

# CACCON, Future Earth Coasts, and Partner Networks Workshop

Arctic Science Summit Week

University of Alaska Fairbanks

Sunday 13 March 2016



This one-day workshop was convened as a side meeting at the Arctic Science Summit Week (ASSW 2016) in Fairbanks, Alaska, on Sunday 13 March 2016. The [ASSW 2016](#) meeting immediately preceded a one-day International Arctic Assembly and the third biennial [Arctic Observing Summit](#).

The side meeting was sponsored jointly by:

- [CACCON](#), the Circum-Arctic Coastal Communities KnOwledge Network;
- [Future Earth Coasts](#), a core project of Future Earth; and
- [Arctic-COAST](#), a Research Coordination Network funded by the US National Science Foundation (NSF).

It was also supported by the NSF-funded Exchange for Local Observations and Knowledge of the Arctic ([ELOKA](#)).

CACCON is the Arctic Regional Engagement Network of circumpolar coastal communities for Future Earth Coasts. A major objective of this meeting was to facilitate regional to international community-to-community knowledge and capacity sharing. The meeting aimed to discuss approaches and progress toward a circumpolar network of knowledge hubs and the emerging global coastal engagement process under Future Earth Coasts. The meeting explored local priorities, challenges, and successes in creating and sharing knowledge-for-action, and insights relevant to sustainability efforts in the Arctic network and the global coastal futures process.

The meeting agenda can be found in Appendix A and a list of participants is in Appendix B.

## Introduction

The meeting, chaired by Don Forbes and Trevor Bell, opened with a welcome and a round of introductions. The chairs provided a general introduction to the session objectives and a tentative agenda, which was intended to be flexible to maximise opportunities to capture insights from community representatives and partner networks. The general plan for the day was to devote most of the morning to hearing from communities about locally-based initiatives and enablers of sustainable development. As part of the Introduction, Don and Trevor provided a brief overview of

the origins, goals, and approach of CACCON. This included a brief overview of [SmartICE](#) (Sea-ice Monitoring And Real-Time Information for Coastal Environments) as an example of community-to-community capacity exchange and solutions-oriented research co-design and co-delivery.

Martin Le Tissier, Executive Officer of Future Earth Coasts (formerly the Land Ocean Interactions in the Coastal Zone (LOICZ) project), provided an overview of the emerging global coastal engagement process, the drivers of coastal change, and the need for better approaches, involving strong stakeholder engagement and direction, for sustainable development in the coastal zone. Future Earth Coasts has a global network of partners and a focus on capacity-building in regional seas and priority 'coastal hotspots': Coastal Urban Areas; Small Island States; Deltas and Estuaries; and the Arctic.

Andrey Petrov, Director of the ARCTICenter and Associate Professor of Geography at the University of Northern Iowa, provided a short summary of the goals and objectives of the Arctic-COAST Research Coordination Network. Arctic-COAST synthesizes and disseminates knowledge about the state, dynamics and resilience of Arctic coastal social-ecological systems. To bridge existing knowledge gaps, Arctic-COAST (1) provides systematic, synthetic knowledge about Eurasian and North American Arctic coastal social-ecological systems (CoSES); (2) compiles spatial, systems-based understandings of CoSES resilience for different geographical scales and regional contexts; (3) crafts future research directions for Arctic CoSES resilience and ecosystem stewardship, focusing on governance issues; and (4) fosters a new generation of scientists, policy and decision makers capable of adaptive management.

## **Community Round-table**

We were fortunate to have representatives from three Canadian Arctic coastal communities in Nunatsiavut (Nain) and Nunavut (Clyde River and Pond Inlet), three US communities in Alaska (Barrow, Wales, and Koyuk), and one Russian community in Chukotka (Lorino). The map below (Fig. 1) shows these communities with symbols in blue. Also in the group were research champions or partners for a number of other communities, some of which are shown in the map with yellow symbols.

Community representatives were asked to focus on four questions:

- What are the local priority issues in your region or community?
- How do you collect and/or use information to address them?
- What have been your community's greatest assets in developing your knowledge base?
- What plans do you have to maintain or expand your knowledge base?

The following text provides selected highlights from community participants<sup>1</sup>.

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<sup>1</sup> Although some of the presentations were made in an afternoon session, they have all been gathered together here for clarity and convenience.

