PIKIALASORSUAQ

"Bridging the Bay"

Cooperation workshop on conservation

Nuuk, Greenland
September 24 – 25, 2013

Report
PIKIALASORSUAQ – “Bridging the Bay” workshop

Produced by
Inuit Circumpolar Council (ICC) - Greenland, P.O. Box 204, 3900 Nuuk.
Phone: +299 32 36 32 – E-mail: iccgreenland@inuit.org
With contribution from Oceans North Canada.

Authors
Bjarne Lyberth, Executive Science Advisor in ICC Greenland, in cooperation with Parnuna Egede, Advisor on Environmental Issues in ICC Greenland.
With contributions from the participants of the workshop.

Cover photo
Courtesy of Mads Peter Heide-Jørgensen, Professor, Dr. Scient.

Contents

1. Executive Summary (English)

The PIKIALARSORSUAQ “Bridging the Bay” workshop took place on September 24 and 25, 2013 in Nuuk, Greenland.

Over 20 participants, including regional Canadian and Greenlandic representatives from communities that surround the Pikialarsorsuaq / North Water Polynya, met at the Inuit Circumpolar Council – Greenland (ICC Greenland) office in Nuuk to discuss the importance of this region.

The two-day workshop, co-sponsored by ICC Greenland and Oceans North Canada (ONC), addressed observations about Pikialarsorsuaq / North Water Polynya from hunters and fishermen from Pond Inlet, Grise Fiord and Arctic Bay in Nunavut, and Kullorsuaq and Qaanaaq in Greenland, as well as researchers from both countries. The workshop concluded with a strong consensus to explore joint strategies for safeguarding and monitoring the health of this region for future generations.

The workshop was divided into three sessions:

- The potential of the area – dealing with living and non-living resources of the area;
- The bridge – about the prehistoric and historic role of the area as a bridge for immigration to Greenland;
- And conservation – dealing with the participants’ views on how the area should be used and managed in the future.

However, presentations and discussions covered much wider topics than those mentioned here.

First session
The first session opened with a description of hunting conditions and traditions in the North-western parts of Greenland and the Northern parts of Baffin Island and Grise Fiord.

Changes have been observed in sea ice and snow conditions as well as distribution and behaviour of the marine mammals, and new species or subspecies have been observed around the North Water Polynya during recent years.

Second session
The contributions from the scientific community dealt with oceanography, biology, geology and historical use of the area.

The mixing of the water current originating from the Atlantic and the Pacific is contributing to the extraordinary high biological productivity of the area. But the high biological productivity is highly dependent on the formation of an ice bridge in Kane Basin north of the polynya. Thus, when the ice bridge is absent the productivity is much lower.

The area is a key wintering area for both marine mammals and birds. However, reported catches in marine mammals are declining during recent years, despite stable abundances, and the causes are uncertain.

Geologically, the area is characterized as an inactive area with little likelihood of commercial hydrocarbon potentials. However, licenses have been issued for hydrocarbon exploration in the vicinity of the North Water Polynya.

Historically and pre-historically, the area has been essential for the earliest North American immigration and settlement of human populations in Greenland from 2500 B.C. until mid 20th century. Also, in medieval times the area has potentially been a place where different Native American peoples and Europeans have met.

Third session
The last session, dealing with conservation issues, included a presentation of the views and elaboration on offshore industry off Greenland by KNAPK (The Organization of Fishermen and Hunters in Greenland). KNAPK advises a halt in hydrocarbon exploration offshore Greenland, as the assaociation is concerned about effects on the fishing and hunting as well as the potential effects on the environment can be deteriorating unless a proper compensation is secured. The session also included a review of international agreements relevant to the conservation issues of the shared areas of Greenland and Canada.

Conclusions
The workshop concluded with two groups presenting their key words related to the topics dealt with in the sessions, as well as an advice to work towards making a commission to consult with local communities about the future use and conservation of the area.

1. Eqikkaaneq (Kalaallisut)

Pikialasorsuaq pillugu suleqatigiilluni isumattorsaqatigiisitsineq pivoq Nuummi September 24-ani 25-anilu 2013.

Peqataasut 20-t sinnillit, tassunga ilaallutik Canadami Nuatsinnilu Pikialasorsuup eqqaani najugalit sinniisaat, Inuit Issittormiut Siunersuisoqatigiiffiata (ICC-p) Nuummi allaffiani naapipput sumiiffiup tamatuma pingaaruteqassusia eqqartorniarlugu.

Isumattorsaqatigiinneq ulluni marlunni pisoq ICC-p Oceans North Canadallu tapersersugaat, eqqartorpaat Pikialasorsuarmi eqqaanilu piniartut Nunavummi Mitsimatalimmiut, Aajuitsormiut, Ippiarsummiullu Nunatsinnilu Kullorsuarmiut Qaanaarmiullu nunanilu taakkunani ilisimatuussutsikkut suliallit maluginiagaat. Isumasioqatigiinnerup inerneraa sumiiffiup kinguaassanut piujuartitsinissamut nakkutiginninnissamullu, ataatsimut iliuusissanik pilersaarusiornissamik isumaqatigiissuteqarneq.

Isumattorsaqatigiinneq immikkoortunut pingasunut avissimavoq:

- Sumiiffiup tunniussassai pisuussutinik uumassusilinnik uumaatsunillu samminniffiusoq;
- Ikaartarfik – sumiiffiup oqaluttuarisaaneq sioqqullugu oqaluttuarineqartunillu Nunatsinnut ikaartarfiusimaneranik samminnittoq;
- Piujuartitsinerlu – peqataasut sumiiffiup siunissami atorneqarnissaa aqunneqarnissaalu pillugit isumaannik samminnittoq.

Taamaattorli saqqummiinerit oqallinnerillu aamma sammisanik allarpaalunnik ilaqarput.

Sammisami siulleq
Sammisami siullermi aallarniutitut oqaluttuarineqarput Nunatta kitaata avannani Qeqertaaluullu avannaatungaani Aajuitsullu eqqaani piniarnernikkut pissutsit ileqqullu.

Allannguutit maluginiarneqarsimasut tassaapput sikup, aputip imaani miluumasut siaruarsimaneri pissusilersorneri, uumasullu nutaat Pikialasorsuup eqqaani ukiuni kingullerni takussaalersimallutik.

Sammisami tullia
Ilisimatuussutsikkut suliallit ilanngussaat sumiiffimmi immap pissusaata, uumassusillit, qaarsut qanoq innerat kiisalu oqaluttuarisaanermi sumiiffiup atorneqarsimaneranik samminnittuupput.

Immap sarfaat Atlantikumiit Manerassuarmiillu aallaavillit akulerunnerisa sumiiffiup uumassusilitsigut immikkut annertuumik pinngorartitsinerannut ilapittuutaapput. Pinngorartitsinermulli Kane Basin-imi Pikialasorsuup avannaaniittumi siku ikaartarfik aaliangiisuulluinnartuuvoq. Taamaammat ikaartarfik sikunngikkaangat pinngorartitsineq annikilleriangaatsiartarpoq.

Sumiiffik imaani miluumasunut timmissanullu ukiivissatut pingaaruteqaqaaq. Taamaattorli pisat nalunaarsorsimasut ukiuni kingullerni annikilliartorput, naak uumasoqassuseq allanngungaarsimanngikkaluartoq, tamatumunnga pissutaasoq nalunarpoq.

Sumiiffiup qaarsortaa pinngoratitsisuunngilaq ikummatissaqarsinnaaneralu ilimanaateqarani, taamaattorli Pikialasorsuup ungasinngisaani ikummatissaqarneranik misissuinissamit akuersissutinik tunniussisoqarnikuuvoq.

Oqaluttuarisaaneqanngikkallarmat oqaluttuarisaaneqalereermallu sumiiffik Nunatsinni, Kr. In. Ukiuni 2500-nik sioqqunneraniit 1800-kkut qeqqata missaata tungaanut, Amerikap avannaaniit nunasisunut siullernut aaliangiisuusimavoq. Ukiunilu akullerni sumiiffik Amerikap inoqqaavisa europamiullu naapiffigisimasinnaalluarpaat.

Sammisami kingulleq
Sammisami kingullermi piujuartitsinermik sammisaqarfiusumi KNAPK-miit Nunatta sineriaata avataani ikummatissaqarneranik misissuineq pillugu isummersornermik saqqummiuffiuvoq. KNAPK-p Nunatta sineriaata avataani ikummatissaqarneranik misissuinerup unitsikkallarneqarnissaanik innersuussivoq, aalisarnermut piniarnermullu kingunipiluit kingunipiluusinnaasullu aseruisinnaammata pissusissamisoortumik taarsiiffigineqarnissaq qulakkeerneqanngippat. Sammisamittaaq Nunatta Canadallu akornanni sumiiffiit ataatsimoorussat piujuartinneqarnissaat pillugit isumaqatigiissutit attuumassuteqarsinnaasut saqqummiunneqarput.

Inerniliinerit
Isumattorsaqatigiinneq naggaserlugu eqimattat marluk oqaatsinik sammisamut tunngassutilinnik, kiisalu isumalioqatigiissitaliortoqarnissaamik, sumiiffimmi siunissami piujuartitsinissaq inoqarfinni ataasiakkaani najugalinnik isumasiuisussanik pilersitsiniartoqarnissaanik innersuussillutik saqqummiipput.

1. Resumé (Dansk)

PIKIALASORSUAQ ”Bridging the Bay” workshoppen fandt sted den 24. og 25. september 2013 i Nuuk, Grønland.

