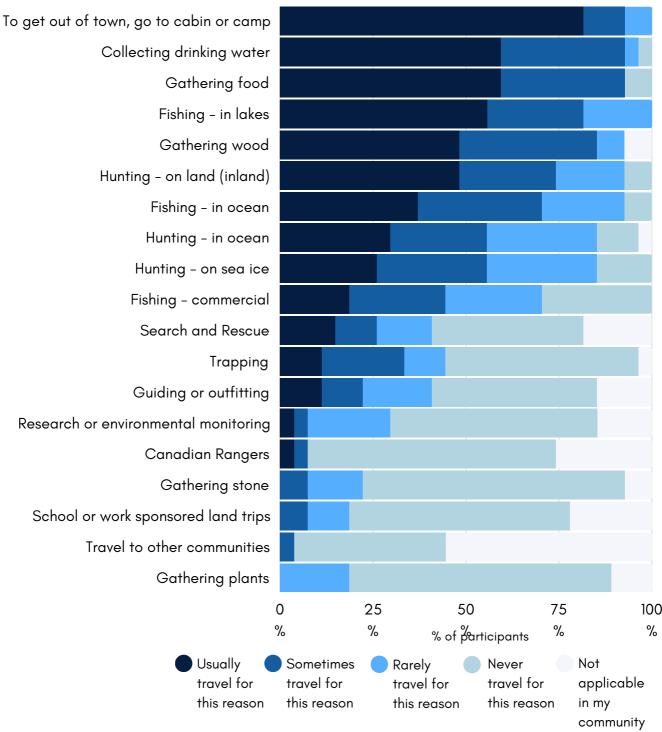
When survey participants travel on the land, ATV is the most common method of transportation used, followed by snowmobile, and boat. Participants also travel on foot, and by vehicle.

Survey participants use different types of transportation at different times of year. ATVs are used all through the year. Snowmobiles are used from November through June. Boats are used from May through October.



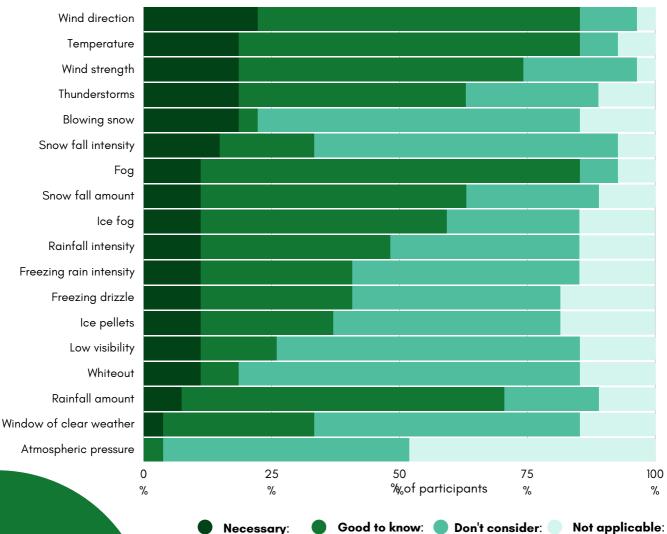
In different times of year, survey participants spend different lengths of time on the land. Most commonly, participants are on the land for hours or days at a time. In May through August many participants are on the land for weeks at a time. Some travel for longer periods of time.

# TRAVEL HABITS REASONS SANIKILUARMIUT PARTICIPANTS USUALLY TRAVEL ON THE LAND



Survey participants travel on the land, water, and ice for many reasons. Most often they travel to get out of town/go to a cabin or camp, collect drinking water, gather food, and fish in lakes and rivers.

