

SAON Governance Review

Workshop #3 – National Structures/Organizations Workshop

April 14th, 2021

Background and Context

As SAON moves forward, there are an increasing number of global and regional efforts that could have an impact on how SAON will evolve over the coming years. It was determined by the SAON Board that it would be valuable to organize a series of virtual workshops to discuss various options and recommendations surrounding SAON governance.

This third workshop in the series on SAON governance focused on the national structures/organizations and was organized under three broad objectives. The first objective of the workshop was to examine the intention and purpose of the national SAON structures/organizations by reviewing the SAON Implementation Plan and other context material. The second objective was to review the considerations and growing interest from others in the SAON national structures/organizations. A discussion of possible common approaches, expectations from the SAON Arctic Data Committee (ADC), the SAON Committee on Observations and Networks (CON), and the SAON Roadmap for Arctic Observing and Data Systems (ROADS) process were all examined. The final objective of the workshop was to discuss a series of questions that would assist in scoping out a way forward for the SAON national structures/organizations with practical steps and actions. These objectives were incorporated into the three-hour workshop (see Annex 1 Agenda). This virtual workshop had excellent engagement from over 20 participants from across the breadth of SAON (see Annex 2 Participant Listing).

Following introductions of the workshop participants, the Code of Conduct from the Arctic Science Summit Week 2020 was reviewed briefly to reinforce the need to be open and welcoming in discussions, to value the diversity of view and opinions of participants, to speak without judgement or argument, and to strive for inclusive, transparent and open communications.

Part A – Background on the Intention and Purpose of the National SAON Structures/Organizations

Background on Intention and Purpose: Jan Rene Larsen, SAON AMAP Secretariat provided a brief overview of the purpose of the national SAON structures/organizations starting with the 2016 External Review of SAON¹ that identified the national SAON organizations are critical to

¹ SAON External Review https://www.arcticobserving.org/images/pdf/Review/SAON-External-Review-Final-Report_August-29-2016.pdf

the SAON process and found that “the National SAON Coordination Committees are viewed as a key component of the SAON organizational structure, but in general, are not funding well”. The External Review report provided the following recommendation:

National SAON Coordination Committees need to be established by all SAON Member Countries. These Committees are critical to the success of SAON and they need to be strengthened with the development of guidelines, mandates and terms of reference. The SAON Secretariat should be tasked with assisting SAON Member Countries in establishing and supporting these national committees.

Jan Rene Larsen continued to explain that in 2017, the SAON Board approved an Implementation Plan² that provided three high level goals for SAON including detailed reference to roles and responsibilities that should be undertaken in part by the national structures/organizations.

Goal 1 - Creating a roadmap to a well-integrated Arctic observing system;
Goal 2 - Free and ethically open access to Arctic observational data; and,
Goal 3 - Ensuring sustainability of Arctic Observing.

In conclusion, Jan Rene Larsen presented aspects from a 2018 survey that was completed by the national members on the SAON Board. The survey examined their respective state-of-readiness to implement the SAON Goals outlined above. An analysis was conducted on the survey results and a manuscript describing the analysis was submitted as a White Paper to the Arctic Observing Summit 2020 and more recently submitted to the journal *Arctic*³ (in review). The presentation to this workshop showed that 13 countries had responded to the survey. From these responses, most countries indicated that they had high or intermediate level of interest in conducting SAON activities.

Following Jan Rene Larsen’s presentation, the workshop moved directly into Part B, Overview of Current National Organizations.

Part B – Current Considerations and New Interest in National Structures/ Organizations

Background on Current SAON National Structures/Organizations: Mikko Strahlendorff, SAON Board Vice-Chair and Champion of this workshop, provided an overview of the current national structures/organizations based on the presentations from 4 national committees (USA, Canada,

² SAON Implementation Plan, https://www.arcticobserving.org/images/pdf/Strategy_and_Implementation/SAON_Implementation_Plan_version_17JUL2018_Status_approved.pdf

³ Summary Report on State of Readiness on Arctic Observations, H. Joseph, L. Loseto, J. Larsen, *Journal Arctic*, In Review.