Over 20 deltagere, inklusiv regionale repræsentanter fra Canadiske og Grønlandske lokalsamfund omkring Pikialasorsuaq / Nordvandet, mødtes på Inuit Circumpolar Council – Grønland (ICC-Grønland)’s kontor i Nuuk for at diskutere vigtigheden af denne region.

Den to dage lange workshop, finansieret i fællesskab af ICC-Grønland og Oceans North Canada (ONC), gennemgik observationer om Pikialasorsuaq / Nordvandet af fangere og fiskere fra Pond Inlet, Grise Fiord og Arctic Bay i Nunavut, og Kullorsuaq og Qaanaaq i Grønland, samt forskere fra begge lande. Workshoppen blev afsluttet med en stærk enighed om at udforske fælles strategier for at beskytte og overvåge områdets sundhed i denne region for fremtidige generationer.

Workshoppen var opdelt i tre sessioner:

- Potentialet i området – om de levende og ikke-levende ressourcer i området;
- Broen – om områdets forhistoriske og historiske rolle som en bro for indvandring til Grønland;
- Og bevarelse – om deltagernes synspunkter om hvordan området bør bruges og forvaltes i fremtiden.

Men både oplæg og diskussioner dækkede meget bredere emner end dem, der er nævnt her.

Første session
Den første session blev indledt med en beskrivelse af jagtforhold og traditioner i de nordvestlige dele af Grønland og de nordlige dele af Baffin Island og Grise Fjord.

Ændringer er blevet observeret i havis og sneforhold, samt udbredelse og adfærd af havpattedyrene, og nye arter eller underarter er blevet observeret omkring Nordvandet i de seneste år.

Anden session
Bidragene fra det videnskabelige samfund omhandlede oceanografi, biologi, geologi og historisk brug af området.

Opblandingen af havstrømmen, der stammer fra Atlanterhavet og Stillehavet, bidrager til den ekstraordinært høje biologiske produktivitet i området. Men den høje biologiske produktivitet er stærkt afhængig af dannelsen af en isbro i Kane Bassin nord for polynya’en. Når isbroen er fraværende er produktiviteten derfor meget lavere. Området er et centralt overvintringsområde for både havpattedyr og fugle. Dog er de rapporterede fangster af havpattedyr faldende i de seneste år, på trods af stabile forekomster, og årsagerne er usikre.

Geologisk er området karakteriseret som et inaktivt område med ringe sandsynlighed for et kommercielt kulbrintepotentiale. Men der er blevet udstedt licenser til efterforskning af kulbrinter i nærheden af Nordvandet.

Historisk og forhistorisk har området været afgørende for den tidligste nordamerikanske indvandring og etablering af befolkningsgrupper i Grønland fra 2500 f.Kr. indtil midten af det 20. århundrede. Også i middelalderen har området potentielt været et sted, hvor forskellige oprindelige folk og europæere har mødtes.

Tredje session
Den sidste session, som omhandlede bevaringsspørgsmål, inkluderede en præsentation af synspunkter og uddybning om offshore industri af KNAPK (Grønlands fisker- og fangerorganisation). KNAPK anbefaler et stop i kulbrinte-efterforskning langs Grønlands kyster, da virkningerne på fiskeriet og fangsten samt de potentielle effekter på miljøet kan være forværrende, medmindre en ordentlig kompensation er sikret. Sessionen inkluderede også en gennemgang af internationale aftaler relevante for bevaringsspørgsmål for de fælles områder af Grønland og Canada.

Konklusioner
Workshoppen blev afsluttet med at to grupper præsenterede deres nøgleord indenfor de emner der blev behandlet under sessionerne, samt en anbefaling om at arbejde hen imod at lave en kommission, der skal konsultere med lokalsamfundene om fremtidig brug og bevarelse af området.

2. Workshop Description

2.1 Purpose

The two-day workshop was designed to initiate a conversation between hunters, fishers and researchers from both Canada and Greenland on the present and future significance of Pikialarsorsuaq / the North Water Polynya. Goals included:

- Confirmation of regional interest in a bi-national dialogue about the future of the region.
- Sharing of knowledge and observations from hunting and fishing communities connected to the North Water.
- Discussion of present and future threats to this region.
- Discussion of strategies aimed at safeguarding this region, including harvesting interests for future generations.

2.2 Process

ICC Greenland and Oceans North Canada jointly hosted this regional workshop.
The workshop explored possible ways to promote cooperation between Inuit communities in Greenland and Nunavut who depend upon the polynya and its biological productivity.

Invitees included representatives from Nunavut Tunngavik Inc. (NTI), Qikiqtani Inuit Association (QIA), and regional hunters and trappers' organizations from Nunavut, as well as the Organization of Fishermen and Hunters in Greenland (KNAPK), including representatives from Kullorsuaq and Qaanaaq.

Figure 1: *Group photo of the workshop participants. Photographer: Julia Demcheson.*

The workshop took place in the ICC Greenland office in Nuuk on September 24 – 25, 2013 and included three sessions focusing on:

- The potential of the area – dealing with living and non-living resources of the area;
- The bridge – about the prehistoric and historic role of the area as a bridge for immigration to Greenland;
- And conservation – dealing with the participants' views on how the area should be used and managed in the future.

The workshop also included various group sessions, described further in section 7.

3. Background

3.1 Introduction

Pikialasorsuaq / the North Water polynya is the largest polynya in the Northern Hemisphere. More importantly than its size is the rich ecosystem that it supports. Indeed, the North Water polynya is the most biologically productive region north of the Arctic Circle (AMAP/CAFF/SDWG, 2013).

Located between Greenland and Canada in the region of Smith Sound and Nares Strait in Northern Baffin Bay, the North Water polynya is one of the primary connections between the Arctic Ocean and the North Atlantic. Weather and ocean currents contribute to a mixing of water and nutrients, including great amounts of fresh water from sea ice and glaciers.

The polynya can be described both spatially (lying roughly between 76°N and 79°N and 70°W to 80°W) and temporally: a distinct polynya (open water area in what is otherwise a frozen ocean) forms in this region as a result of seasonal west winds and a stable ice bridge in Kane Basin to the north. Upwelling of relatively warm water means that this region never freezes completely, and marine mammals inhabit these waters even before a distinct polynya forms.

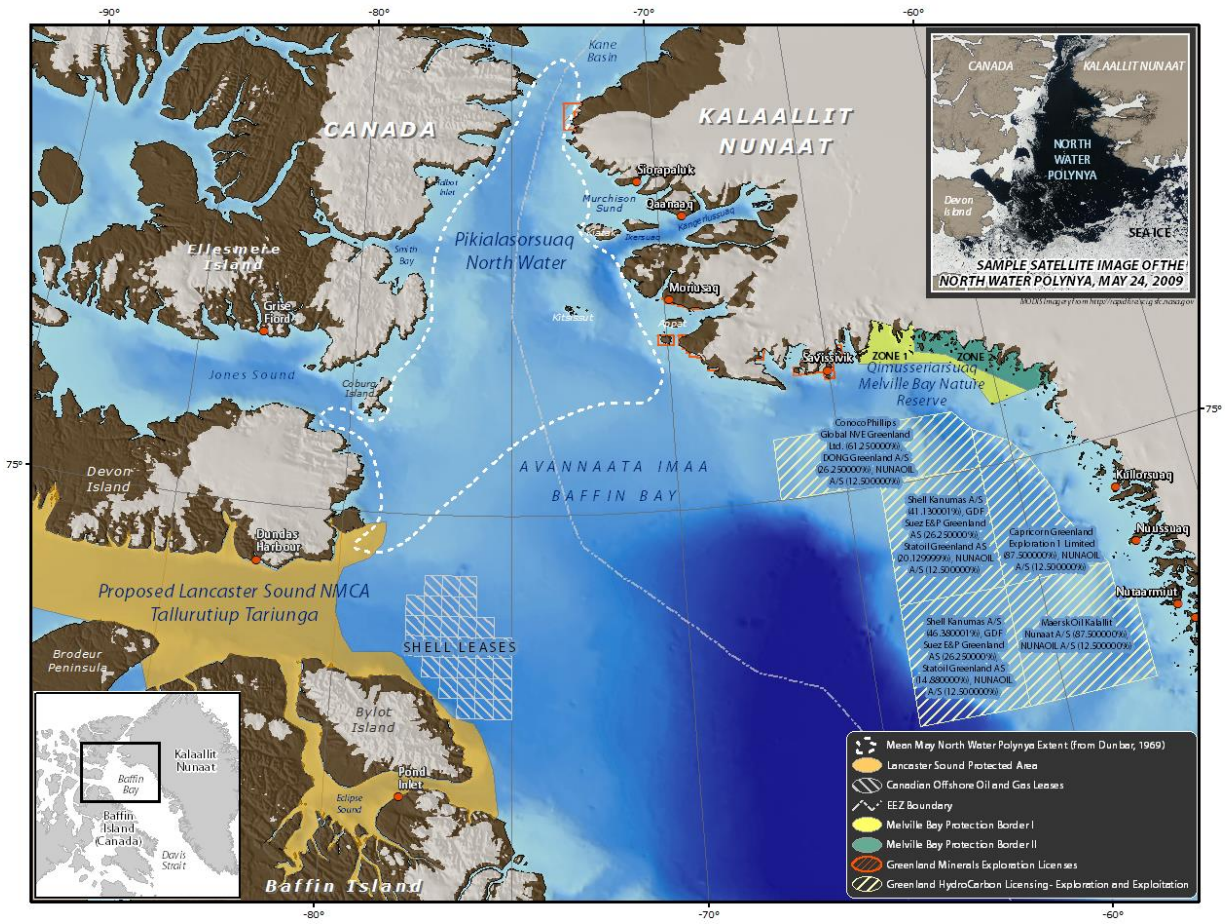

Figure 2: *Map of the Pikialasorsuaq / North Water Polynya. Source: Oceans North Canada.*

The polynya's open waters allow for an unusually early spring plankton bloom. This early bloom provides food for Arctic cod, a species that plays a critical role in supporting the entire ecosystem. Large concentrations of marine mammals including walrus, seals, polar bears, beluga, narwhal and bowhead feed at the ice edge until spring break-up. The same habitat provides vital feeding grounds for millions of seabirds, including an estimated two-thirds of the world population of dovekie and thick-billed murres (AMAP/CAFF/SDWG, 2013).