# WEATHER CONDITIONS SANIKILUARMIUT PARTICIPANTS **CHECK BEFORE THEY TRAVEL**



I would not

travel without knowing about this condition

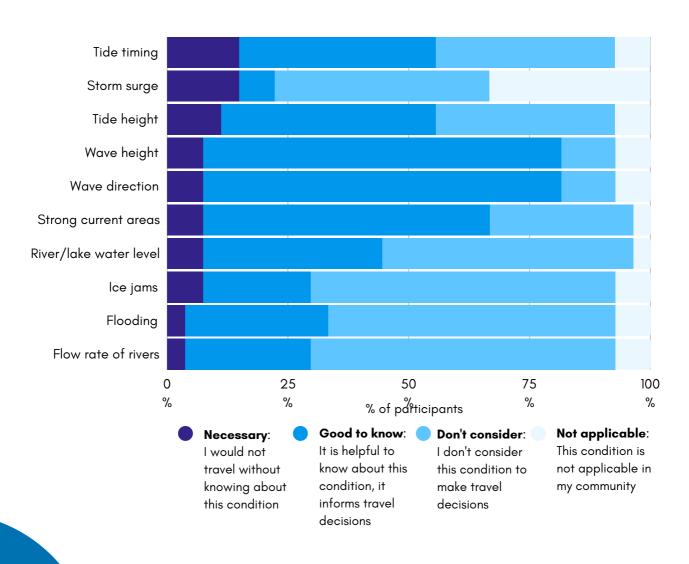
It is helpful to know about this condition, it informs travel decisions

I don't consider this condition to make travel decisions

This condition is not applicable in my community

Sanikiluarmiut participants check many types of weather conditions before they travel on the land, water, sea ice, and snow. Wind direction, temperature, wind strength, thunderstorms, and blowing snow are the weather conditions most commonly considered necessary to check before travelling.

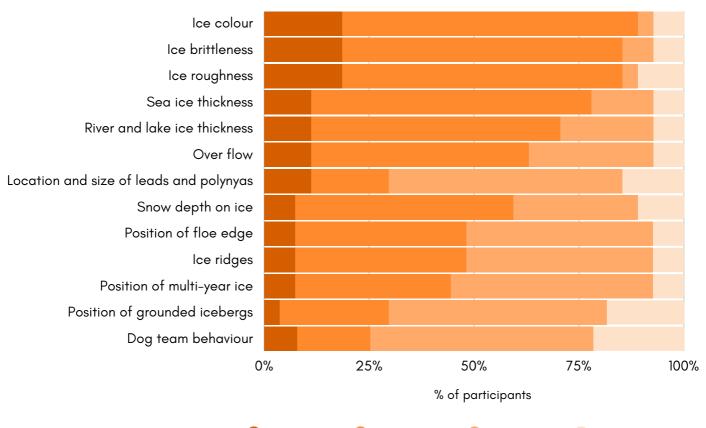
# WATER CONDITIONS SANIKILUARMIUT PARTICIPANTS CHECK BEFORE THEY TRAVEL



WATER

Sanikiluarmiut participants check many types of water conditions before they travel on the land. Tide timing, storm surge, and tide height are the water conditions most commonly considered necessary to check before travelling.

# ICE CONDITIONS SANIKILUARMIUT PARTICIPANTS CHECK BEFORE THEY TRAVEL



Necessary:
I would not
travel without
knowing about

this condition

Good to know:

It is helpful to know about this condition, it informs travel

decisions

Don't consider:

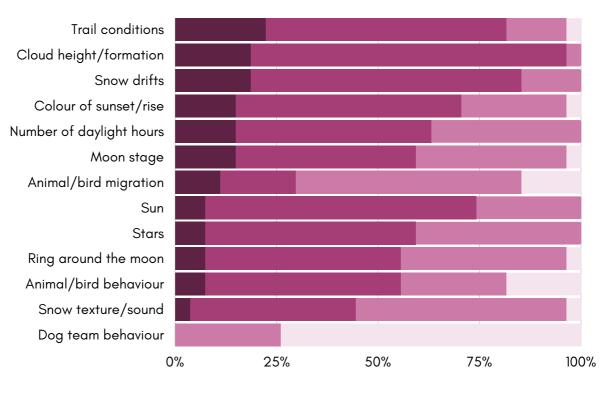
I don't consider
this condition to
make travel
decisions

Not applicable: This condition is not applicable in my community



Sanikiluarmiut participants check many types of ice conditions before they travel on the land. Ice colour, ice brittleness, and ice roughness are the ice conditions most commonly considered necessary to check before travelling.