Finland and Iceland) to the SAON Board in November and December 2020. There was a wide diversity in the approach by each country in how to approach the SAON National organizations. He noted that his remarks were observations on what had been heard at the November and December presentations and that further examination might be necessary on some aspects. In regards to common elements from these national SAON Board members, there appears to be a lack of a strong interest in the need for the national SAON organizations. These national organizations were in place in the early years of SAON, and during the development of the initial inventory exercise to list observation and project capacities but it seems that interest has waned. Of those organizations currently in place, mandate and membership is uneven with some governmental bodies but primarily academic representatives. However on a positive note, he observed that there continues to be good interest and participation on the SAON Board itself and in the nascent ROADS process. While there seems to be very good interest in the ROADS process, there may be a wait-and-see attitude until the process gets well underway. As well, most SAON members are also engaged in other Arctic observing efforts such as the Arctic Observing Summit Working Groups, and the Arctic Council Working Groups. He observed that few references were made in the presentations to the compilation of the National Inventories after the initial start of SAON.

Mikko Strahlendorff then highlighted some examples of what seems to have worked well within the existing SAON national organizations. In one case (Finland), a Senior Arctic Official Secretary had convened the SAON National Committee for a while and that had drawn greater interest to it. In some cases (Finland, Canada and USA), the National Committees were convened when there were specific items on the SAON Board agenda where a national response was requested, e.g. national inventories. Other features that were observed included that Canada had used the work to produce a report on the state of environmental monitoring in their jurisdiction. In the case of the USA, it was noted that their National Committee is organized along disciplines (e.g. glaciers, marine and terrestrial ecosystems) and that it has strong linkages to national policies and research plans that serve as a top-down driver.

In regards to membership on the national structures/organizations, generally, individuals came from both public research institutions (e.g. meteorological services, natural resources, environment, geology, earth observations) as well as from universities but that there was a large variation between countries. Representation from Indigenous organizations is generally very low. Mikko Strahlendorff noted that the number of government representatives above the level of the representatives in National Committees is very low. He observed as well that the Arctic Council Working Groups (WGs) were usually invited as participants or observers to the National Committees. In conclusion, he asked the workshop participants to consider if there were other structures in existence that might serve to reach the goals of SAON and are not already connected to SAON, and how could we consider networking with these.

Workshop Discussion on Intention and Purpose of the National SAON Structures/ Organizations and Current SAON National Structures:

The first discussion opportunity in the workshop was provided at this point to examine the presentations made. Larry Hinzman, International Arctic Science Committee (IASC) Chair, opened the discussion by commenting that the workshop was on a good trajectory thus far. He stated that the issue of national structures/organizations was something that has been a struggle over the past decade as each nation has their own approach, their own priorities, and their own structure and organization and that it is very difficult to have a uniform approach internationally. However, he noted that this diversity in approach could be a strength, stating that individual nations can build their own approach. He highlighted the efforts of Finland and how they have built their approach and how they have responded really well in the past 30 or more years. Larry Hinzman also stated that he was pleased with the work of the Arctic data network system over the past five years as they move forward with building a cyber capability that is inclusive and utilizing what is available to work for all of us. He summarized by saying that rather than try and come up with a uniform approach that everyone must fit into, it is preferable to work with what is available and work to our strengths.

Sandy Starkweather, SAON Board Chair, stated that the terminology used by ADC references a federated-approach in their structure and that adoption of this approach, with an emphasis on interoperability, might be helpful. She continued that while the presentation on the current national structures highlighted that the US example (US Arctic Observing Network – US AON) may be one of the more active committees, that there still remains what she described as a “fog factor” nationally where clarity is not always present amongst organizations. In fact, there was a national meeting later in the day within the US, to present and clarify roles and responsibilities (link to webinar on US Arctic Observing Network (AON):<https://www.iarppcollaborations.org/members/events/20505>). Sandy Starkweather stated that she considered an important takeaway message from today’s workshop was the need for SAON to be organized around clear tasks. For example, in the past when there had been asks from SAON it was not always clear that the members needed to reach back within their nations for the input and response. She added that it needs to be clear as to what actions need a broader national response and that this needs to be communicated.

Vito Vitale, Italy, stated that the SAON national structures/organizations may be very diverse but that they are the only forum in which the voices of some non-Arctic countries can be expressed and that for this reason SAON is critically important. He suggested that the landscape of Arctic observing activities should be mapped in a graph that showed their roles vs effectiveness as a means to describe these features of organizations. He also asked whether SAON was more aligned with science or policy activities. This question sparked discussion in the chat function of the workshop, see below. He also reinforced the comment in the

presentation that while there had been strong interest initially in the SAON national committees that this has decreased recently.