While leading polar scientists have focused on the North Water in recent decades, the region has been recognized by Inuit for generations as a critical habitat. Indeed, Inuit use and occupation of Northeast Canada and Greenland is linked to the North Water and the abundance of marine life it supports. This region has been home to the northernmost human settlements in the world for at least 5,000 years. Communities in Nunavut and Avanersuaq (Northwest Greenland) continue to rely on the biological productivity of the polynya.

In some recent years, the northern ice bridge in Kane Basin has become less reliable and the polynya less defined. The consequences of these changes, linked to larger climatic shifts observable in many parts of the Arctic, are unknown.

3.2 ICC policy

The environmental policies of ICC are set out in various documents, most notably the Inuit Arctic Policy (2010) and the Circumpolar Inuit Declaration on Resource Development Principles in Inuit Nunaat (2011). Of articles with special relevance to the topic of Pikialasorsuaq / North Water Polynya are as follows:

3.2.1 Excerpts from the Inuit Arctic Policy

Inuit Arctic Policy (2010), Chapter III: Environmental Issues

<u>Section: Environmental Protection, Conservation and Development</u>

> ***1.*** *It is a fundamental objective of the Inuit Arctic Policy to protect the delicate environment, including the marine and other resources on which Inuit depend. The right to a safe and healthy environment is an emerging human right and is especially important to Inuit.*
>
> ***2.*** *Within the vast Inuit Nunaat, Inuit have the right and responsibility to ensure the integrity of the Arctic environment and its resources, as a continuing source of life, livelihood and well-being for present and future generations.*
>
> ***4.*** *Strategies to protect and manage the Arctic environment are necessary at international, national and regional levels. Individuals and organizations such as the Inuit Circumpolar Council and the new Inuit Center for International Understanding, as well as governments, can play a significant role in stimulating public concern for the Arctic environment. Collaboration with other organizations such as the International Union for the Conservation*

of Nature and Natural Resources (IUCN) and other NGOs should be encouraged.

16. *Measures to encourage international co-operation and management are necessary. These could include:*

- *entering into, or strengthening of, international agreements on acid rain, ocean dumping, contaminants, and other environmental problems;*
- *establishment of international monitoring agencies to measure the performance of states, in protecting or adversely affecting the Arctic or global environment;*
- *creation of effective and binding procedures for resolving transnational environmental disputes;*
- *promotion of cooperative environmental and international research among states; and*
- *the development of uniform impact assessment procedures for the Arctic.*

Section: Renewable Resource Management and Intellectual Property

14. *It is essential that international law doctrines or principles not be used in an inequitable, incorrect, or illegal manner by state governments and others, so as to deprive Inuit of full recognition of their resource and other rights. In particular, the concept of res nullius (property of nobody that is susceptible to appropriation) must be recognized as an invalid doctrine in relation to Inuit territorial and resource rights. In addition, the common heritage of humankind principle (see 1982 U.N. Convention on the Law of the Sea) must not be applied in a manner that may in effect deny or diminish Inuit offshore rights.*

Section: Non-Renewable Resources

10. *Non-renewable resource development projects in the Arctic must not only be environmentally sustainable, but also be equitable from the viewpoint of the Inuit affected. Social and cultural, as well as environmental considerations must be an integral part of regional, national, and international development strategies relating in any way to the Arctic. These strategies must not only be oriented towards economic goals, but also strive to achieve social justice and preservation of culture.*

Section: Arctic Marine Use and Management

19. *Marine areas of exceptional importance to the Arctic environment or to Inuit culture should be identified and designated as requiring special protections. These areas should be exempted from marine transportation by tankers and other large vessels, as well as certain forms of resource development.*

3.2.2 Excerpts from the Declaration on Resource Development Principles

Circumpolar Inuit Declaration on Resource Development Principles in Inuit Nunaat (2011)

> ***2.3*** *Our rights as an indigenous people, including our right to self-determination, may be exercised in a practical way through governance structures that combine both Inuit and non-Inuit constituents. No matter what level or form of self-determination the Inuit of any particular region have achieved, resource development in Inuit Nunaat must proceed only with the free, prior, and informed consent of the Inuit of that region.*
>
> ***6.1*** *The physical and mental health of human communities and individuals cannot be separated from the health of the natural environment.*
>
> ***6.4*** *Resource development must enhance, not detract from, Inuit food security.*
>
> ***7.5*** *International standard-setting bodies must seek and secure direct and meaningful input from Inuit. National, regional and local bodies, such as offshore and land management regimes, must be designed and operated to be effective, transparent and accountable, thereby gaining and sustaining the confidence of the Inuit public at all times.*
>
> ***8.2*** *Land and offshore management regimes must include (a) long-term land use plans that set out ground rules for development applicable to specific projects, and (b) robust impact assessment processes to gauge the likely impacts of specific projects.*
>
> ***8.3*** *Management, land use planning and impact assessment regimes must address the cumulative impacts of existing and potential projects and, where prudent, limit the number and scope of projects permitted.*
>
> ***8.4*** *Impact assessments covering broad geographic areas are important and necessary management tools, and their completion in advance of specific project proposals should be encouraged.*

4. First session – Potential of the area

The theme of the first session was "The potential of the area – dealing with living and non-living resources of the area". In this session, following topics were discussed:

- Hunting – observations during the last years
- Oceanography
- Marine wildlife – change and adaptation
- Geology
- Plenary discussion – Traditional Knowledge + science marriage

4.1 Hunting – observations during the last years

Presenters:
Mads Ole Kristiansen, hunter, Qaanaaq
Qaerngaaq Nielsen, hunter, Savissivik
Levi Barnabas, QIA, Arctic Bay
Larry Audlaluk, QIA, Grise Fiord

Figure 3: *Mads Ole Kristiansen presenting. Photographer: Parnuna Egede.*

Most important hunted marine mammals are: narwhals, walrus, ringed and bearded seals, and polar bears. They are primarily used for consumption. The hunting of these has changed during the last years.

Walrus hunting on new ice is affected by the late ice formation.

Polar bear hunting trips from Qaanaaq to Kane Basin in winter has become difficult because of less ice and snow.

Having followed the narwhal run entering Inglefield Bredning, changes are apparent especially during the latest years – before, the run would take one hour, now it takes three hours. Thus the number of migrating narwhals has increased. Also their behaviour during hunting has changed, before it was normal that narwhals around a harpooned narwhal would start fleeing, now many don't flee at all.

Narwhal hunting in Melville Bay during summer has become more difficult during the last years – there are fewer narwhals, and they are more shy and difficult to approach. Many hunters got nothing this summer.

Figure 4: *Qaerngaaq Nielsen presenting. Photographer: Augusta Jeremiassen.*

During the Jones Sound seismic surveys in the 1980s the behaviour of hunted animals changed. And during the activities in Baffin Bay in the recent years changes have also been observed.

The hunting of marine mammals has changed due to changes in behaviour. Narwhals have changed migration patterns, possibly due to seismic testing in the Baffin Bay 2011-13, or for other

reasons.

Some also state that there may be a correlation between the new observations of killer whales, and the change in narwhal behaviour.

What was also mentioned is that former muskox hunting trips to Ellesmere Island now has stopped because of regulations that don't respect indigenous peoples' rights.

4.2 Oceanography

Presenter:
Dany Dumont, University of Rimouski, Quebec.

The mixing of different water masses originating from the Atlantic Ocean and the Pacific Ocean, and their transformation along the journey in Arctic conditions, are contributing to the area's extraordinary high biological productivity. Water masses originating from the Pacific Ocean are driven through the Bering Strait, around the Polar Sea with the polar gyre and through the Fram Strait to Pikialasorsuaq as surface water (<200m depth). Water masses from the Atlantic Ocean are driven in the deep layers through the Davis Strait along the west coast of Greenland, north towards Pikialasorsuaq. This mixing together of water masses, along with ice conditions makes the area up to ten times more biologically productive as other areas in the Arctic.

The high biological productivity is highly dependent on the formation of an ice bridge in Kane Basin. The ice bridge is a major determinant for the opening of the polynya, as the ice bridge and the predominant northerly wind are preventing ice floes from moving south over Pikialasorsuaq, leaving it open for light to reach the water and fuel the primary production.

When the ice bridge is absent the productivity is much lower. Over the past two decades, the polynya occurrence and timing has changed significantly, affecting the timing, the localization and the intensity of the spring bloom. The primary production occurs earlier, is globally decreasing, and shifts northward (Figure 5).

The North Water may be losing its peculiarity as a biological hot spot, a direct effect of Arctic warming.

We do not understand well how the ecosystem functions, although progresses are being made. We are quite sure it will undergo major transformations over the next generations.