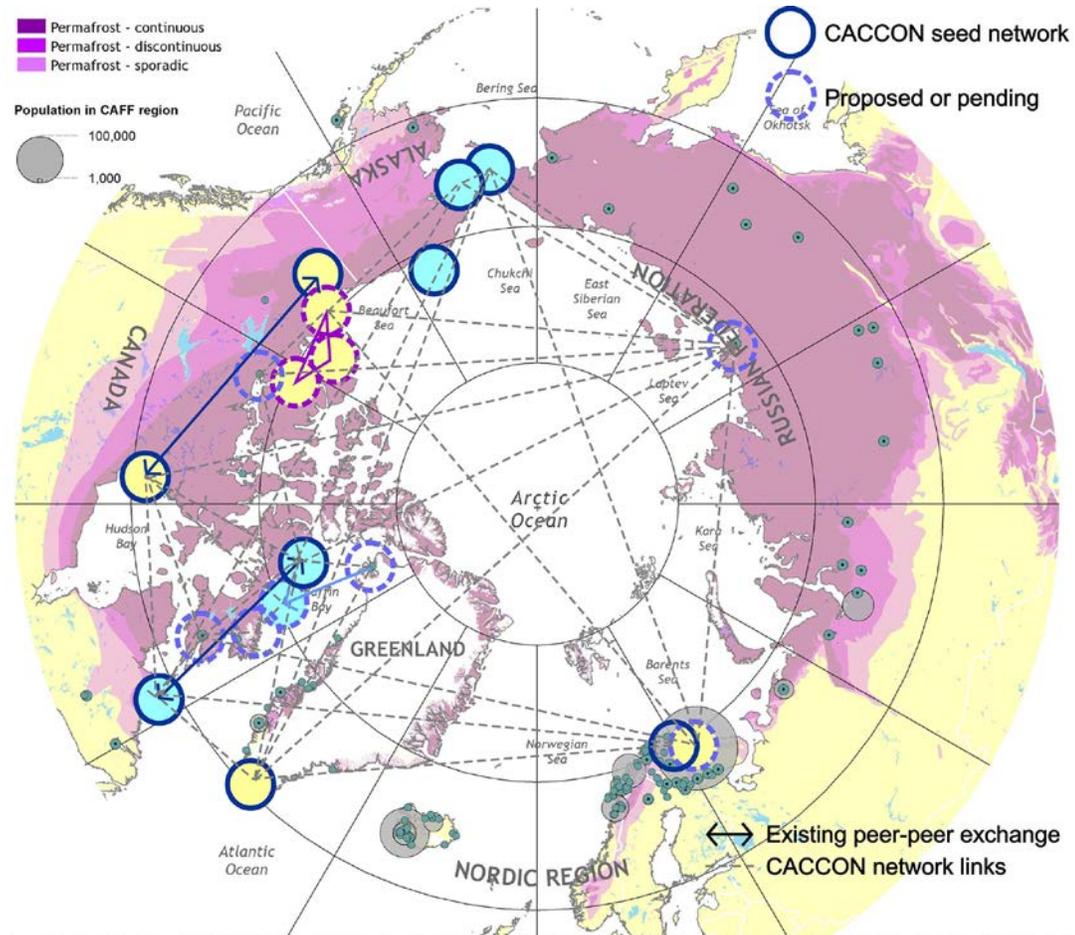


Fig. 1. Circumpolar coastal zone showing distribution of permafrost<sup>2</sup>, communities with a population over 1000 within the Conservation of Arctic Flora and Fauna (CAFF) region, and the CACCON pilot network as well as pending or proposed network partners<sup>3</sup>. The Fairbanks workshop included community representatives from sites shown in blue, and research champions or partners from those in yellow.

***Nain, Nunatsiavut (Rodd Laing)***

<sup>2</sup> Permafrost data in this figure are from Brown, J., Ferrians, O.J., Jr., Heginbottom, J.A. and Melnikov, E.S. 2002. Circum-Arctic Map of Permafrost and Ground-Ice Conditions. Version 2. National Snow and Ice Data Center, Boulder, CO. Digital data set GGD318 (<http://nsidc.org/data/GGD318>).

