ROADS Advisory Panel
16th January 2024, 15-17 UTC, 16-18 CET, 10am-12pm EST
Teleconference –
Workshop #1: Indigenous and Community-scale Systems

1. Welcome and Review of Agenda

Today's ROADS Advisory Panel (AP) meeting was the first in a series of informative mini-workshops on how observing and data system requirements and implementation strategies are structured, documented and evaluated across diverse activities. The focus at this initial mini-workshop was on Indigenous-led and community-scale systems.

The ROADS Advisory Panel (AP) Co-chairs, Sandy Starkweather and Lauren Divine were joined by Margaret Rudolf who together chaired the mini-workshop. Participants were welcomed and given the number of invited guests to the meeting, a quick round of introductions took place (List of participants Appendix 1). Lauren provided an overview of today's agenda (Appendix 2) noting that meeting documents are available at the following workspace: https://drive.google.com/drive/folders/1rm3aGZcGuKaVMagkNNpU8sOEzEChKWns She also noted that minutes from the last AP meeting were available for review at Minutes from meeting 19th December 2023

Margaret set the stage for today's mini-workshop by reviewing the ROADS Guiding Principles, including the principle that states "Indigenous equitable partnership and funding for their activities is critical to ROADS". She then presented the four phases in the ROADS Expert Panel process, noting that Phase 3: Develop SAV Observing and Data Systems Requirements is the topic for today's meeting. This material is all available on the ROADS website https://roadsadvisorypanel.org/documentation She reviewed that today's discussions would focus on Indigenous and community-scale systems and that mini-workshops in February and later would focus on Regional and Global systems.

Lauren reviewed the CARE principles (**C**ollective benefits, **A**uthority to Control, **R**esponsibility, **E**thics) and their relevance to today's discussions. Lauren described how the CARE principles are reflected in the work of the Indigenous Sentinel Networks (ISN), regarding Indigenous data policies and community data management. The principles have generated valuable discussions and data management within ISN efforts. Noor Johnson spoke of ELOKA and how the CARE principles have been valuable in increasing awareness of access to data/open data and that Indigenous data sovereignty is key in these discussions. She noted that details of implementation of the CARE principles are advancing and that their application to community generated data is important. Noor described how today's presentations from ISN, ELOKA and SIKU will be valuable to continue conversations

with communities on questions about what do communities want? How can they track how data are used? Where are the data going and to what purpose? Who is citing it?

2. Presentations on Indigenous and Community-scale Systems

(Note: Please refer to the ROADS website where the three following presentations are available; highlights of the presentations are presented below)

a. **SIKU** - Sophie Crump, SIKU, presented on this Indigenous knowledge social network that is both a web and mobile based platform designed to support Indigenous knowledge sharing across communities and individuals. Four core principles have guided the development and use of SIKU – Respect, Self-determination, Intellectual Property (e.g. project stewardship framework with data ownership), and Integrity of information. Sophie described how these principles are being applied in the creation of a protected area in James Bay region. Further data management details from the SIKU platform were provided on the type of social postings, language options, location details of observations, shareability of data, privacy of posts/data, as well as stewardship options (e.g. Indigenous, Ice Watch, Open Access stewardship).

b. **ELOKA** – Noor Johnson described ELOKA (Exchange for Local Observations and Knowledge of the Arctic) as fostering collaboration and learning between resident Arctic experts and visiting researchers to facilitate the collection, preservation, exchange and use of local observations and Indigenous knowledge. ELOKA works with community and academic partners to develop products and tools to ethically store and share data. Their services include consulting on ethical data management, providing archival and data rescue, capacity sharing and training, and building a network of community-led projects. She described a community data management system that addressed implementing requirements and best practices (e.g. FAIR, CARE), building capacity and communities, and collaborative data stewardship. She noted that the data services provided by ELOKA are backed up at the NSIDC. Noor outlined in detail the data sovereignty and ownership within ELOKA that have been a key part of their development by building long-term partnerships/relationships via education, training and capacity building and being responsive to changing needs of the partner/community (e.g. agile software development). Noor also noted that ELOKA efforts are open and that they would welcome new partners as they continue to learn and move forward.