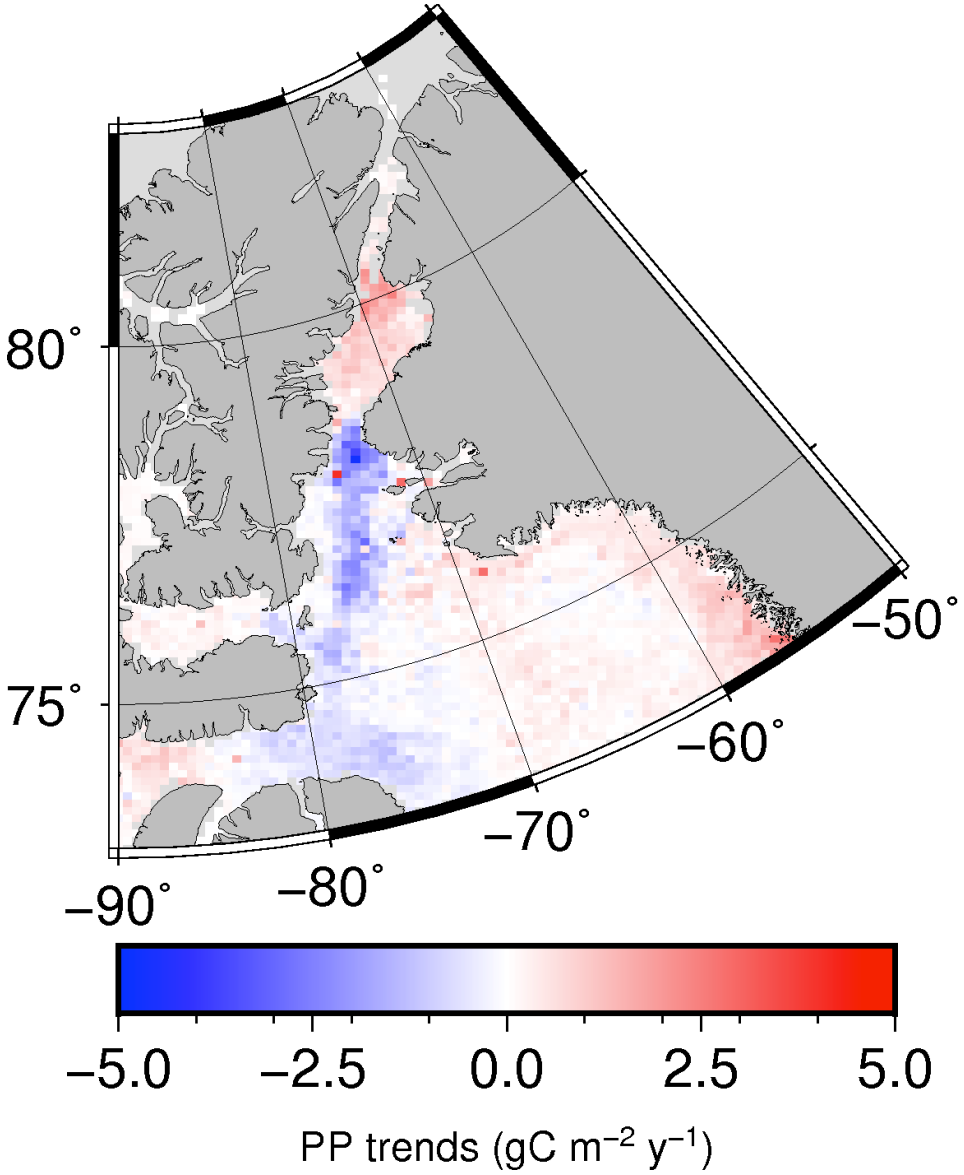

Figure 5: *Trends in primary production. The primary production occurs earlier, is globally decreasing, and shifts northward. Source: Dumont, unpublished.*

4.3 Marine wildlife – change and adaptation

Presenter:
Mads Peter Heide-Jørgensen, Greenland Institute of Natural Resources, Nuuk.

Changes in climate and ice conditions are not new phenomena. In the 1950s, the Danish zoologist Christian Vibe described changes notably in the Thule area.

For the Pikialasorsuaq / North Water polynya, several recent years show a decrease in periods of monthly mean sea ice coverage or earlier timing of ice breakup over the last years. As ice conditions are highly variable from year to year, overall trends are mostly noticeable when expressed as 10 year averages or when looking at adjacent areas in Kane Basin and Baffin Bay (Heide-Jørgensen et al. 2012, figure 6).

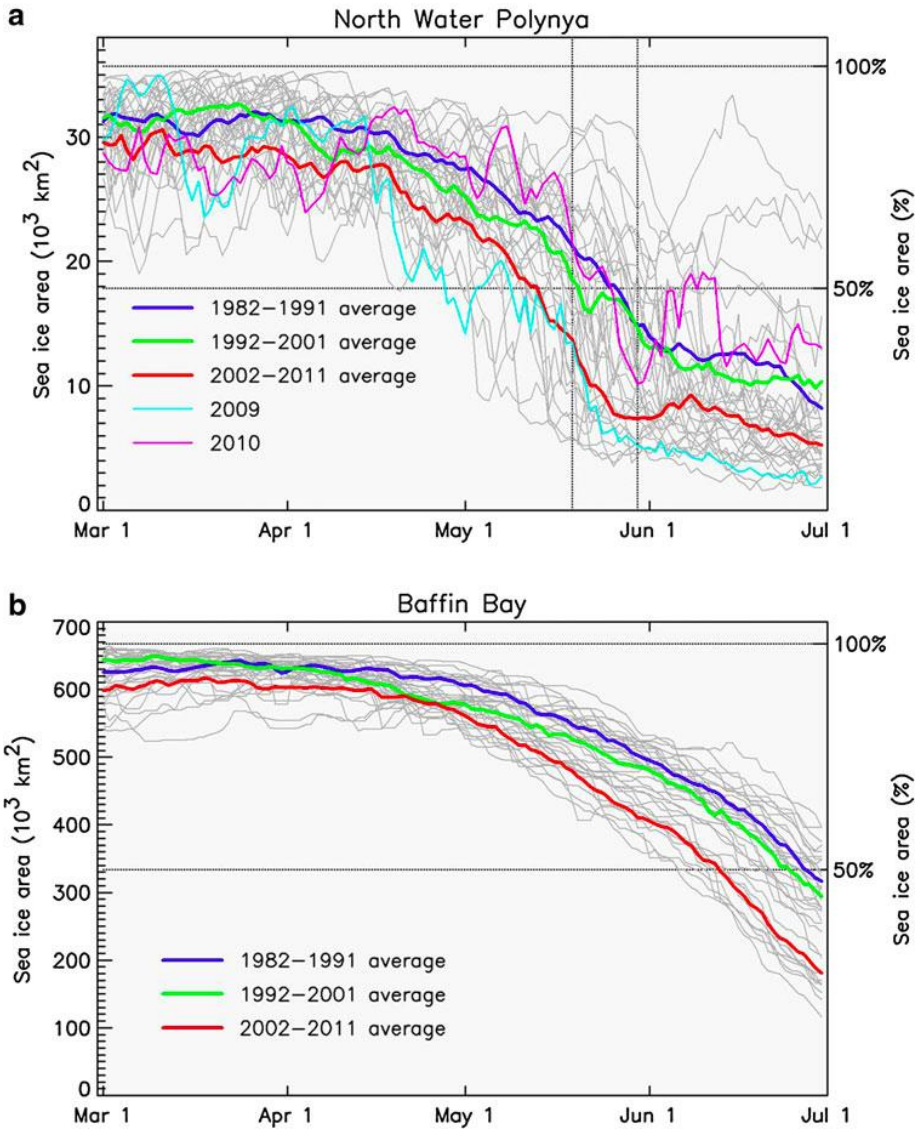

Figure 6: *Trends in sea Ice cover in North Water polynya and Baffin Bay. Source: Heide-Jørgensen et al. 2012.*

During spring, some of the highest densities of marine wildlife can be observed in the area (Figure 7).