# OTHER ENVIRONMENTAL **CONDITIONS SANIKILUARMIUT** PARTICIPANTS CHECK BEFORE THEY TRAVEL



% of participants

**Necessary**: I would not travel without knowing about this condition

It is helpful to know about this condition, it informs travel decisions

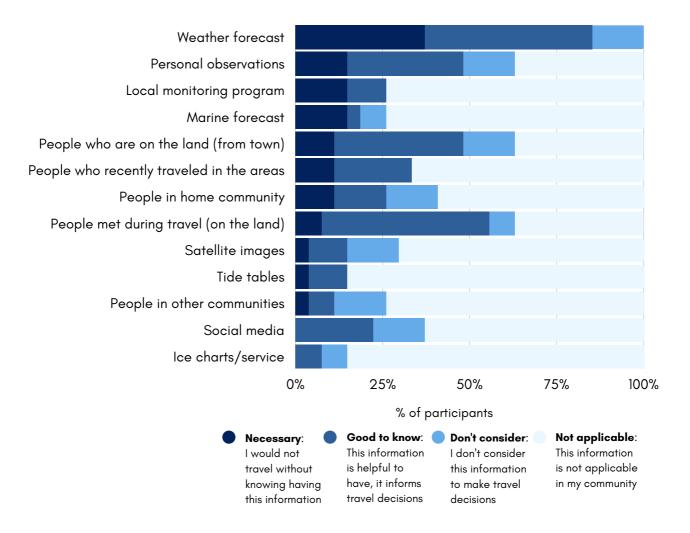
Good to know: Don't consider: I don't consider this condition to make travel decisions

Not applicable: This condition is not applicable in my community



Sanikiluarmiut participants check many other environmental conditions before they travel on the land. Trail conditions, cloud height/formation, and snow drifts are the other environmental conditions most often considered necessary to check before travelling.

# INFORMATION SOURCES SANIKILUARMIUT PARTICIPANTS USE WHEN PLANNING A TRIP

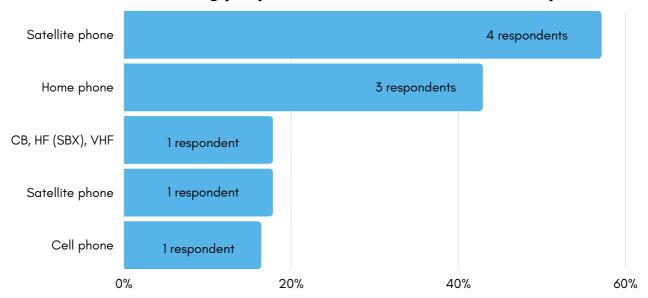


When planning a trip, Sanikiluarmiut participants access many sources of environmental information before they travel on the land. Weather forecast, personal observations, local monitoring program, and marine forecast are the information sources that participants most often consider necessary to check before travelling.

While on the land and when deciding to return home weather forecast, talking to people met during travel on the land, and talking to people who are on the land in the area participants are planning to travel to are the information sources that are used most by Sanikiluarmiut.

# CONTACTING COMMUNITY INFORMATION SOURCES

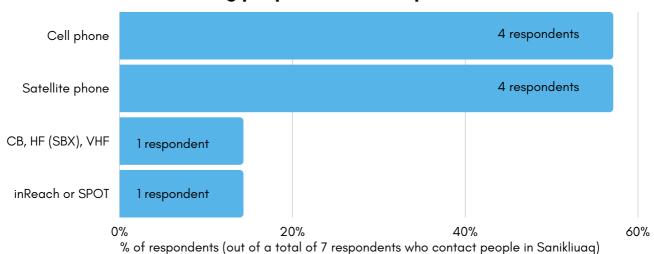
### Contacting people on the land while in Sanikiluaq



% of respondents (out of a total of 7 respondents who contact people on the land)

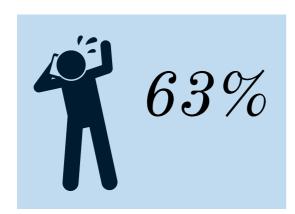
Respondents who contact people on the land to ask about environmental conditions while they themselves are in Sanikiluaq mostly use satellite phones and home phones to contact them.