Larry Hinzman spoke again to ask the workshop participants, “What drives the Arctic observing nations”? He said that SAON is about sustained observations, but noted that most international collaborative observing activities are project-based and that these projects are in place for a limited period of time (e.g. not sustained). He noted that on the other hand, national priorities will drive sustained observations and suggested that each nation needs to consider how we can get our respective nations to invest in those sustained observations that not only align with the national priorities, but also contribute to an international missions and purposes. So how can we get these national – international priorities to align? He also suggested that the upcoming Arctic Science Ministerial (ASM 3) will be an incredibly strong endorsement and encouragement for making these sustained observations and will be an excellent opportunity to advance SAON’s efforts. This ASM 3 endorsement should be used as the pathway forward for SAON.

In addition to the verbal discussions at the workshop, there was also substantive discussion taking place within the chat functions of the virtual platform. Both Roberto Delgado and Catherine Coons reinforced in these written comments that from the US perspective most Arctic observing projects are federally funded for 3-5 years. Vito Vitale wrote that SAON has a great role to play in sustaining Arctic observations and that it can play a crucial function in the system. He wrote that to do this, there is a need to consolidate and obtain the credit and mandate. In addition, he suggested that the ASM process will help in this regard and that the ASM Statement will be very positive to this end. He wrote that SAON is already playing a very good role in the data realm and that he felt that from a European side that they can offer a very good contribution in the future.

Doug Cripe, Group on Earth Observations (GEO) Secretariat, commented in the chat box, concerning the discussion as to whether SAON is closer to politics or science. He asked “Does this need to be a dichotomy?” and suggested that SAON could address both, bridging the science-policy gap, to inform decisions in the Arctic. Vito Vitale agreed with to this written comment, suggesting that this is a great and unique role for SAON. However, to achieve this, Vito Vitale wrote that this means that SAON would need to be able to collect the voice of the research community and then have the sufficient power and role to be able to be effectively transfer this voice to the political and funding levels.

Background on Considerations and Expectations from Within SAON:

SAON Arctic Data Committee - Peter Pulsifer, ADC Chair, presented on the expectations and considerations of the national structures/organizations from the ADC perspective. He first responded to earlier comments about the operation of the ADC and clarified that the ADC conceptualizes the data system as an ecosystem and that is critical for ecosystems to have

diversity in order to function well and that they also need an environment in which they can thrive. Within the ADC, they have been focusing on trying to understand what that environment needs to be. Key components that are emerging to describe the environment, were outlined by Peter Pulsifer as including a shared vision of what they want to end up with - without thinking about all the details and forcing everybody into certain boxes, as well as looking at general standard ways of working together that transcend the project.

Peter Pulsifer described that the purpose of the ADC is to promote and facilitate international collaboration towards the goal of free, ethically open, sustained and timely access to Arctic data through useful, usable and interoperable systems. He highlighted the following key points where national structures/organizations could contribute to the ADC:

- Assign up to 2 appropriate national representatives to actively engage in ADC activities;
- Identify national project, programs, etc. involved in Arctic data and make ADC aware through the Mapping the Arctic Data Ecosystem (MADE) project;
- Engage in the development of an effective policy framework to realize the vision and framework of the ADC; and
- Assist in identifying appropriate entities/persons to engage in ADC working group activities.

SAON Committee on Observations and Networks - Jan Rene Larsen presented this information on behalf of Lisa Loseto, CON Chair who was delayed in joining the workshop. He emphasized that CON requires the participation of persons who can speak on behalf of national (and organizational) projects, as well as have the support of a national co-ordination team on observational capacities so as to effectively participate and guide CON activities and workplans. He also highlighted one of the CON goals/tasks that he had also referenced during the background presentation of the SAON Implementation Plan. This task being the need to conduct an inventory of national observational capacities. Jan Rene Larsen noted that there is more work to be done on how this information should be reported out and that more work is being done in this regard. An additional task that was cited from the CON perspective was the need for assessments and recommendations on observational activities in support of Arctic Societal Benefit Areas (SBAs) which require the baseline knowledge (supported with an inventory) of national observing capacity.