<sup>3</sup> Source of population data: Forbes, D.L. (editor). 2011. State of the Arctic Coast 2010 – Scientific Review and Outlook. International Arctic Science Committee, Land-Ocean Interactions in the Coastal Zone, Arctic Monitoring and Assessment Programme, International Permafrost Association. Helmholtz-Zentrum, Geesthacht, Germany, 178 p.

Nunatsiavut takes a “no silos” approach to research and knowledge acquisition in the region. There are many overlapping and interconnected issues, including inadequate housing and food insecurity. Rodd spoke about the results of a housing needs assessment, which revealed regional differences and the most severe housing needs in the two most northern communities in Nunatsiavut: Hopedale and Nain. These two communities are also the ones with the highest levels of food insecurity. There is an urgent need for assessment in real time, and changing the way things are done is the only way to make a difference. The Nunatsiavut Government (NG) is establishing a knowledge management strategy, including the creation of Statistics Nunatsiavut. It is hoped that this will bring about local buy-in, help with downscaling, integrate with on-the-ground realities and provide an overall framework of knowledge synthesis and implementation. Rodd also briefly described the impacts of the SmartICE (Sea-ice Monitoring And Real-Time Information for Coastal Environments) project, which was launched in Nain, and the development of the SmartKOMATIK for mapping ice conditions in real time.

Questions/Comments:

- *Can you tell us more about the SmartKOMATIK?* In response to questions about SmartKOMATIK, Trevor mentioned the cost, which is approximately \$40,000 CAD, and the goal of finding funding to place sensors in many more northern communities.
- *Who evaluates the research programs?* “We do”. In addition to the Nunatsiavut Government’s own program evaluation, the NG receives support from partners to help with evaluation. Although the NG is small, communities know their needs. Trevor added that there is also a research proposal peer review process in Nunatsiavut.
- *How does community engagement begin?* Go spend time in the community and get to know people without asking research questions. The most effective way of doing meaningful research and to transfer the science knowledge is to have Inuit embedded in the research from the outset (co-design and co-production of knowledge). NG sponsored a regional research forum where people in Nunatsiavut tried to learn cooperatively what the needs of the communities were. This also involved researchers, who were helping to put their science into context, and resulted in the sharing of information across many levels.
- *Is it really the case that because of sea-ice loss that there is less country food? What is the main cause of food insecurity?* A food security report is about to be released in Nunatsiavut. Community sharing is really important as a group hunts, fishes, and traps for the whole community and the community wants to eat local traditional food and not have to rely on the grocery store. The community wants to be able to access food and the community freezer program has significantly helped, with a sharing program, as well as provision of firearms, ammunition, and fuel. Seals and arctic char are presently the main sources of food, but it is difficult to compare across regions.

**Clyde River, Nunavut** (Shari Gearhead, Mike Jaypoody, and Robert Kautuk)

The [Ittaq Heritage and Research Centre](#) has been a catalyst for community-directed research in Clyde River for about the past 8 years, including studies of weather and ice conditions for access to country food. Through a number of initiatives, Clyde River has a history of interaction with other Arctic and non-Arctic communities, including Barrow (Alaska) and Qaanaq (Greenland) through the

Siku-Inuit-Hila project; and communities in Nepal through a 3-poles program. Clyde River puts a priority on community leadership, with the community identifying research priorities and inviting people in to provide specific expertise. The Ilisaqsivik Society, a community service organization, has been an important contributor to community well-being and development over many years, and contributed to the development of video production expertise in the community. Recently the Ittaq Heritage and Research Centre has been developing the Clyde River Knowledge Atlas with support from ELOKA (the Exchange for Local Observations and Knowledge of the Arctic) and the Geomatics and Cartographic Research Centre at Carleton University. This involves accessing results from past research in the region to make it available for local decision-making. In addition, work is underway to document the location and pronunciation of place names over a large area of central Baffin Island in an online interactive atlas framework.

Questions/Comments:

- *Is the Clyde River Knowledge Atlas public?* Although it is not yet public, Mike Jaypoody and Robert Kautuk gave participants a glimpse of the internal site, the access of which during the preliminary stages of development, is limited to community members.
- *With regard to internet speed challenges working in northern communities, how do you upload large amounts of data?* Peter Pulsifer (ELOKA) talked about the importance of having southern nodes to help back-up data and provide access as deemed appropriate.
- *How do you capture and share elders' stories?* Shari Gearheard replied that although they are being documented they are mostly available in the community. Some are available online, and eventually more will be uploaded, but it takes time.