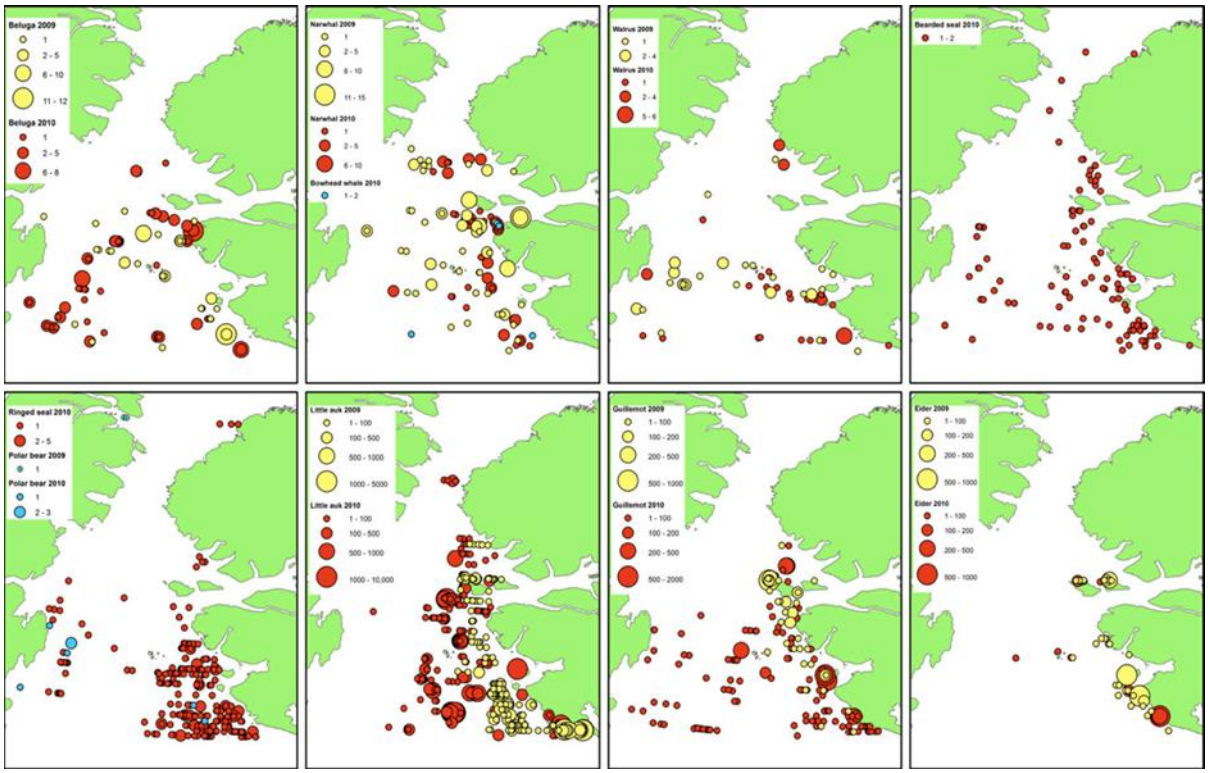

Figure 7: *Observations during aerial counts in 2009 and 2010. Source: Heide-Jørgensen et al. 2012.*

4.4 Geology

Presenter:
Thomas Varming, Bureau of Minerals and Petroleum, Nuuk.

The first exploration well off Greenland was drilled in the 1970s, and the second drilling programme did not take place until the late 1990s. Presently, there is a licensing round every two years. In total, 200,000 km^2 are licensed and 13 companies are involved in exploration. In 2010, five licensing blocks were opened in Baffin Bay (Fact box 1).

As for the Pikialasorsuaq area, seismic surveys have been conducted by the Alfred Wegener Institute in the 1970s. It is now categorized by the US Geological Survey as ”not prospective”. No organic source rock has been identified. The area is in the north of a geological drift that causes an opening of the Davis Strait area (Figure 8).

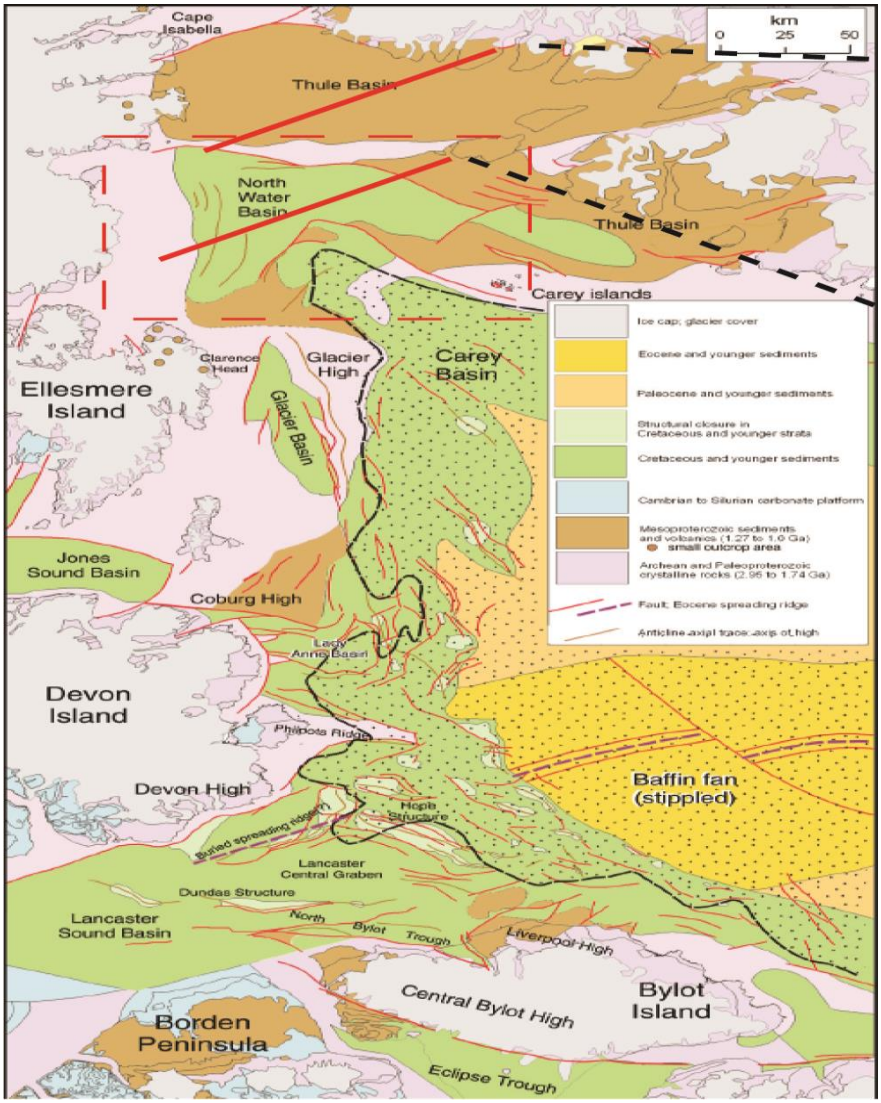

Figure 8: *Simplified geological map of the Nares Strait – Baffin Bay region. Source: Composed from Harrison et al. 2011 and Spencer et al. 2011.*

FACT BOX 1: SEISMIC SURVEYS IN BAFFIN BAY IN 2012 AND 2013

The Bureau of Minerals and Resources issued five license blocks for the Baffin Bay area in northwest Greenland in 2011, of which two of those extend into the Narwhal Protection Zone I. Subsequently, four separate seismic surveys were conducted in the Baffin Bay area in 2012 and one in 2013.

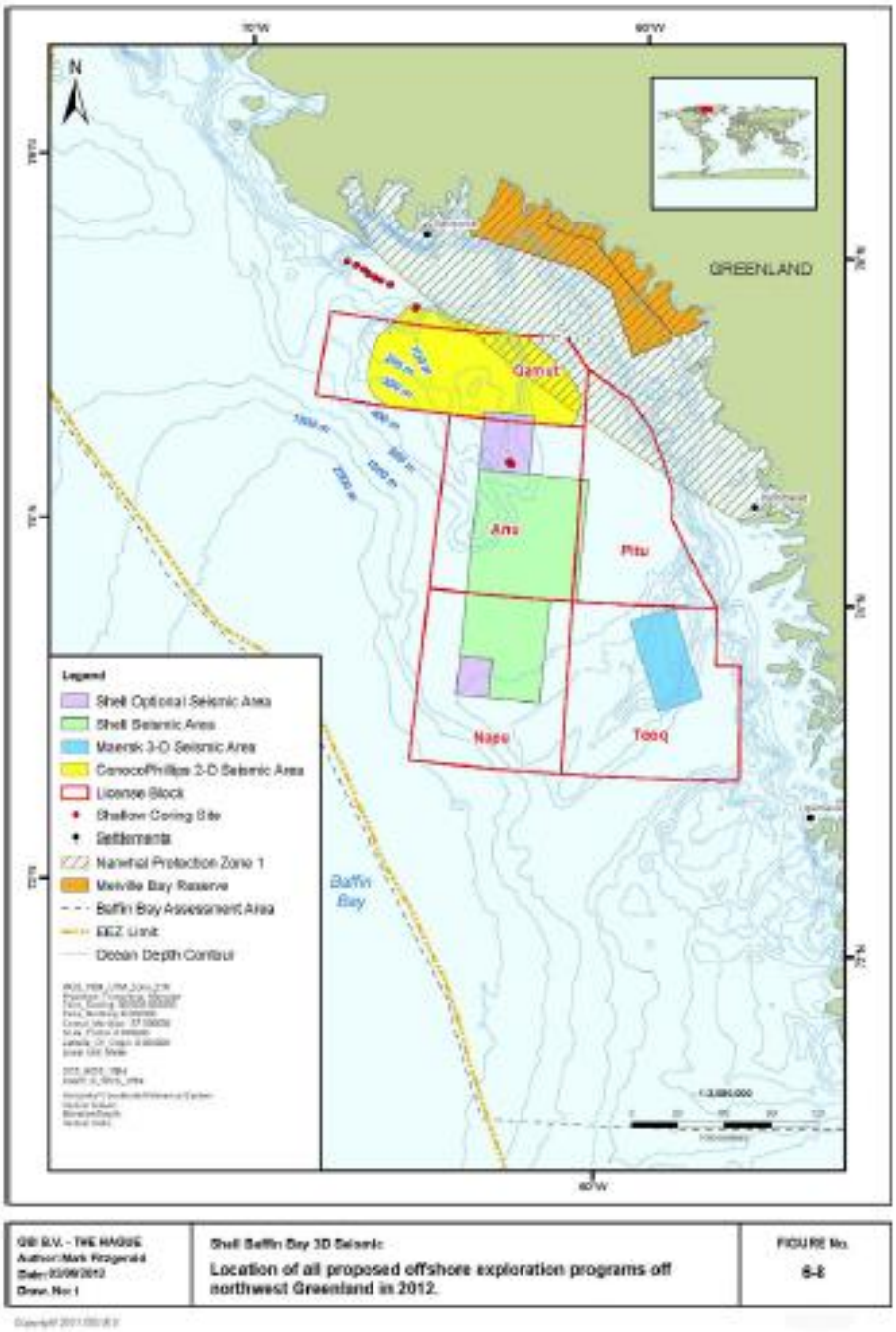

Figure 9: *Map of the location of all proposed offshore exploration programs off southwest Greenland in 2012. Source: The Environmental Impact Assessment made for Shell Oil in 2012.*

4.5 Plenary discussion – Traditional Knowledge + science marriage

The discussion was primarily centered on the use of traditional knowledge (TK) for monitoring wildlife and impacts from seismic activities and heavy shipping. Use of TK is not "standardized" nor structured, which it perhaps should be. Until recently TK or local observations have often been referred to in various publication as "anecdotal evidence". However, ICC is working on a white paper on TK under the auspice of different Arctic Council working groups (Fact box 2).