SAON ROADS Process – Sandy Starkweather, SAON Board Chair, spoke of the considerations and expectations of national structures/organizations from the SAON ROADS process. She noted that the ADC has reached a maturity level with focussed tasks associated with the Committee and that the ROADS process still has rather diffuse tasks which are being brought to a more concrete level. To achieve this level of maturity within ROADS, strong national committees would be useful. Sandy Starkweather noted that some larger pilot projects are coming online within the US that will assist in piloting the ROADS process. One such focus is

using a food security lens in the Arctic Pacific sector. In addition, she noted that the new Arctic PASSION project⁴ is starting up as part of the EU Arctic Cluster projects and that it is aligned with the intention of the ROADS process.

Sandy Starkweather divided expectations and considerations from the ROADS process into those immediate and future considerations.

Immediate – Familiarize funding agenda with plans/structure and get feedback; and deliberate the structure and composition of the ROADS Advising Panel.

Future – Link national assessments of key observing system needs to identify candidate variables or Expert Panel topics; recommend Expert Panel topics or identify experts for engagement; and, foster on-going engagement with funding agencies and other partners in ROADS.

She emphasized that getting clarity at the national level about the advising process would be incredibly helpful to the ROADS process, and that individual nations should be having conversations with the Permanent Participants, Indigenous organizations and communities in our respective countries to ask them about where they see themselves fitting in, and how things might move forward in terms of the advising process. It is envisaged that the ROADS process will be a linking process from the SAON Strategic Plan to the inventories of observing activities and that these inventories of information are accrued into value added products. Once the SAON ROADS processes are more fully underway it will be critical to have the reach-back into the national subject matter experts through the national structures/organizations. Sandy concluded by stating that she looks forward to a time when the ROADS process will have as much clarity and definition around the types of tasks associated with its work as that just presented from the ADC.

Workshop Discussion Considerations and Expectations from Within SAON: At this point in the workshop, there was discussion on the presentations by the CON, ADC and ROADS process on their expectations from the national structures/organizations. Roberto Delgado, USA, spoke of the challenges associated within national committees as they balance national efforts and investments with different agencies, different missions, different funding cycles, and different processes for supporting Arctic observations broadly. These challenges in turn all dictate the National Committee’s activities, efforts and investments at the international level. In particular, he highlighted the challenge of sustaining observations as there are not many programs or agencies within the USA that have long-term monitoring aspects (e.g. many are 5-year duration, and possibly renewable). Roberto Delgado also spoke of the need for consistent messaging and clarification of the roles of the national structures/organizations. He reflected on the possible role that the national committees might have in the integration of science-policy and of

⁴ EU Polar Cluster Passion Project - <https://www.passion-project.eu/>

possibly taking on tasks associated with this integration interface. He noted again the focus in observations in the Pacific Arctic region on food security as well as coastal environments.

Eva Krummel, Inuit Circumpolar Council (ICC), stated that the national structures/organizations are crucial to foster and build Indigenous participation in sustained Arctic observing. The national committees could make a very important contribution and difference in this area. The national bodies need to include representation from governments, academia as well as Indigenous organizations. She stated that countries need to “look inside” and to foster and bring forward Indigenous efforts, and that the national committee would be an excellent forum for this. Within Canada, for example, work is being done on Indigenous-led community monitoring efforts and this could be part of the national perspective. The national structures/organizations could then bring these Indigenous efforts forward to the international discussions, together with efforts from academic and government participants. Eva Krummel responded to comments in the Chat box regarding the science vs policy roles of SAON, and stated that in addition to these two functions, that Indigenous knowledge should also be considered. She also cited the work by the ICC in building the Atlas of Community-based Monitoring efforts in the Arctic. Eva Krummel stated that she agreed with the comments from others on the need for diversity within SAON – considering the membership within the national structures/organizations as well as their functioning and reporting aspects. She liked the reference to the “fog factor” that was spoken by Sandy Starkweather wherein there is a lack of clarity amongst observing networks and organizations but emphasized that strong National Committees were key to the success of SAON. Eva Krummel agreed that we need to continue to work together and to push forward even with this fog factor; and that Indigenous participation is absolutely key in moving forward.