### Contacting people in Sanikiluaq while on the land



Respondents who contact people in Sanikiluaq to ask about environmental conditions while they themselves are on the land mostly use cell phones or satellite phones.

### **CONTACTING OTHERS FOR HELP**

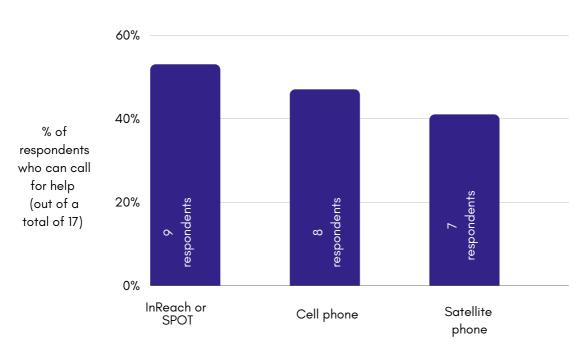


If Sanikiluarmiut participants get stranded or have an accident on the land, 63% (out of a total of 27) can call for help.

Of the 17 respondents who can call for help, most would call a **family member** (83%), or **local search and rescue** (47%), and some would call a **friend** (35%) for help.

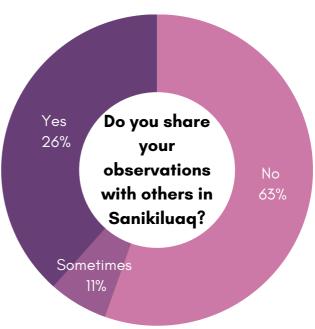
Of the 17 respondents who can call for help, most use an inReach or SPOT device (53%), cell phone (47%), or satellite phone (41%).

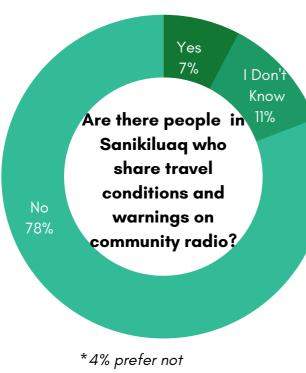
# TO CALL FOR HELP SANIKILUARMIUT RESPONDENTS USE ...



# SHARING OBSERVATIONS OF WEATHER, WATER, ICE, OR SNOW **CONDITIONS WITH OTHERS IN** SANIKILUAQ

Some (37%) of participants share their observations of weather, water, ice, or snow conditions with others in Sanikiluag.



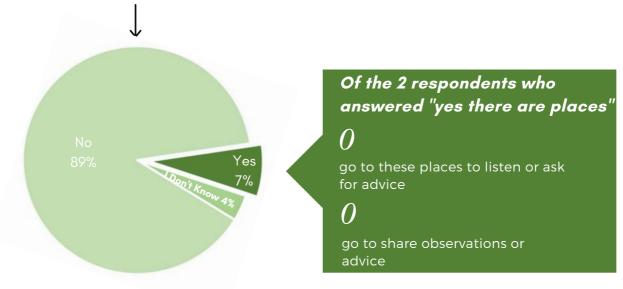


to answer

Most (78%) participants said there are not people regularly going on community radio in Sanikiluag, or CB/HF(SBX)/VHF radio, to share warnings or provide advice about weather, water, or ice conditions. A few (11%) participants did not know if people regularly go on community radio in Sanikiluaq, or CB/HF(SBX)/VHF radio, to share warnings or provide advice about weather, water, or ice conditions.

# GATHERING TO TALK ABOUT TRAVEL CONDITIONS WITH OTHERS IN SANIKILUAQ

Are there places in Sanikiluaq where people tend to meet and talk about recent travel conditions?



Most (89%) participants said there are not places in Sanikiluaq where people tend to meet and talk about recent travel conditions, or weather, water, ice and other environmental conditions. Of the 7% (2 participants) who said there are places where people meet, none of them go to those places to listen or ask for advice or to share observations or advice.