Both in Greenland and Canada, TK has been used in several contexts with different purposes. In Upernavik, there's an ongoing community based monitoring project for eider ducks, which has been going on for more than ten years. In the Canadian Beaufort Sea, Community based monitoring is being used for different purposes. In Alaska, it took scientists many years to realize that the Inuppiaat had a much more intimate knowledge about the bowhead whale population residing in the area and that their science based population estimates were underestimated. On the other hand, IWC (International Whaling Commission) only recognizes science-based evidence for population size and trend estimations.

FACT BOX 2: ICC DEFINITION OF TRADITIONAL KNOWLEDGE
ICC offers the following definition of Traditional Knowledge: "Traditional knowledge is a systematic way of thinking applied to phenomena across biological, physical, cultural and spiritual systems. It includes insights based on evidence acquired through direct and long-term experiences and extensive and multigenerational observations, lessons and skills. It has developed over millennia and is still developing in a living process, including knowledge acquired today and in the future, and it is passed on from generation to generation."

5. Second session – History

5.1 Migration

Presenter:
Mikkel Myrup, National museum and Archive of Greenland, Nuuk.

Immigration through the ice bridge of Smith Sound / Kane Basin has been going on for at least 4500 years. A discontinuous flow of migrations by peoples of different origin (Independence, Saqqaq, Dorset and Thule cultures) have crossed the ice bridge. Some groups have vanished sooner or later, but the latest immigrants (the Thule culture believed to have immigrated around 1200 A.C.) have managed to survive around Greenland up until today.

Inuit (Thule culture), Dorset and European cultures have potentially met around Pikialasorsuaq during medieval times (around 1200 A.C.) (Figure 10).

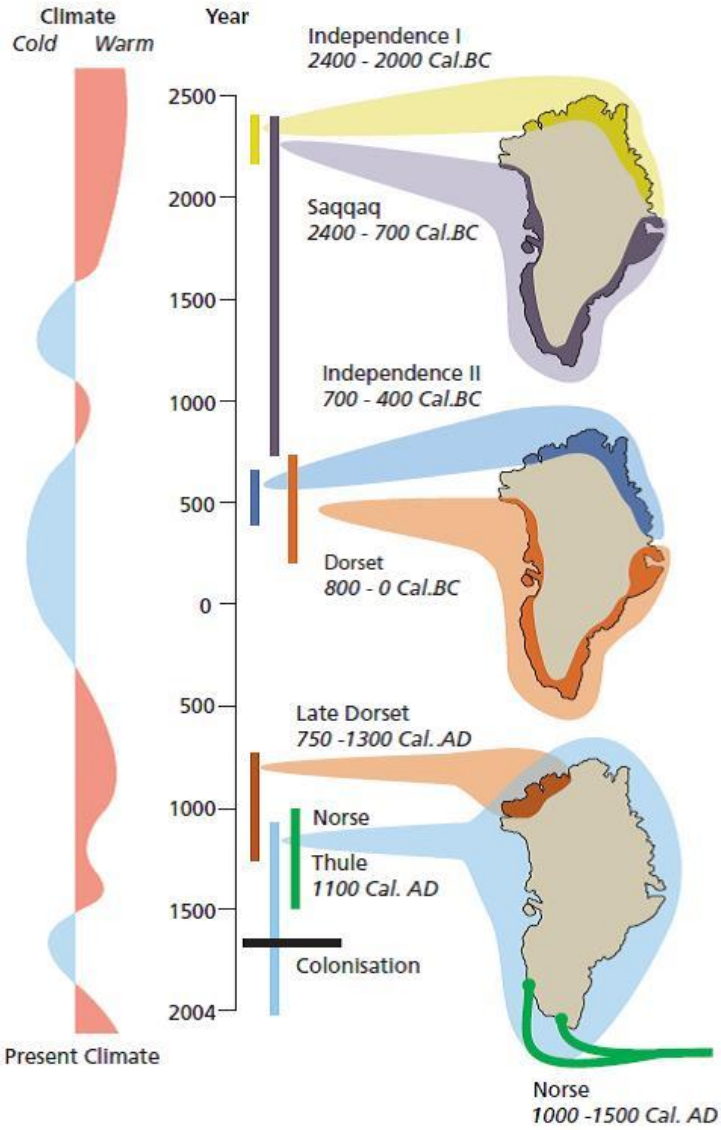

Figure 10: *Immigration waves through time. Source: National museum and Archive of Greenland.*

Much of what we know of the history of successive migrants to Greenland comes to us through findings of tools, houses as well as art located in many different sites (Figure 11). In addition, a rich folklore of oral traditions exists that tells the story of the earliest people of Pikialasorsuaq.

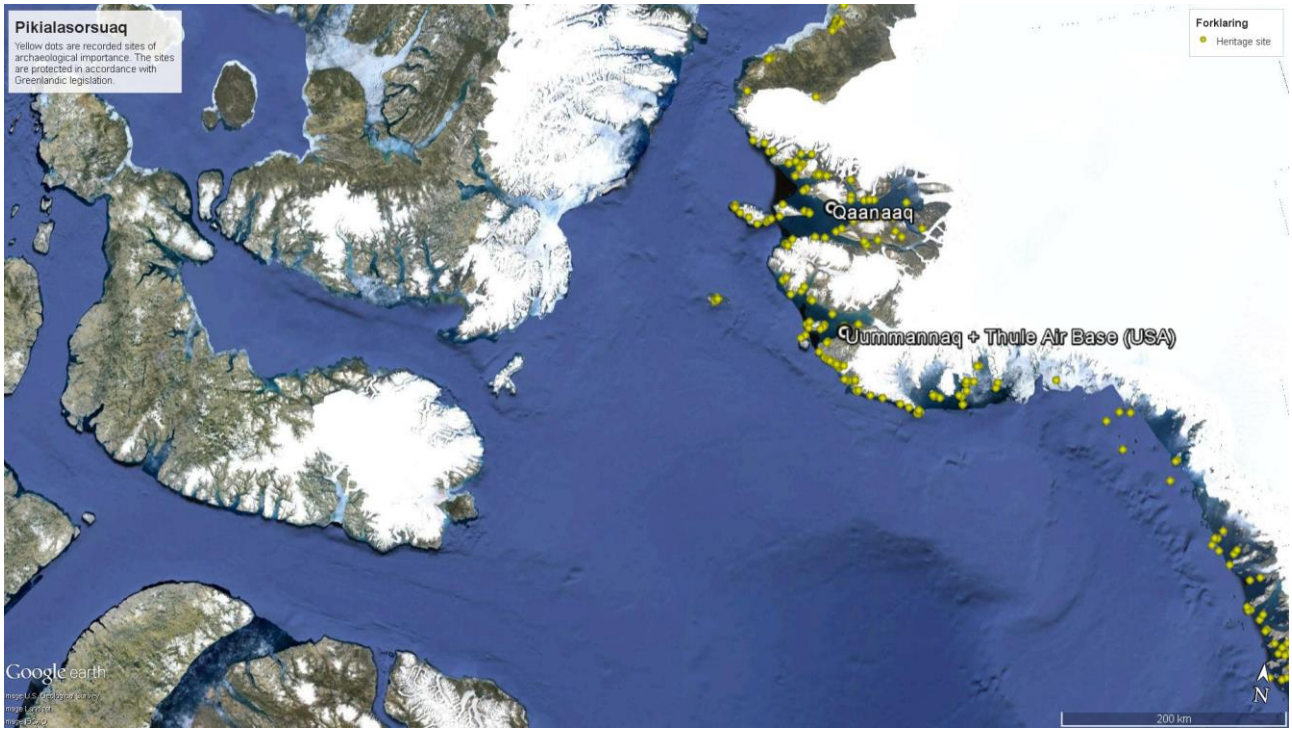

Figure 11: *Finding sites of artefacts. Source: National museum and Archive of Greenland.*

5.2 Qillarsuaq

Presenter:
Laakkuluk Williamson Bathory, ONC, Iqaluit.

The story of Qillarsuaq is a story of a charismatic leader and his group who journeyed from present-day northern Nunavut over the ice bridge of Smith Sound / Kane Basin to Avanersuaq – Northern Greenland in the mid-nineteenth century (Fact box 3). He reintroduced forgotten skills like the use of bow and arrows and qajaq to the people of Avanersuaq. Such is the case with the present day reinventions of amaatit and drums in Southwestern Greenland.

This story serves as a great inspiration to the work of ICC and ONC, which can be an introduction of ways to preserve life in a unique area while still maintaining a traditional lifestyle. These skills have given our ancestors the ability to survive in the Arctic for thousands of years.

FACT BOX 3: QILLARSUAQ
According to oral traditions, Qillarsuaq and his group were in conflicts with other people in Northern Baffin Island, and began their journey from Devon Island around 1858 and arrived to Avanersuaq around 1861 (Mary-Rousseliere 1991).