Sandy Starkweather reinforced aspects raised by Eva Krummel, stating that one of the things learned from the workshop on the ROADS Advisory Panel is that the Indigenous governance systems are complex – ranging from communities, to tribal, to Permanent Participants at the Arctic Council – and that SAON needs to be engaging with Indigenous peoples at all of these levels. Sandy Starkweather emphasized that a full range of engagement across this broad spectrum is very important and this makes the national committees even more important, as this is where the more finely scaled and diverse kind of engagement is really going to be possible.

Mikko Strahlendorff also reinforced the need for strong and meaningful participation from Indigenous peoples and that the national committees could be a practical means of making these connections and advancing this engagement. He added that this would be a good practical task to move forward on.

Background on Considerations from International Arctic Observing Efforts:

This portion of the workshop had three presentations from examples of International Arctic observing initiatives – EU PolarNet, World Meteorological Organization (WMO), and GEO.

These were included in the workshop to determine if any of these networks could be leveraged with the work of SAON, was there alignment or complementarity with the SAON mandate, or if the national contact points could be shared to build stronger and integrated initiatives.

EU PolarNet – Nicole Biebow presented aspects of not only EU PolarNet but also from the German national perspective. In regards to EU PolarNet, the national contact points were originally recruited from the European Polar Board and were transferred over to the new organization. EU PolarNet is a continuously active project funded by the EU and has associated deliverables and milestones, and with terms of reference described in the Consortium Agreement. The project work description reads that the organization will improve coordination and cooperation across European community in Arctic activities – so the members are narrower than SAON but its mandate is broader. In regards to the German national committee, Nicole Biebow outlined that national contact points are based on the strategic importance of the boards: national contact points for strategically relevant boards are appointed by the national committees for the Scientific Committee on Antarctic Research (SCAR) and IASC, institutes appoint national contacts for boards of a lower or more institute-related strategic role, and some boards are based on voluntary membership. She also stated that there is generally no requirement for a national committee to be in place behind the national contact point. The network of national contact points serve primarily in an information capacity and they meet annually to discuss activities.

World Meteorological Organization (WMO) – Rodica Nitu presented aspects from the WMO. The WMO focal points for SAON are nominated by the National Meteorological and/or Hydrological Services and reflect the institutional interest on the potential engagement with SAON. WMO provides the principles of the engagement (e.g. anticipated mutual benefits) while the decision rests with the designating institution which makes the commitment of resources (e.g. time) for the engagement. The roles and responsibilities of the WMO contact points are to enable linkages between the operational organizations of the National Meteorological and Hydrological Services with the communities engaged in SAON. She outlined that there is no requirement for a national committee behind the contact points, and that the expectation is that the national engagement is driven by an existing or planned initiative that will benefit from exposure to SAON. However, Rodica Nitu added that the national level operational meteorological and hydrological communities frequently engage with the scientific communities based on the recognition of mutual benefits. She noted that there are general principles (similar to Terms of Reference) for the WMO contacts that were shared with SAON in 2019 and that perhaps these could be revisited again. Her final advice to the workshop was to consider the use of “pilot projects” to test the principles of collaboration and to learn valuable lessons from these first steps. The Arctic HYCOS project, that aims to collect and share hydrological data and information for the Arctic basin to enable better climate

research and predictions in the Northern Hemisphere⁵, was cited as one example where WMO is working with SAON.

Global Earth Observations (GEO) Secretariat – Doug Cripe presented information on the GEO initiative. He explained that the GEO member governments are free to select national Principals and Alternates from the senior levels of the appropriate Ministry and that GEO does not provide guidance on who these contacts should be. These Principals serve as the liaison point between GEO and the member countries. In addition, when countries join GEO and appoint the Principal and Alternate, they are also endorsing the GEO Strategic Plan and its contents (e.g. data sharing principles).

Doug Cripe also explained that while there is no requirement for national committees to be formed behind the national GEO contact points, that in fact, a number of governments have organized a national GEO with regrouping of relevant agencies for collective input and decisions. Examples were cited from Japan, Germany and the US, where there are various forms of national GEO committees. Doug Cripe commented that these national committees helped to reduce the “fog factor” as described by Sandy Starkweather earlier in the workshop by encouraging cross agency organization and communication to happen. There are GEO Rules of Procedure that assist in providing clarification of the roles of the GEO Members, Principals, Alternates, etc. In addition, GEO holds Regional Caucus and Executive Committee, as well as annual Plenary and periodic Earth Observation Summits that keep national contact points (GEO Principals) engaged in the GEO work. In terms of additional advice from a GEO perspective, he reminded the workshop participants of the importance of systemically updating contact information and that communication and messaging to GEO Principals – and all national contact points - should be concise and targeted to avoid email fatigue.