**Pond Inlet, Nunavut** (Shelly Elverum and Natasha Simonee)

In Nunavut, 60% of the population is under 20 years old, so creating opportunities for young people to take their place in community affairs is a high priority. This is where Ikaarvik can play an important role (see Ikaarvik: *Barriers to Bridges*<sup>4</sup> for more details). Pond Inlet has a number of initiatives sponsored from various community groups including Ikaarvik and the Hunters & Trappers Organization. A noteworthy example was a community research priority-setting exercise that gave the first word to youth and then brought them together with adults and elders. The young people not only had creative ideas but also gained confidence through validation by the older people. Topics of concern included relationships, child-rearing, community governance, healing, language, education, and food security. This and other Ikaarvik initiatives are helping to create opportunities for young people to take an active role in research and other community efforts. This has also provided the opportunity for partnerships with projects and networks that respond to community priorities (e.g. SmartICE, AMAIS<sup>5</sup>, CACCON). The community is positive that the solutions [to sustainability] are possible by getting assistance through partners and networks.

Questions/Comments:

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<sup>4</sup>[http://www.nunatsiagonline.ca/stories/article/65674ikaarvik\\_bridging\\_the\\_gap\\_between\\_arctic\\_science\\_and\\_northern\\_needs/](http://www.nunatsiagonline.ca/stories/article/65674ikaarvik_bridging_the_gap_between_arctic_science_and_northern_needs/)

<sup>5</sup> Arctic Marine Activities Integration and Synthesis Project (a MEOPAR project), <http://meopar.ca/research/project/arctic-marine-activities-integration-synthesis-project-amais-enhancing-ocea>

- *A question about the connection between youth and senior generations:* The 30-40 age group is quite important as a bridging generation, so building opportunities for communication across the community age spectrum is essential.
- *Comment that the SmartICE technology can be used to detect soil contaminants as well as providing information on ice.* Shelly acknowledged that this is a great example of partnership with scientists to address community priorities and share information.

***Lorino, Chukotka (Eduard Zdor and Vladimir Etylin)***

Research priorities in the region are very similar to those discussed already. Climate change impacts the way people use the land and the sea. Industrial development of the region, particularly offshore oil and gas development in the Chukchi Sea, is taking place in a key ecological area for walrus in the region. As in other places, such as Clyde River, there is concern about the effects of marine seismic exploration on marine mammals. Walrus are a critical resource culturally and for food security; reindeer herding is also important and at present there are 16 native enterprises providing enough food and even exporting some. Preservation of identity (culture, lifestyle, language) is a vital concern. Research priorities include the status of marine mammals – walrus and polar bear – and there has been some research on traditional knowledge (also referred to as Indigenous knowledge<sup>6</sup>), including a couple of reports in English, which are on the web. There are many problems with research funding in Russia at present, so international partners are important for seeking out other avenues of support. While there are many topics of common interest, research priorities are not always the same. In the 1990s, indigenous people were not prepared for the drastic social changes that occurred, but Chukotkans were a little better off because of good local leadership. Indigenous organizations are not numerous in Chukotka, but they are organizing and moving forward. Traditional knowledge tends to be transferred in person, but the internet is also being used to transfer this knowledge. Combining traditional knowledge and scientific knowledge is important. The government may be able to help with moving this forward.

***Questions/Comments:***

- *Is food security in the region dependent on the domestic reindeer herding?* There are fewer reindeer nowadays but there is still food available for communities, and with three slaughterhouses they are able to export some as well.