c. **Indigenous Sentinels Network (ISN)** – Bruce Robson opened his presentation by outlining the ISN mission statement: “to support the collection of Indigenous, local and traditional knowledge and scientific information to empower holistic, ecosystem – and community-centered natural resource management and decision-making at multiple levels”. ISN has worked in the Alaska region for over twenty years. They have developed purpose-built apps for a range of data collection programs. After four years, ISN is nearing the completion of a new software platform that has re-designed requirements (regarding themes of coastal erosion, migratory birds, subsistence harvest monitoring, etc.) The new platform provides increased control by local communities with components on data access, who can see the data, and how the data can be shared across programs

and communities. They have developed a novel "form builder" function that could have application on other platforms. Bruce noted that ISN is open to working with new partners, in line with their mission statement.

d. SAON Arctic Data Committee – Unfortunately, no one from the ADC was able to attend today.

A rich discussion followed these presentations focussing on the following questions: What did we hear about today that would be helpful tools in the Expert Panels' toolkit for Phase III and Phase IV? What did we hear that informs our thinking about structuring and documenting requirements and implementation for Shared Arctic Variables? What did we hear that informs our thinking about evaluating documentation for Shared Arctic Variables?

Sandy described the mini-workshop as a learning and sharing session that had been very successful in this regard. She noted that the presentations showed a good perspective of the FAIR and CARE data principles in practice.

Hajo Eicken asked for clarification on "**R**esponsibility" of data (from the CARE principle). Sophie described that SIKU projects are usually Indigenous community-led and emphasized the need for positive relationships with others about the observations. Bruce added that Responsibility has been described as having three aspects: building positive relationships with others as described by the SIKU work; incorporating Indigenous languages and perspectives in world views into software and documentation; and building on Indigenous tools by expanding capability and capacity through mapping functionality (e.g. dynamic form builder), and more community-driven rather than community-based efforts. Margaret provided two links to additional information on the CARE principles for Indigenous data governance: https://static1.squarespace.com/static/5d3799de845604000199cd24/t/6397b363b502ff481fce6baf/1670886246948/CARE%2BPrinciples_One%2BPagers%2BFINAL_Oct_17_2019.pdf and also https://www.gida-global.org/care Bruce also provided a link to further information on Grounding Indigenous Rights and local contexts at https://localcontexts.org/

Alona Alexia noted that the presentations highlighted the use of web-based apps and new technology tools and wondered if there were policies directed for use by different age groups. Responses from SIKU and ISN projects noted that while there are no policies in place, a range of approaches are used from paper notes to audio recordings to web-based apps, noting that for work to be useful to everyone that a range of options are accommodated.

In response to a question from Margaret, it was clarified that data hosting occurs on a range of platforms ranging from national (Canadian platform for SIKU) to cloud-based applications (ISN). Discussions continue by SIKU and ISN on other options.

Christine Barnard asked for further information on challenges of data management for Indigenous data emanating from Indigenous-led research projects. Bruce described how ISN endeavours to put the right tools in the hands of Indigenous communities (e.g. setting up data forums, codesigning with scientific researchers) and that they can create secure data access portals with Key Performance Indicators/data dashboards that are important in

monitoring access and success of efforts. Sophie noted as well that management of projects varies from community to community. In addition, SIKU has hired Indigenous regional coordinators that work in specific regions where there are many projects to be designed and implemented.

Margaret asked whether data that is considered as Indigenous-held knowledge was treated differently from other data such as observations; and wondered if there was a definition for Indigenous knowledge data. Bruce replied that ISN is more protocol driven, with community-based monitoring that have transitioned to new technologies (audio, text, video) to collect the data. ISN is involved in the collection of knowledge that may not easily result in specific data points but that could transition to data; giving credence to the history of the data and the individual who is providing the information. He noted that from a platform design perspective that it is more of a difference in terms of how the data is collected – it is easy to do a drop-down list with numerical data but it is more challenging to provide an opportunity for an individual to tell a story about what they know regarding an environmental variable and why it is important and where that knowledge came from. This may require taking into account the background and cultural history of the person providing the data. Sophie noted that Indigenous knowledge is most evident in the ice-posting application on SIKU which relies heavily on this knowledge/terminology. As well, the use of social posts on SIKU have proven useful to see Indigenous knowledge being shared.