Workshop Discussion on International:

Mikko Strahlendorff stated that WMO and GEO are both good examples of how observing networks could possibly work together. It would be advantageous to work together to find a good contact point for each country for their network, someone who would be a good partner in another organization and whom we could work with. He added that although Germany may not have an official SAON national committee, that there is an unofficial network that does seem to work well with different actors working on different disciplines in relation to Arctic observing. This unofficial German network could likely be effective in providing national input to SAON questions, such as the development of ROADS Shared Arctic Variables (SAVs).

Catherine Coons highlighted the efforts of the Arctic Council Working Group, Council of Arctic Flora and Fauna (CAFF) that is working on the Circumpolar Biodiversity Monitoring Program (CBMP). She acknowledged that there may not have been extensive collaboration to date with

⁵ WMO Arctic HYCOS project - <https://hydrohub.wmo.int/en/projects>

SAON efforts. However, in talking with the CAFF Co-Chair (Tom Christiansen, Denmark), Catherine Coon would like to re-invigorate the connection and dialogue with SAON in regards to biodiversity monitoring across the pan-Arctic and across multiple ecosystems.

There continued to be considerable discussion taking place in the Chat box during this virtual workshop. Mikko Strahlendorff clarified further to Sandy's reference to the EU Polar project, PASSION, commenting that SAON is deeply linked into Arctic PASSION as the AMAP Secretariat is a partner and ROADS actions are included in the Arctic PASSION actions. Mikko also provided a link for reading the Polar Expert Group reports (<https://www.copernicus.eu/en/news/news/new-copernicus-polar-expert-group-report-published>).

Maribeth Murray, Arctic Institute of North America, clarified that with respect to the Arctic PASSION project that there is co-funding from Canada for Canadian participation.

Mikko Strahlendorff wrote that the Arctic PASSION project has actions planned within its activities to examine the policy – science discussions that were discussed earlier in this workshop. He also emphasized that AC Working Groups should be involved in SAON activities, for example in ROADS actions.

Both Rodica Nitu and Doug Cripe indicated in the chat box that they would be willing to share the contacts of the WMO Focal Points and the GEO Principal contact information with the SAON.

Part C – Way Forward, Practical Steps that will advance the National Organizations

This portion of the Workshop included a tour de table with participants having received the following question in advance: *In your opinion, what is one key action that needs to be taken to re-invigorate the SAON national organizations and that will lead to their success?*

Tour de Table Discussions

Roberto Delgado was the first to respond to this question and he provided some background context to the American scene. He explained that the US National Committee works from, and expands upon, the existing framework and structures in the US that involves existing policy and research programs (e.g. IARPC – Inter-Agency Arctic Research Policy Committee) This allows the US National Committee to navigate and reach out to the research community to enhance co-ordination and collaboration working at the federal level through to academic partners, state organizations and tribal organizations. The US National Committee has not yet established vision and goals as it continues to work with both SAON and the national policies of the US but that it has achieved success with its communications strategy. Roberto Delgado suggested that the key action to be taken must to be to have clear, measurable goals,

objectives, outcomes, as well as identifying and supporting committed champions from across both the federal agencies and the broader observing communities. He emphasized that these leadership roles are important and that they need to have adequate support in terms of resources including financial, time and effort, access to facilities and data systems. As well, he spoke of the importance and need for all efforts to encompass a broad swath of users and stakeholders. In conclusion, Roberto Delgado stated that in SAON's observing and data systems efforts that they should cross a range of priority areas or cross-cutting areas of societal benefit, including community health, resilience sustainable economies and livelihoods and risk mitigation.

Nadezhda Kharlampieva, Russia, spoke of the hydro-meteorological services that work at the national level and the issues associated with different principles (e.g. water basin challenges) and working with the research side.

Agnieszka Moeller, Poland, explained that Poland is a small country which is not yet very well organized in regards to Arctic observing activities. She described the community as fragmented in Poland with different views, and different levels of interest in SAON activities. Agnieszka Moeller stated that there was some interaction between science and the political level, with their Foreign Affairs ministry having interest in SAON activities. She continued on to state that the key task could be development of very clear guidelines to address questions such as: what should be the role of the community, what is expected, provision of clear tasks and deliverables. Agnieszka Moeller added that the approach presented by Peter Pulsifer (ADC Chair) on the ADC expectations of the national structures/organizations were clearly defined and resonated with her.