***Barrow and North Slope Borough, Alaska (Qaiyaan Harcharek)***

The Department of Wildlife Management in the North Slope Borough (NSB) was established to promote and ensure food security. It also promotes the integration of traditional knowledge and conventional science. Bowhead whale harvesting is important culturally and as a food source, but a successful harvest is dependent on the availability of ice which is thick enough to haul out and butcher the whale. This is threatened by climate change, which is also leading to earlier breakup and later freeze-up. Climate warming is also threatening the stability and effectiveness of ice houses, resulting in diminished capacity to preserve whale meat and other food; the alternative (i.e. mechanical freezers) requires energy and financial resources. There are also issues related to

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<sup>6</sup> Recognising that the Inuit Circumpolar Council (ICC), and others use the term ‘Indigenous Knowledge’ (IK), it should be noted that ‘traditional knowledge’ and ‘indigenous knowledge’ are used interchangeably in this report, depending on the speaker.

technology and the use of GPS without understanding the land or the sea ice. The Department of Wildlife Management uses USGS maps, which don't include the traditional place names, and which could become an issue for search and rescue. There is, therefore, a need to reclaim traditional place names (decolonization of maps) and strengthen the use of indigenous language. There is also concern about the impacts of research activity on hunting success, and the need for researchers to share findings in a form and language that is understandable to local stakeholders. The Iñupiak language is at risk, yet identity and knowledge are tied to the language, as are concepts related to snow, ice, and navigation on the land, that can't be expressed in English. There is also a need for culturally and environmentally appropriate education, instead of a southern curriculum that northern students cannot relate to. Locally-relevant science education is a great way to get youth interested in the land and for them to aspire to become scientists themselves. Finally, the pace of climate change is rapid beyond people's capacity to adapt, resulting in hunters falling through the ice on the sea, lakes, and rivers. They can no longer do fall sea-ice fishing, as it is late freezing, and it is difficult to get to the caribou in the fall due to the lack of sea ice for travelling. This has an impact on food security.

Questions/Comments:

- *Are folks on the North Slope able to control the type and amount of research?* There is a permitting process on the North Slope. Furthermore, no social science research project would be possible without community support.
- *Discussion about the use of community resources and knowledge:* If approached in the right way, with appropriate credit, citation, and co-investigation, a lot of money could be saved. In addition, it is not about validating traditional knowledge, which has its own validation processes.
- *Other points from the discussion:*
  - There is a shortage of resources for evaluating research applications in the communities – this is not in anyone's job description, so it falls on the shoulders of people already committed in other ways and becomes a stress on the community.
  - Northern indigenous residents have much knowledge and should be respected as scientists themselves. Because traditional knowledge is oral, it is considered by some to be unreliable and invalid.
  - The deep pockets of industry have weight in the decisions being made. People are afraid to share traditional knowledge because they don't know how it will be used, written down, and/or interpreted, or if it will be used against them (bowhead whale example was given).

***Wales and Koyuk, Alaska (Amos Oxereok)***

Amos recently moved from Wales to Koyuk, so his awareness of issues in Wales, particularly related to walrus hunting, is fresh. He spoke against a backdrop of outstanding video that brought the whole room along for the walrus hunt in the waters between Alaska and Chukotka and between the Bering and the Chukchi seas. He spoke about environmental change – the fact that they don't see multi-year ice anymore, ice is sometimes more congested meaning they have to use leads. They use satellite data, weather data, because weather is less predictable, and if they relied solely on traditional knowledge, no one would go out hunting. At the same time, there is a need to consider how they can use change to their advantage. He also mentioned that Facebook is being used to track how animals are moving north.

### ***Yukon Research Centre, Whitehorse (Alison Perrin)***

The Yukon Research Centre, representing a regional partner, focuses on climate-change adaptation across the Arctic under the Northern Climate Exchange and the Yukon Climate Change Consortium. Yukon communities are on freshwater rivers and are interested in riverbank erosion, permafrost, flooding, ice jams, water security, safety on the land, and impacts of resource development, among other issues. Alison spoke about the importance of community champions, community research needs assessments, and partnerships with other institutions. She also highlighted the [Arctic Adaptation Exchange](#), to which the Yukon government's Climate Change Secretariat contributed.

#### ***Questions/Comments:***

- *There was a question about the Yukon's marine coast, which has no permanent settlements, but forms part of the Inuvialuit Settlement Region, where people from Aklavik, Northwest Territories, use traditional lands on an ongoing basis. There is a perennial hunting and fishing community at Shingle Point, important cultural and archaeological resources along the entire coast, just half of which falls within Ivvavik National Park, and the territorial park at Herschel Island, which is an important historic site. What are the information needs and who are the decision-makers who need to be involved along this coast?* There is a position in the Yukon Territorial Government which includes part-time responsibility for North Slope issues, including management of the Porcupine Caribou Herd, for which information is exchanged and shared with relevant stakeholders in Alaska and with community members.