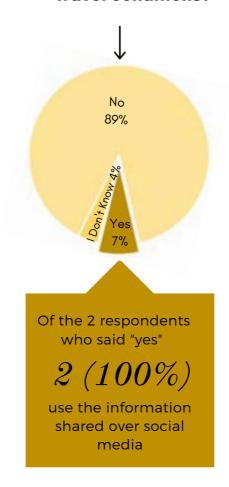
# PLACES SANIKILUARMIUT GATHER TO TALK ABOUT TRAVEL CONDITIONS

At home and in public



# SOCIAL MEDIA SANIKILUARMIUT USE TO SHARE TRAVEL CONDITIONS

# Do Sanikiluarmiut use social media to talk about travel conditions?



There were 2 Sanikiluarmiut participants who identified being aware of social media pages or groups where people share observations or advice about weather, water, and ice conditions mentioned using Facebook.

It is important to note that some respondents have their own knowledge of the weather, water, ice, and snow conditions so they do not check social media for this information.

# Commonly used social media

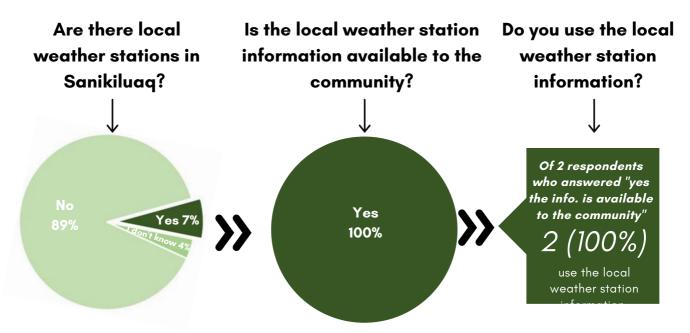
### Facebook

• Sanikiluaq Announcements

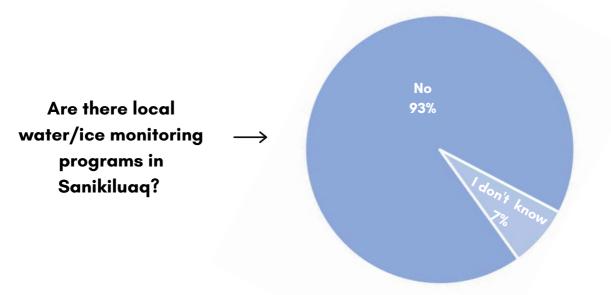
# Topics, descriptions, and photos include

- Environmental conditions
- Hunting stories
- Weather

### **COMMUNITY MONITORING PROGRAMS**

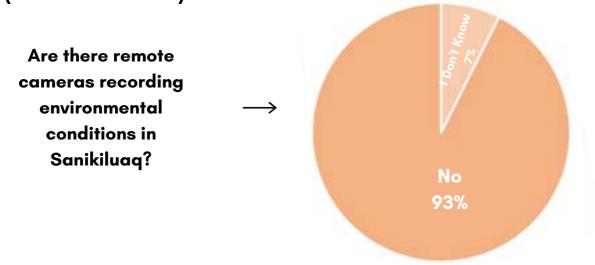


When asked about local weather stations, it is notable that 24 participants said that there are no local weather stations and 7 participants said that local weather stations do exist. Of the 7 participants who said there are local weather stations in Sanikiluaq, 2 of them said the weather station information is available in Sanikiluaq and both of them said that they use the information.



When asked about local water and ice monitoring programs 2 participants said that they do not know if there are local water and ice monitoring programs and 25 said that local water and ice monitoring programs do not exist.

COMMUNITY MONITORING PROGRAMS (CONTINUED)



**Remote cameras** are cameras placed in areas where a photographer cannot be at the camera to take photos. Remote cameras often have a self-timer built into the camera so photos can be taken at specific times. An example is a remote camera mounted somewhere near a floe edge, with a built-in timer that is set to take a photo at noon each day.

When asked about remote cameras, most participants said there are no remote cameras recording environmental conditions in Sanikiluaq, and a few said that they do not know if there are remote cameras. Arctic Eider Society is a partner on this project, and through them we know that University of Manitoba had a weather station up for one year until it did not work anymore. It had a camera, and while the weather information was available on the SIKU website, the live camera was not available at the time.