Hiroyuki Enomoto, Japan, spoke about the number of organizations within Japan and that they have not yet established good dialog or connections between government and academic organizations. He acknowledged that this will be important to establish for a strong and effective national committee.

Vito Vitale, Italy, stated that he concurred with the comments from Agnieszka Moeller that a key action should be the creation of clear guidelines. In the longer term, he suggested that there is a need to give a clear idea of how SAON will play in the landscape of Arctic observing, for example in promoting and supporting the Arctic Funding Forum and shaping the agenda and priorities. In addition, he stated that the ROADS process is important and that there should be a commitment to develop it in a robust manner.

Jórunn Harðardóttir, Iceland, also agreed with comments from Agnieszka Moeller and explained that in Iceland there is a committee on Arctic matters that includes most of the institutions that are involved in ongoing Arctic observations. It also includes the contacts of the Arctic Council WGs (e.g. PAME) as well as IASC. The committee meets regularly every 3 or 4 months. She suggested that this Committee could be used as the Icelandic National SAON Committee.

However, she added that the Committee would need specific tasks and guidelines, and terms of reference that need to be developed. So the one key action suggested by Iceland would be a list of what is needed to get the Committee started and engaged.

Nicole Biebow, Germany, stated that she was supportive of the comments made by Vito Vitale and agreed that a key strategy is needed for Indigenous engagement. She described again that there is no SAON national committee in Germany and that there is hindrance in getting scientists involved in such committees as scientists are rewarded more for publishing their research work vs participation on boards. This presents a challenge to motivate and engage scientists in SAON's Arctic observing efforts and she suggested that incentives might need to be considered for better engagement. Nicole Biebow closed by commenting that Germany will be coordinating the Arctic PASSION project and that there is good alignment with SAON.

Mikko Strahlendorff, Finland, stated that there is no need for national structures/organizations just "for themselves" but that they must bring value to the overall process. One necessity for the national committees is to advance efforts like the SAON ROADS process, including the identification and development of the Shared Arctic Variables (SAVs) in Arctic observing. Mikko Strahlendorff acknowledged that many countries already have individuals working on this but that a practical action would be to have every country actively working on each SAV. He stated that a very concrete task for the National Committees would be to propose individuals to work on developing the SAVs. This work is essential to the ROADS process and would be a good key action. Mikko Strahlendorff also emphasized the need to have Indigenous participation in the SAON ROADS activities and welcomed the efforts of the ICC (Eva Krummel) to help in developing this Indigenous participation.

Zhang Beichen, China stated that while there is no SAON national structure/organization in China, there is a national committee on polar research. He stated that it is important to encourage Chinese scientists to be more active and engaged in international Arctic observing activities. He cited the example that with increased engagement from scientists, then there could be larger contributions to efforts such as assessments of the Arctic environment.

Adam Houben, Canada spoke that from his perspective within Polar Knowledge Canada that this newer agency has only recently able to take on the leadership and co-ordination of Arctic monitoring and SAON activities. Having said this, he added that it was important to note that in the past, Canadian SAON support had been strong and that they hope to return to that level of effort in Canada as momentum is growing for this support. Adam Houben agreed with earlier comments on the need for clear tasks that would encourage responses from the SAON national structures. He added that the ROADS process is an exciting initiative with its proposed Shared Arctic Variables that will require strong participation from SAON members. He concluded in reminding participants that it is important to remember not only the WHAT is being observed

but also the WHY these observations are needed.

Discussions on the Way Forward and Practical Steps to advance the National Organizations:

In addition to the responses to the Tour de Table question, several additional participants either spoke of their suggestions on a way forward or provided their input in the chat box discussions.

Rodica Nitu reinforced that concrete tasks would be valuable at this time to demonstrate the SAON principles and to provide a reason for national engagement. She stated that there are so many pressures on everyone now that it is actually difficult to engage in initiatives where there is not something specific that is asked of them. This reinforced the need for tasks to be assigned to the SAON national structures/organizations. She cited the Arctic PASSION as a good project to work on as it could align with SAON ROADS efforts and could be a logical place to be seeking some of these specific tasks.