### **Networks Round-Table**

After lunch, the workshop shifted to a discussion with other networks working to promote community-driven observing, knowledge management, and capacity sharing in the North. While many were not able to participate, the selection of networks represented provided an opportunity for valuable exchange of ideas and experience, opening opportunities for collaboration and synergy.

#### ***A-OK: Alaska Arctic Observatory (Olivia Lee, University of Alaska Fairbanks (UAF))***

This network involving North Slope communities, which builds on the SIZONet project (the [Seasonal Ice Zone Observing Network](#)), is just getting started. It is intended to facilitate community-based observations of sea ice and permafrost and how they affect subsistence hunting, and is partnering with CACCON and CONAS ([Community Observing Network for Adaptation and Security](#)), among others. It provides a regional knowledge hub developed in partnership with ELOKA, an interactive tool for the communities to store, manage, and share their data. It focuses on the variables that are most important to community members, so they have ownership of the data. The network is funded for 5 years and has a Steering Committee with two members from UAF and representation from each community. This network will complement initiatives like the Local Environment Observers (LEO) network that is more observational and opportunistic.

#### ***Inuit Circumpolar Council (presented by Peter Pulsifer, National Snow and Ice Data Center, ELOKA)***

Carolina Behe (ICC-Anchorage) had intended to join us but was unfortunately delayed arriving. In her place, Peter Pulsifer, who works closely with the Inuit Circumpolar Council (ICC) and Inuit

Tapariit Kanatami (ITK) kindly offered to provide some details on ICC activities as ELOKA is a partner in the development of the project reported. He explained that ICC is the lead on the [Atlas of Community-Based Monitoring and Indigenous Knowledge in a Changing Arctic](#) in partnership with Brown University, ITK, ELOKA and others. This can be considered the ‘Yellow Pages’ for Arctic community-based monitoring. He mentioned that although a full report<sup>7</sup> analyzing the content of the Atlas was forthcoming, an executive summary is already available. The atlas also includes a layer on Inuit mental health and wellness projects and programs and new content is being added through additional support from Polar Knowledge Canada. Questions include how we measure success – based on usage and through direct communication with users.

Questions/Comments:

- *How can you bring this directly to the communities with low bandwidth?* The Atlas is designed with low-bandwidth environments in mind, however other options might include burning a DVD and sending to the communities several times a year; additionally, the report will be available and could be updated regularly with adequate resources. To promote the Atlas, it would be helpful to link to community Facebook pages and similar.

***Exchange for Local Observations and Knowledge of the Arctic- ELOKA (Peter Pulsifer, NSIDC)***

The NSF-funded ELOKA program provides support services for the collection, preservation, exchange, and use of local observations and knowledge of the Arctic by communities, researchers, and others. Hosted by the National Snow and Ice Data Center (NSIDC) at the University of Colorado, ELOKA has full use of the infrastructure and data management expertise of that organization. ELOKA may sometimes serve as an archive for communities that don't have capacity, but is also building capacity with projects such as was described earlier in Clyde River. Other components of ELOKA include data listings and catalogue services; data distribution; long-term preservation using the Data Conservancy software (partly funded by NSF); community narrative sites; and combining satellite data with indigenous knowledge and values (*Inuit Qaujimaqatuqangit*), including place names and historical knowledge. ELOKA collaborates with and supports SIZONet (the [Seasonal Ice Zone Observing Network](#)), the [Yupik Environmental Knowledge Project](#), and many others. Another activity is building knowledge models for cross-cultural understanding – linking WMO terminology and Inuit terminology using concept-mapping visualizations. The focus here is on sea-ice safety and how to communicate to youth. ELOKA focuses on projects “owned and operated” by the community. It works to train community members on how to manage their own knowledge hubs. In response to a question, Peter indicated that ELOKA and partners often tend to think more about linking than combining traditional knowledge and western science data, as attempts to integrate can be problematic (e.g. attempting to reduce narrative to quantitative data). Capturing the relationships, scales, and temporal differences of traditional knowledge is a thoughtful process carried out in partnership with knowledge holders. Each community is different in what they want and how they share their information and with whom. ELOKA funding has just been renewed.