6. Third session – Conservation

6.1 Traditions around Qaanaaq

Presenter:
Mads Ole Kristiansen, hunter, Qaanaaq.

Many traditions are taught from childhood and not written down, but also the hunters' boards can advise on rules that must be followed.

Within certain limits hunting for marine mammals can only take place using specific methods, for example entering the Inglefield Bredning hunting with motorized boat is limited. Likewise, hunting for walrus or narwhals can only take place by harpooning before killing - that is an old tradition respected by everyone.

6.2 Protecting traditional livelihoods

Presenter:
Petrus Biilmann, KNAPK, Nuuk.
The following text is from his PowerPoint presentation.

"KNAPK is strictly against oil exploration in our waters. That is because 90% of our country's business is derived from renewable marine resources. If any serious oil-related accident should happen, Greenlanders living off of hunting and fishing will be suffer strongly. In the "protected area" of Melville Bay, seismic surveys are conducted by companies looking for oil.

Whales
We all know that whales are easily affected by sound. Intense sounds from seismic activities will not be the only problem. We also understand that, in hydrocarbon exploration, many vessels will be used. This increase in traffic and shipping noise will affect whales of all sizes. Many whales, such as narwhal, adopt noise avoidance strategies that can cause them to change migration routes, and this can also mean that hunting sites will probably need to be moved. Hunters have already observed disturbances to narwhal populations and changed behaviour as a result.

What happens in and around Pikialasorsuaq
As a consequence of still stronger currents in Pikialasorsuaq causing the ice to melt much earlier and increased ship traffic, not only do hunting sites change, but hunting traditions used for a long time may also change. Pollution from ships and oil exploration is also a great concern in Melville Bay and Pikialasorsuaq. Greenland lacks the ability to respond to a major oil spill. If an accident should happen in this region, severe consequences for hunters and fishers cannot be avoided."

Figure 12: *This may become something for history books only? Photographer: Mads Ole Kristiansen*

6.3 Regulation of oil and mineral activities

Presenter:
Thomas Varming, Ministry of Industry and Minerals Resources, Nuuk.

As stated in the Greenland Act on Mineral and Hydrocarbon Resources (Mineral Resources Act): Before any oil license can be issued the government must prepare a Strategic Environmental Impact Assessment (SEIA). In Greenland, SEIAs are prepared by the Danish Center of Environment and Energy (DCE). SEIAs summarize existing knowledge about the proposed license area and identify knowledge gaps.

When companies apply for licenses they must deliver a Social Impact Assessment (SIA), which will be a foundation for the possible later Impact Benefit Agreement (IBA), which is a three party agreement between the municipality, the government and the applying company. Besides the SIA companies must deliver Environmental Impact Assessment (EIAs) based on the SEIA.

The Greenland Mineral Resources Act also stands above other legislation like the Conservation Act, and thus BMP can issue licenses in areas protected by the Conservation Act. BMP has presently no plans of designating areas as no-go zones. However, the BMP has little interest in oil exploration in Pikialasorsuaq, because the Bureau believes that it does not contain the right geological features for petroleum.

6.4 Relevant international agreements and ongoing work

Presenter:
Parnuna Egede, ICC Greenland, Nuuk.
The following text is from her PowerPoint presentation.

6.4.1 Bilateral agreement

Bilateral Agreement between the Government of Canada and the Government of the Kingdom of Denmark for Cooperation Relating to the Marine Environment

This Agreement applies to the prevention, reduction and control of pollution of the marine environment resulting from activities within the area covered by this Agreement.

Prior to the initiation of any works or undertakings in its area of responsibility which may create a significant risk of pollution in the area of responsibility of the other Party, each Party on its own initiative or at the request of the other Party shall provide the other Party with all relevant information and data, the transmission of which is not prohibited by their respective laws or subject to any understanding with respect to confidentiality, and shall invite the comments of the other Party.

Each Party shall enter into consultations at the request of the other Party on any works or undertakings referred to in paragraph 1 and shall pursue such consultations over a reasonable period of time. Such consultations, held in the best spirit of cooperation and good neighbourliness, shall not be used by a Party to delay unreasonably or to impede the works or undertakings on which consultations are taking place.

6.4.2 International agreements

1982 United Nations Convention on the Law of the Sea (UNCLOS)

1969 International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties

1990 International Convention on Oil Pollution Preparedness, Response and Co-operation

1991 Convention on Environmental Impact Assessment in a Transboundary Context (Espoo)

The Espoo (EIA) Convention sets out the obligations of Parties to assess the environmental impact of certain activities at an early stage of planning. It also lays down the general obligation of States to notify and consult each other on all major projects under consideration that are likely to have a significant adverse environmental impact across boundaries.

Principle 17:
Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.

Principle 19:
States shall provide prior and timely notification and relevant information to potentially affected States on activities that may have a significant adverse transboundary environmental effect and shall consult with those States at an early stage and in good faith.

1979 Convention on Long-Range Transboundary Air Pollution (LRTAP)

Article 5:
Consultations shall be held, upon request, at an early stage between, on the one hand, Contracting Parties which are actually affected by or exposed to a significant risk of long-range transboundary air pollution and, on the other hand, Contracting Parties within which and subject to whose jurisdiction a significant contribution to long-range transboundary air pollution originates, or could originate, in connection with activities carried on or contemplated therein.

2009 International Maritime Organisation Guidelines for Ships Operating in Polar Waters

Mandatory Polar Code
IMO is currently developing a draft International code of safety for ships operating in polar waters (Polar Code), which would cover the full range of design, construction, equipment, operational, training, search and rescue and environmental protection matters relevant to ships operating in the inhospitable waters surrounding the two poles.

Arctic Council is looking to work together on a common approach with suggestions to higher standards.

1989 International Labour Organization Convention concerning Indigenous and Tribal Peoples in Independent Countries

ILO Convention no. 169 – Indigenous and Tribal Peoples Convention (ILO C169)

Article 15:
1. The rights of the peoples concerned to the natural resources pertaining to their lands shall be specially safeguarded. These rights include the right of these peoples to participate in the use, management and conservation of these resources.

2. In cases in which the State retains the ownership of mineral or sub-surface resources or rights to other resources pertaining to lands, governments shall establish or maintain procedures through which they shall consult these peoples, with a view to ascertaining whether and to what degree their interests would be prejudiced, before undertaking or

permitting any programmes for the exploration or exploitation of such resources pertaining to their lands. The peoples concerned shall wherever possible participate in the benefits of such activities, and shall receive fair compensation for any damages which they may sustain as a result of such activities.

Article 32:
Governments shall take appropriate measures, including by means of international agreements, to facilitate contacts and co-operation between indigenous and tribal peoples across borders, including activities in the economic, social, cultural, spiritual and environmental fields.

2007 United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)

Article 32:
1. Indigenous peoples have the right to determine and develop priorities and strategies for the development or use of their lands or territories and other resources.

2. States shall consult and cooperate in good faith with the indigenous peoples concerned through their own representative institutions in order to obtain their free and informed consent prior to the approval of any project affecting their lands or territories and other resources, particularly in connection with the development, utilization or exploitation of mineral, water or other resources.

3. States shall provide effective mechanisms for just and fair redress for any such activities, and appropriate measures shall be taken to mitigate adverse environmental, economic, social, cultural or spiritual impact.

6.4.3 Relevant work under the auspice of the Arctic Council

Arctic Marine Shipping Assessment (AMSA)
Provides policy advice and recommendations on marine safety and marine environmental protection as it related to shipping in the Arctic marine environment

AMSA Recommendation II (A) – Survey of Arctic Indigenous Marine Use

That the Arctic states should consider conducting surveys on Arctic marine use by indigenous communities where gaps are identified to collect information for establishing up-to-date baseline data to assess the impacts from Arctic shipping activities.

AMSA II (C)
The overall objective is to identify the ecologically and culturally significant marine areas that are vulnerable to marine vessel activities in the Arctic in light of changing climate conditions and increasing multiple marine uses.
Specific objectives include:

- Compile existing information and identify Arctic areas of heightened ecological and cultural significance

- Overlap these areas with existing information on Arctic marine vessel activity and prognosis for future development due to climate change and consider their vulnerability in relation to vessel activity
- Report the findings to the Senior Arctic Officials (SAO) of the Arctic Council

Baffin Bay – Davis Strait is one of the Large Marine Ecosystems (LME) investigated, identifying areas of Heightened Ecological Significance, including the North Water Polynya on both the Canadian and Greenlandic side

The report contains information on ecological function and the extent to which these areas meet the International Maritime Organisation (IMO) ecological criteria for Particularly Sensitive Sea Areas (PSSAs)

Link: http://www.caff.is/publications/view_document/251-arctic-marine-areas-of-heightened-ecological-and-cultural-significance-arctic-marine-shipping-assessment-amsa-iic

Agreement on Cooperation on Marine Oil Spill Pollution in the Arctic
The objective of this Agreement is to strengthen cooperation, coordination and mutual assistance among the Parties on oil pollution preparedness and response in the Arctic in order to protect the marine environment from pollution by oil.

- Signed at the Kiruna Ministerial Meeting in May 2013
- Agreement legally binding, appendices and Operational Guidelines not legally binding

Article 5 - Authorities and Contact Points
1. Each Party's national system for responding promptly and effectively to oil pollution incidents shall include as a minimum the designation of:
a. the competent national authority or authorities with responsibility for oil pollution preparedness and response;
b. the national 24-hour operational contact point or points, which shall be responsible for the receipt and transmission of oil pollution reports; and
c. an authority or authorities entitled to act on behalf of the Party to request assistance or to decide to render the assistance requested.