Lauren observed that as a non-Indigenous scientist working for a community on community-driven monitoring, keeping in mind the goal of “continually work for the improvement of people's lives and the environment, while striving to do no harm. Be accountable and responsive to the local communities who have the right to understand the risks and benefits of what we do.” She considered this a process of ongoing self-evaluation of both work and products.

Sandy stated that each step within the ROADS process is a process itself as well, and that the AP empowers the EPs with planning tools and practices to move forward. As the ROADS process moves closer to developing implementation strategies and requirements, the accessibility to useful tools to achieve this will be important. Today’s presentations provided powerful examples of implementing observing systems that involve Indigenous and community observations. She said that it was also encouraging to see today’s examples as open for further partnering. She asked if the data profiles/data models that exist behind the software systems could be included in future ROADS documentation on SAVs. Sandy also noted that the references by Noor regarding new benchmarks and metrics for the CARE principles could be useful in the evaluation of the EP material.

Jan Rene Larsen stated that as the ROADS process moves forward to developing a documentation framework for requirements of data and data streams, today’s discussion has been helpful regarding rights of data holders and being able to document this. The presentations also raised questions for future discussion about the use of licence protocols and persistent identifiers for some of this data, as a tool to assist with this. He added that the Phase III evaluations to be conducted by the AP on future EP documentation will be aided by today’s presentations. A final technical question was raised about security of storing data in the cloud and whether this might jeopardize the rights of the data.

There was a general sense from other AP members that the material presented was very helpful and a lot of knowledge had been gained. The high level of maturity of the work was noted, as well as how the AP evaluation process can be informed relating to data requirements in Phase III. Members stated their appreciation for the three presentations and that the material would be considered further as details of Phase III were developed.

In conclusion, Margaret stated that it would be interesting to look at the reflection from Phase II (societal benefit aspects) into Phase III (data requirements) for the 3 projects. She saw SIKU and ISN as focusing on stewardship and co-management, while ELOKA was focusing more on research. The requirements will therefore vary on the various perspectives.
In moving forward, further discussions on Phase III, observing and data system requirements, will take place at the AOS as described below.

3. Update on the Arctic Observing Summit 2024/ Arctic Science Summit Week

Alice Bradley spoke to the upcoming Arctic Science Summit Week: March 21-29, 2024 and AOS: 27-29 March, 2024, Edinburgh, Scotland. There is a current call for posters for dedicated poster space at the AOS, and the call for short statements has been extended to the end of January. Relevant side-meetings and events are being scheduled at this time, including a meeting of the ROADS AP.

4. Closing Remarks

Hanna Lappalainen briefly described the AASCO (Arena for the Gap Analysis of Arctic Science Cooperation) initiative that is funded by the Prince Albert Foundation. She outlined aspects of the workplan for 2024-25 including sessions scheduled at the 2024 ASSW on March 23 and 24. Jan Rene will circulate details of these sessions that will be of interest to SAON ROADS members.

Ilkka Matero noted that Phase I documentation from the Permafrost EP has been submitted to the AP for evaluation.

The next AP meeting will again be a mini-workshop scheduled for 13th February and 27th February, 16-18 CET / 10-12 am EST / 15-17 UTC, to examine regional and global data management systems. The March meeting will be an Open Partnership Meeting at AOS (tentative, proposed). This will be an opportunity to debrief on discussions to date on developing Phase III documentation.

Appendix 1

Participants ROADS Advisory Panel Meeting

16th January 2024
Teleconference - **Workshop #1: Indigenous and Community-scale Systems**

Advisory Panel Member Participants

Alona Alexia, University of the North
Christine Barnard, ArcticNet
Alice Bradley, Williams College, AOS WG #4
Lauren Divine, Aleut International Association (AIA) – ROADS AP Co-Chair
Ola Grabak, European Space Agency
Hanna K Lappalainen, PEXX
Heikki Lihavainen, Arctic PASSION & SIOS, Co-Chair of SAON CON
Ilkka Matero, SIOS (Permafrost Expert Panel)
Victoria Qutuuq Buschman, ICC
Margaret Rudolf, RNA CoObs (& Food Security Expert Panel)
Sandy Starkweather, NOAA, USA – ROADS AP Co-Chair
Tetsuo Sueyoshi, JAMSTEC/NIPR, Japan
Katriina Veijola, FMI, Wildfires EP (Wildfire Expert Panel)
Talia Wells, Arctic Institute of North America, (Sea Ice Expert Panel)