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<sup>7</sup> The review of the SAON task on Community-based monitoring and Indigenous knowledge in a Changing Arctic has now been finalised: It is available at:

[http://www.inuitcircumpolar.com/uploads/3/0/5/4/30542564/cbm\\_final\\_report.pdf](http://www.inuitcircumpolar.com/uploads/3/0/5/4/30542564/cbm_final_report.pdf)

***Community Based Observing Networks*** (Lilian Alessa, Centre for Resilient Communities (CRC), University of Idaho)

A number of community-based observing networks (CBONs) have emerged in recent years and there is a growing understanding of their value and best practices<sup>8</sup>. The Bering Sea Sub-Network (BSSN) fostered collaborative sharing of environmental knowledge among eight Aleut communities on both sides of the Bering Sea. It was an early example of community knowledge-sharing and co-production as well as integration across international boundaries. BSSN has now transitioned into CONAS (the [Community Observing Network for Adaptation and Security](#)), which aims to continue the partnership with the BSSN communities, expanding the scope to include “tangible metrics and guidelines for adaptation” in collaboration with the Sustainable Development Working Group and Conservation of Arctic Flora and Fauna (CAFF) of the Arctic Council. Lilian also reported on an innovative shift to partnership (and funding) with Google, in which each of the communities determines the conditions and has a separate agreement with the company. CBONs should be recognized as full-fledged observing systems and can serve multiple functions, as do instrumental observing systems. We can consider a typology of community-based observing (CBO) ranging from formal networks and systems to community observer blogs (e.g. Local Environmental Observers, LEO). Federal agencies are legally mandated to make decisions based on the best available knowledge, thus there is a need for a science and practice of CBO that is not driven by any one group. Among other initiatives, the Department of Homeland Security has established the Arctic Domain Awareness Center, which will address environmental as well as other security concerns, and mobilize a CBON for situational awareness in relation to search and rescue.

### **Other contributions**

*Laura Eerkes-Medrano* (University of Victoria, Victoria, BC) presented insights from her extensive experience and community consultations on marine and weather hazards. Her work includes consideration of the perception of risk (and related gender bias) in Arctic coastal communities from the Chukchi Sea to the Canadian Arctic Archipelago.

*Rebecca Anderson* (United States Geological Survey, Anchorage, AK) presented an overview of the Circumpolar Biodiversity Monitoring Programme (CBMP) of the Conservation of Arctic Flora and Fauna Working Group of the Arctic Council and its [Coastal Expert Monitoring Group](#) (CEMG), of which she is co-Chair. The CEMG, responsible for the Coastal CBMP, will engage much more closely with northern communities than any of the other components (terrestrial, freshwater, marine) and will value traditional and indigenous knowledge, community-based monitoring, remote sensing, and other data sources. There are clear opportunities for synergy and collaboration between CACCON and CEMG, as initiated in Ottawa earlier in March.

*Gail Fondahl* (University of Northern British Columbia, Prince George, BC), current chair of the Social and Human Working Group (SHWG) of the International Arctic Science Committee (IASC), one of the IASC working groups that co-sponsored CACCON, provided an overview of the SHWG agenda, including a cross-cutting focus on people and coastal processes, as well as attention to issues of power, agency, gender, and equity.

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<sup>8</sup> See Alessa et al. 2016. [Best Practices for Community-based Observing: A National Workshop Report](#), Oct 5-6, 2015, Seattle, WA.

## Summary – Thoughts and Insights

The following is a selection of final comments from workshop participants:

- Individual groups and organizations should document best practices, different regions doing different things, to assist in understanding how other communities are addressing issues.
- Many of the problems we are addressing are similar to issues in Pacific islands. So much to share with other indigenous groups. Try to find some money to bring people from this group to other workshops.
- Ideas for sharing project capacity ... What is capacity from a northern perspective?
- Add more links to the website.
- CACCON needs to catch up with American and Russian partners ... how to effectively use resources to build energy and synergies.
- Stay in touch with the IASC SHWG to see in which ways we can help.
- I would like to have something where I can see what's going on in other communities, to know who to contact.
- I have been truly inspired with what's been going on in the communities. I have been leading the Arctic Social Indicators work, but the community element is what has been missing.
- This activity needs to be transdisciplinary, involving decision-makers and practitioners.
- We need to think about a communications plan, to bring information into communities.
- Future meetings need to be in a context more congenial to northern residents.
- Need a more intimate venue and conversation with the communities, including youth and schools.
- We have a big issue here in Alaska, and need CACCON to reach out to the coastal communities on how to get this information to researchers.
- It would be good to have a commitment to send out a group list and e-mail, updates every 6 months
- Write a synthesis of what we did today, it frames coastal processes and how communities are approaching challenges.
- Try and focus on working together to converge networks-on-networks-on-networks. How do we get it so it's all coming through one channel.
- Work with funders and governments to make research investments directly into the communities. The top-down model is not sustainable.
- This resonates with the Arctic Council working groups - how can they and the Arctic Institute of North America (AINA) contribute and help move this from the bottom up.
- Think about the structure, governance, and how does it affect leadership.

The co-chairs thanked everyone for their insightful comments and valued attention through a long and very full day. It was enlightening and inspiring to hear from all of our community and regional participants, our network partners, and the broader group. This is the largest group of knowledge shareholders we have brought together so far and we greatly appreciate your commitment of time and your contributions. This brought the workshop to a close.

See appendices on the following pages for the Agenda and a list of participants.

## Appendix I

### Agenda

#### CACCON/ Future Earth Coasts/ Arctic-COAST Workshop

ASSW, University of Alaska Fairbanks, Sunday 13 March 2016

09:00 **Introduction**

CACCON/ SmartICE	Forbes & Bell
Future Earth Coasts	LeTissier
Arctic-COAST	Petrov

10:00 Coffee

10:10 **Community Knowledge Hubs Roundtable**

Knowledge Hub Status, Challenges, and Recommendations

- Nunatsiavut
- Clyde River
- Pond Inlet
- Barrow
- Wales
- Chukotka

**Knowledge Hubs Discussion** – key enablers, challenges, ‘bright spots’

12:00 **Lunch & Fresh Air**

13:00 **Networks Roundtable**

Scope, partners, notable achievements, prognosis

- ICC (Inuit Circumpolar Council)
- ELOKA (Exchange for Local Observations and Knowledge of the Arctic)
- A-OK (Alaska Arctic observatory)
- BSSN/ CONAS (Bering Sea Sub-Network/Community Observing Network for Adaptation and Security)
- others?

**Networks Discussion** – complementarity, working together, learning from each other

15:00 Coffee

15:15 **Arctic-COAST**

15:45 **CACCON & Future Earth Coasts**

16:15 **Discussion: Collaborative agenda, Arctic/Global Coastal Futures**

16:45 Adjourn

## Appendix II

### List of Participants

#### ***CACCON Initiating Group***

Donald Forbes	Vice-chair, Future Earth Coasts & Memorial University, Dartmouth, NS, Canada
Trevor Bell	SmartICE, Memorial University of Newfoundland, St. John's, NL, Canada
Joan Nymand Larsen	Scientific Steering Committee- Future Earth Coasts & Stefansson Arctic Institute, Akureyri, Iceland
Andrey Petrov	Arctic-COASTS, University of Northern Iowa, Cedar Falls, IA, USA
Peter Pulsifer	Exchange for Local Observations and Knowledge of the Arctic (ELOKA) & National Snow and Ice Data Center, Boulder, CO, USA
Tatiana Vlasova	Russian Academy of Sciences, Moscow, Russia

#### ***Sponsoring organizations***

Martin Le Tissier	Executive Officer, Future Earth Coasts, University College Cork, Cork, Ireland
Gail Fondahl	Chair, International Arctic Science Committee (IASC) Social and Human Working Group (SHWG), University of Northern British Columbia, Prince George, BC, Canada

#### ***Representatives from existing or potential community knowledge hubs***

Rodd Laing	Nunatsiavut Government, Nain, NL, Canada
Shelly Elverum	Ikaarvik and SmartICE, Pond Inlet, NU, Canada
Natasha Simonee	Mittimatalik Hunters & Trappers Association, Pond Inlet, NU, Canada
Shari Gearheard	Ittaq Heritage and Research Centre, Clyde River, NU, Canada & University of Colorado, Boulder, USA
Robert Kautuk	Ittaq Heritage and Research Centre, Clyde River, NU, Canada
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