Artic Eider Society has used time lapse cameras in the past to document changes. That program does not produce live images; only later once they are retrieved, can the photos be shared. Only a few timelapse photos have been shared on SIKU in recent years, as that program was on hold during the COVID-19 pandemic. Arctic Eider Society hopes in future, to link live weather stations and web cameras.

SIKU is a local monitoring program, operating (and founded by Arctic Eider Society in) Sanikiluaq. However, survey responses suggest that community members are not widely aware of SIKU, or they did not associate SIKU with the way the questions were asked in the survey.

# PRODUCTS AND ACCESSING ENVIRONMENTAL FORECASTS

Along with community sources of information to decide if it is safe to travel, Sanikiluarmiut respondents use a wide range of weather and marine forecasts available. There may be other information sources available beyond those mentioned by respondents.

### **WEATHER** FORECAST PRODUCTS USED

- Environment Canada, Government of Canada (www.weather.gc.ca)
- Google
- Windy (www.windy.com)
- Weather Underground, Wundergound (www.wundergound.com)

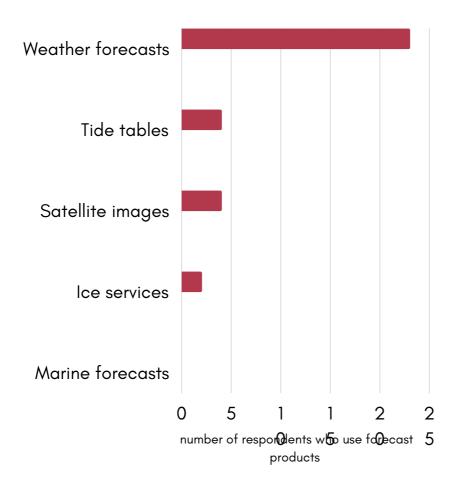
### ICE CHARTS/SERVICES USED

• Environment Canada, Government of Canada (www.weather.gc.ca)

### SATELLITE IMAGE PRODUCTS USED

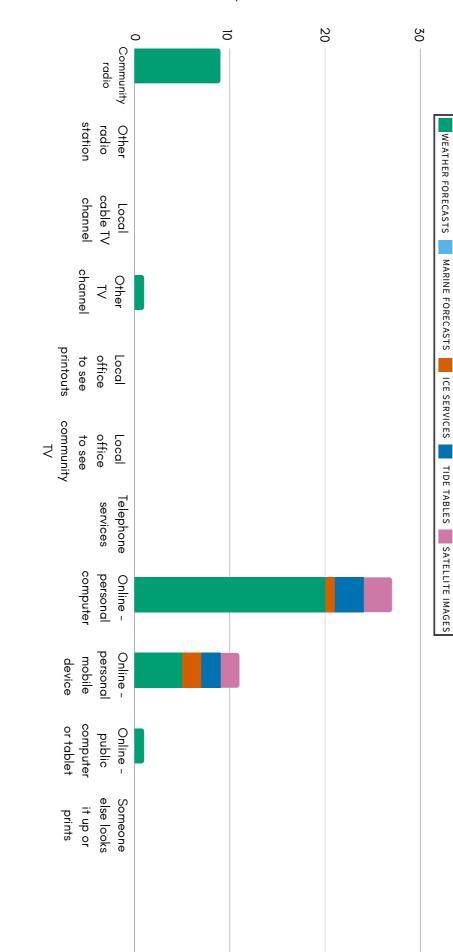
- Environment Canada
- Google Earth
- SIKU app, SIKU.org

# PRODUCTS AND ACCESSING ENVIRONMENTAL FORECASTS (CONTINUED)



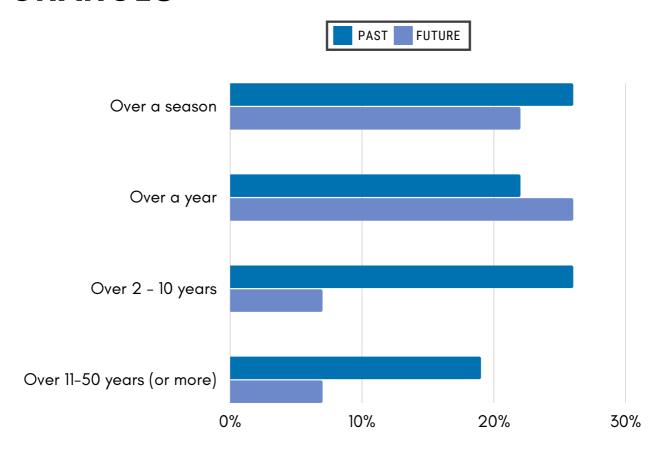
Of the forecasting products used, respondents most often rely on weather forecasts, followed by tide tables, and satellite images.