Invited Guests
Sophie Crump, SIKU, Canada
Hajo Eicken, National Arctic Research Center, University of Alaska Fairbanks
Noor Johnson, ELOKA, National Snow and Ice Data Center
Bruce Robson, Indigenous Sentinels Network, Aleut St Paul Tribal Government

Member Regrets Absent

João Canário, University of Lisbon, Portugal & IASC
Cathy Coon, CBMP/CAFF
Sten Lund, Government of Greenland
Tero Mustonen, SnowChange
Gier Otterson, Institute of Marine Research, Norway
Volker Rachold, AWI Germany
Andrea Spolaor, CNR, Italy
Mikko Strahlendorff, FMI, Finland
Chantelle Verhey, World Data Systems (WDO), International Technology Office (ITO) & Co-chair Elect of SAON Arctic Data Committee

Advisory Panel Ex-Officio members
SAON Secretariat – Jan Rene Larsen, Helen Joseph
SAON – IASC Fellow – vacant

Appendix 2 - Agenda

ROADS Advisory Panel
Teleconference
16th January 2024, 15-17 UTC, 16-18 CET, 10am-12pm EST
Join Zoom Meeting
https://cuboulder.zoom.us/j/4105560408

Workspace for agendas and meeting notes:
https://drive.google.com/drive/folders/1rm3aGZcGuKaVMagkNNpU8sOEzEChKWns

AP Members please review: Minutes from meeting 19th December 2023

This is the first in a series of informative mini-workshops on how observing and data system requirements and implementation strategies are structured across diverse activities, documented and evaluated.
This will Inform SAON's Arctic ROADS process, mainly Phase III and IV documentation.

- January 16, 2024 – Indigenous-led and community-scale systems
- February 20, 2024 – Regional systems
- TBD, 2024 – Global systems

Workshop #1: Indigenous and community-scale systems

Welcome and Set the Stage (Margaret, 10 min)
Presentations from Efforts (50 min total):

- Collective benefits, Authority to control, Responsibility, Ethics (CARE) Principles - Lauren Divine, Bruce Robson, and Tash Haycock-Chavez (10 min)
- Arctic Data Committee (ADC) specific actions in the ADC related to CARE Principles - Vanessa Raymond (time conflict), Chantelle Verhey (confirmed) (10 min)
- SIKU - Sophie Crump (confirmed) (10 min)
- Indigenous Sentinels Network (ISN) - Lauren Divine (confirmed); Bruce Robson (invited) (10 min)
- Exchange for Local Observations and Knowledge of the Arctic (ELOKA) - Noor Johnson (invited); Tash Haycock-Chavez (invited) (10 min)

Framing questions to each:

1. Please describe what requirements mean for your network/organisation (developing definition) - and how they help you to achieve your goals
2. Please describe your program or activity and how it relates to observing and/or data system requirements or provides utility to implementing observing and/or data systems
3. How are structures (requirements or implementation strategies) developed or decided upon?
4. Do you use any existing vocabularies or ontologies to structure your information?
5. Are your capabilities open to other collaborators?

Dialog questions for the open discussion to follow (Sandy, 45 min)

1. Are there any clarifying questions for the speakers?
2. What did we hear about today that would be helpful tools in the Expert Panels' toolkit for Phase III and Phase IV?

3. What did we hear that informs our thinking about structuring and documenting requirements and implementation for Shared Arctic Variables?
4. What did we hear that informs our thinking about evaluating documentation for Shared Arctic Variables?

Summary & Next Steps (Margaret, 10 min)

1. What further actions should we take to learn more about this topic?
2. How can we look to the AOS for input and progress?
3. Remind people of future workshops & AOS WG efforts of relevance

The next workshop date will be 20th February, 16-18 CET / 10-12 am EST / 15-17 UTC. March meeting will be an Open Partnership Meeting at AOS (tentative, proposed).

Note to AP Members: Please reserve the third Tuesday every month 16-1730 CET / 10-1130 am EST / 15-1630 UTC. Agenda and other meeting documents will be made available here: https://roadsadvisorypanel.org/meeting-documents