Article 6 - Notification
1. Whenever a Party receives information on oil pollution, or possible oil pollution, it shall:
c. (…) without delay, inform all States whose interests are affected or likely to be affected by such oil pollution incident (…)

Article 7 - Monitoring
3. The Parties shall endeavor to cooperate in organizing and conducting monitoring, especially regarding transboundary oil pollution, inter alia, through conclusion of bilateral or multilateral agreements or arrangements.

Article 11 - Joint Review of Oil Pollution Incident Response Operations

After a joint response operation, the Parties shall make best efforts to conduct a joint review of the operation, led by the Party or Parties that coordinated the operation. Where appropriate, and subject to relevant national law, Parties involved in a joint review should document their findings and conclusions and make the results of such joint review publicly available.

Article 12 - Cooperation and Exchange of Information

2. Each Party, subject to its national law and international law, should endeavor to make information provided to other Parties under paragraph 1 of this Article publicly available.

Article 13 - Joint Exercises and Training

3. Where appropriate, the Parties should include stakeholders in the planning and execution of joint exercises and training.

Operational Guidelines

5.4 Public Communications

Public communication should be handled by the Requesting Party. During joint operations, the respective public affairs officers should coordinate to the maximum extent possible to ensure information released separately is consistent and accurate.

Kingdom of Denmark, in relation to Greenland: Responsibility for response to pollution at sea from oil and chemicals lies within 3 jurisdictions:

<u>Inside 3 NM:</u>
Spills inside the 3 NM zone falls under the jurisdiction of the Ministry of Domestic Affairs, Nature and Environment (MDANE), which reports directly to the Government of Greenland

<u>Outside 3 NM:</u>
Spills outside the 3 NM zone fall under the jurisdiction of the Danish Government. JOINT ARCTIC COMMAND (JACMD) is appointed by the Danish Government to monitor and combat those spills

<u>Spills from hydrocarbon related activities:</u>
Any spills from mineral and hydrocarbon related exploration and exploitation at sea falls under the jurisdiction of the Mineral License and Safety Authority (MLSA, earlier BMP), regardless whether the spill is within or outside 3 NM the Greenland coast. The MLSA reports directly to the government of Greenland through the Ministry of Mineral Resources. The Danish Centre for Environment and Energy (DCE) formerly known as the Danish National Environmental Research Institute/NERI) acts as environmental adviser to the Environment Agency for Mineral Resources Activities, which is in charge of the environmental issues of resource development, and reports directly to the government of Greenland through the Ministry of Nature and Environment.

Adaptation Actions for a Changing Arctic
Current status: Working on an implementation plan with the aim to "*produce information to assist local decision-makers and stakeholders in three pilot regions in developing adaptation tools and strategies to better deal with climate change and other pertinent environmental stressors*".

- Relevant Pilot region: Davis Strait / Baffin Bay

Link: http://www.arctic-council.org/index.php/en/document-archive/category/395-3-climate-environment-and-biodiversity?download=1441:3-1b-aaca-part-c-amap-proposed-work-plan.

Other relevant information from the Arctic Council:
Emergency Prevention, Preparedness and Response (EPPR) working group - Agreement on Cooperation on Marine Oil Pollution, Preparedness and Response in the Arctic

Link: http://www.arctic-council.org/eppr/agreement-on-cooperation-on-marine-oil-pollution-preparedness-and-response-in-the-arctic/

6.4.4 Case study

In Canada the process around the proposed Lancaster Sound national marine conversation area has been quite muddled, and the hope is that we can learn from their mistakes (Fact box 4).

FACT BOX 4: LANCASTER SOUND - TALLURUTIP TARIUNGA

(Excerpts from Riddell-Dixon, 2011)
Located at the eastern entrance to the Northwest Passage, Lancaster Sound is frequently referred to as the Serengeti of the Arctic in recognition of its incredible biological richness. (…) The marine mammals are particularly important sources of food for the Inuit as well as having cultural significance for them.
(…)
In December 2009, the federal Ministers of the Environment, Parks Canada and Health, along with the Nunavut Minister of the Environment and the Acting President of the Qikiqtani Inuit Association, announced a $5-million feasibility study for designating Lancaster Sound as a national marine conservation area.
(…)
In 2008, the Harper government committed $100 dollars over five years to the Canadian Geological Survey's program to update its geological maps (…); thus, when officials in Natural Resources Canada heard that the German ship R/V Polarstern was going to be conducting research in Lancaster Sound in the summer of 2010, they saw an opportunity to join forces and to undertake some of the seismic testing that the Canadian Geological Survey needed. While Environment Canada wanted to have Lancaster Sound designated as a national marine conservation area, it respected the argument put forward by Natural Resources that one needs to know what resources exist in and around an area before it is reserved for conservation.
(…)
The Nunavut Impact Review Board approved seismic testing, albeit with a list of conditions, which included holding meaningful consultations with the communities involved and having mammal observers on the ship to ensure that the seismic air gun was not deployed within one kilometre of

a marine mammal. On the basis of the board's recommendation, the Nunavut environment minister issued a research licence for the scientists to conduct the tests in Lancaster Sound.

On August 3, 2010, six days before the Polarstern was to commence its testing in Lancaster Sound, the Qikiqtani Inuit Association applied to the Nunavut Court of Justice to have the testing stopped on the grounds that the federal government had failed to hold meaningful consultations with the Inuit or to adequately accommodate their interests. (…) It raised concerns that the testing could negatively affect marine wildlife and serve as a precursor for oil and gas exploration and development, which could seriously threaten the economic and cultural well-being of the Inuit. On August 8, 2010, the court ordered the testing stopped on the grounds that the tests could cause "irreparable harm" to the five affected Inuit communities (Arctic Bay, Grise Fiord, Resolute Bay, Pond Inlet and Clyde River). (…) Although officials from Natural Resources had held one-day consultations in each of the affected communities, the meetings had been rushed and poorly executed. Furthermore, they were convened when many local citizens were away on hunting expeditions.

7. Group work

Groups assembled at the end of day 1 and 2 and wrote a list of key words.

7.1 Group 1

List of key words:

Research	Misissuineq
Hunting	Piniarneq
Conservation – What, how	Allanngutsaaliuineq – Suna, qanoq
Protect hunting areas	Piniarfiit illersorlugit
Inuit	Inuit
Ocean	Imavik
Changes	Allanngorneq
Adaptations	Naleqqussarneq
Connections	Attaveqaatit
Children	Meeqqat
Culture	Piorsarsimassuseq
Management	Aqutsineq
Sustainability	Piujuartitsineq
Information sharing	Paasissutissanik avitseqatigiinneq
Safeguarding	Illersuineq
Data collection	Paasissutissanik katersuineq
Sustainable use of resources	Pisuussutinik piujuartitsilluni atuineq
Mining and exploration	Aatsitassarsiorneq
Transportation	Assartuineq
Migration (Marine mammals)	Ingerlaarneq (imaani miluumasut)
Education	Ilinniartitaasaneq
Hearing processes	Tusarniaanerit
Diet/food security	Nerisaqarnerup qulakkeernera
Local and Traditional Knowledge	Piffimmi ilisimasatoqqat
Tourism	Takornariartitsineq
Agreement	Isumaqatigiissut
Respect	Ataqqeqatigiinneq
Pikialasorsuaq Commission	Pikialasorsuaq pillugu Isumalioqatigiissitaq

Group Statement

Recognizing the social, economic and ecological importance and unique nature of Pikialasorsuaq / North Water polynya, we emphasise that the current and developing use of this area needs bilateral and international collaboration, based on the principles of free, prior and informed consent.

7.2 Group 2

Suggestions and statements:

1) Land Use plan, to establish a commission that travels to communities and have them discuss the future of the area.
2) To carry out a mapping of important hunting areas
3) Canadians are fortunate to have the opportunity to interfere with resource development plans contrary to Greenlanders.
4) The QIA interference with Tallurutip Tariunga (Lancaster Sound) is a way to move forward.
5) The suggestion put forward in 1) should not only involve Inuit, but all potential with interests in Pikialasorsuaq (military, shipping companies, tourism, NTI, QIA) the output will be a document with recommendations for the authorities.
6) It is important to communicate throughout the process to authorities and others.
7) To come with a common message.
8) With regards to hydrocarbon development: No Go zones should be clearly defined in a bilateral agreement, contingency plan should be in place with regards to possible compensation in case of a spill
9) We may have to say “yes” to development as there may be no other options. Jobs is a good thing, but we may lose our culture
10) Culture, sharing of information
11) Why seismic studies? More transparency needed
12) More education
13) Wildlife is our food source that we must safeguard and protect
14) Respect each culture we are all doing what we can for our future generation
15) Why don’t they use the gathered experience
16) Local peoples need of food supply from wildlife
17) The Tallurutip Tariunga did not stop development
18) We need to identify important archaeological and hunting areas
19) Some company (coal company?) got permission to carry out studies on land where others need special permission
20) We are the caretakers and we should be open in our work.

8. Conclusions

Representatives from communities around Pikialasorsuaq, as well as participating scientists, are observing changes in wildlife behaviour and distribution, and in physical conditions of Pikialasorsuaq.

Causes of the changes are primarily due to climate changes, but also hydrocarbon exploration in the vicinity of the area may cause changes in wildlife behaviour and distribution.

Workshop participants agree on bringing forward a proposal to establish a commission to consult with communities and communicate possibilities for future use and conservation of the area.

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10. Appendices

Appendix 1: Participants List

Appendix 2: Workshop programme