# RESPONDENTS ACCESS POLAR SERVICES **WAYS THAT SANIKILUARMIUT**



by going online using a personal mobile device or personal computer, or listening to community Sanikiluarmiut respondents access environmental forecast products in a range of ways, and mostly radio

# INTEREST IN INFORMATION ABOUT PAST AND FUTURE ENVIRONMENTAL CHANGES

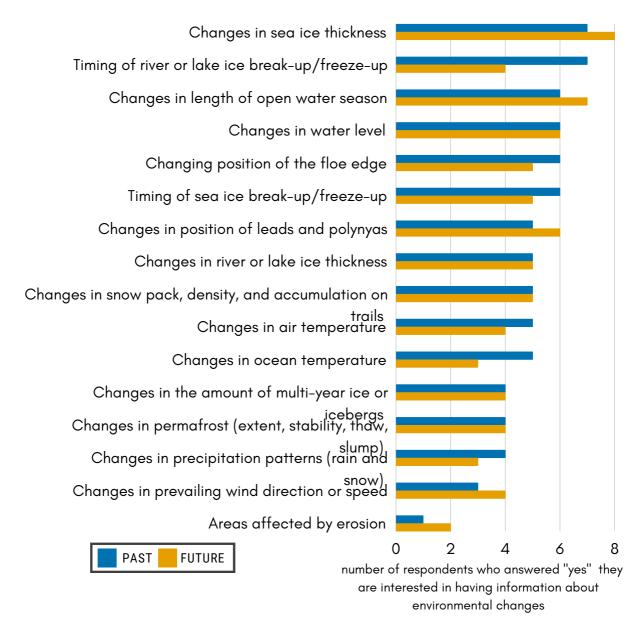


% of participants who said "yes" they are interested in having information about long-term environmental changes

More participants are interested in information about past changes to weather, water or ice conditions (related to climate change) than are interested in forecasting or predictions, in particular over 2-10 years and over 11-50 years or more.

# INTEREST IN LONG-TERM ENVIRONMENTAL CHANGES

# INFORMATION ABOUT PAST OR FUTURE CHANGES FOR MAKING DECISIONS



More respondents are interested in having information about past environmental changes than about future changes. Common topics of interest included changes in sea ice thickness, timing of river or lake ice break-up/freeze-up, length of open water season, water level, floe edge position, and timing of sea ice break-up/freeze up.

### INTEREST IN TRAINING

Respondents who said they were interested in receiving training on survival skills and navigating the land (9 participants), observing and understanding environmental conditions (8 participants), local environmental monitoring programs (6 participants), and accessing or using social media pages or groups (8 participants), were invited to describe the kinds of training they are interested in. Respondents were also asked to share about who they would like to learn from, and environmental conditions they would like to learn more about. The points below were organized by report writers to group them into similar topics.



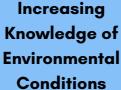
### **Improving Navigation Skills** on the Land



**Developing Safety** and Survival Skills on the Land

- Learn from an Elder
  - How to observe and navigate the land
- Arctic survival skills
- Igloo building







**Gaining Familiarity** with Technology

- Ice conditions
- The environment, and environmental changes
- Traditional training on observing weather conditions
- Waves, water conditions
- Weather conditions

- Drone operation
- Using Google
- Satellite images (for ice conditions)Ways to use traditional knowledge and science/technology

# トロースペート シュラック Sanikiluaq, Nunavut



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ΔΔC<sup>1</sup>P<sup>1</sup>VİLQ
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Results of a community survey on environmental forecasting uses and needs