Lisa Loseto, CON Chair, spoke in support of the points made both Rodica Nitu and Mikko Strahlendorff, on the need to have both clarity in the tasks and connections back into the countries. She stated that these actions would entice and motivate individuals to be more engaged.

Mikko Strahlendorff reinforced the point that for concrete actions to be taken at an international level such as SAON, that there needs to be specific tasks asked of the national structures/organizations. He suggested that work on the ROADS process in developing Shared Arctic Variables should assign clear and logical tasks to the national committees or at least the Member Countries and their national networks. Mikko Strahlendorff stated that these concrete tasks would be a means of engaging people and getting them actively involved.

Vito Vitale reminded participants that we are looking for expertise and engagement in development of the ROADS SAVs and that the ROADS process implementation plan would be good start. However, he added that it is not yet clear what benefits will be provided back to participants and this clarification would encourage their involvement.

Peter Pulsifer stated that as the ADC Chair, and for SAON in general, that there needs to be well functioning national committees but even having at least one contact within a Member County enables the Committees to have someone to connect with in that country. Without a point of contact, the Committee Chairs have to spend considerable effort to seek out a contact and these are not designated from within the country. He stated that this is critical for the success of the work of SAON.

Sandy Starkweather reflected on the SAON ROADS process acknowledging that it might still be in a wait-and-see mode as stated earlier in the workshop. She suggested that the existing Task

Force could be used and that they could be asked this question re: what is the key action needed. She continued to state that one key action that should be focused on is building relationships with Indigenous communities and organizations. She reminded participants that the ROADS process has a very balanced diagram around Shared Arctic Variables (Figure 1) where they are being identified at the intersection of what Indigenous communities are looking for, what regional science and decision making entities are looking for, and what the global networks have already prioritized. Sandy Starkweather observed that the Arctic Observing Summit's Food Security Working Group has already indicated that they need more time to align themselves within the process and to understand what they want their alignment within the process to be.

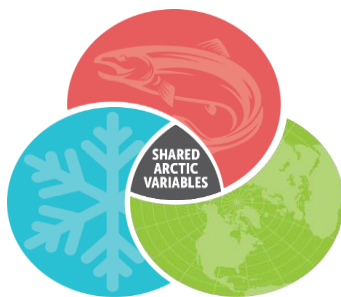


Figure 1: Shared Arctic Variables, SAON ROADS Process

Sandy Starkweather stated that it is clear that if we really want to partner in this specific way around Shared Arctic Variables, then we cannot get out ahead of a key constituency of our partnerships. She reflected that while there is a need for concrete asks, that we also need to be aware that if we have not yet done the groundwork and the relationship building (e.g. to identify partners, and to come to agreements around how you want to partner on something like the ROADS process), then the concrete ask is going to fail. This description emphasized the importance to focus on relationship building with Indigenous communities and organizations.

Mikko Strahlendorff reminded participants of the SAON vision and spoke of the language used regarding the sustained nature of Arctic observations. He continued on to say that the SAON ROADS process and the development of Shared Arctic Variables (SAVs) will be important steps in the key actions to be taken. He envisions that in the coming year, that ROADS Expert Panels may have identified and initiated planning around at least two SAVs. Mikko referenced the EU project, Arctic PASSION, as an initiative that will be active for this. In conclusion, he emphasized again the need for the national structures/organizations to be a means for SAON to be able to reach deep into country's expertise and beyond the single representative to SAON so as to provide a richer and broader perspective to SAON and ROADS activities.

Nadezhda Kharlampieva commented that from the Hydro Meteorological perspective that they continue to see SAON as a platform for the Russian Arctic and the value of the National

Committee. She reinforced the need to connect Indigenous peoples in the monitoring of lakes and rivers and that it is also important to have municipalities engaged. She reminded the participants that many Russian scientists had participated in the 2016 survey (External Evaluation of SAON) to better understand priorities and that consideration could be given to repeating this survey.

In response to questions on how best to increase Indigenous participation in the National Organizations, Eva Krummel, ICC, stated that she would be pleased to help support this work. She emphasized the need for countries to have clear governance structures when Indigenous participants are approached to be part of the SAON process. In addition, Eva Krummel spoke of the important need to build up the networks and to increase Indigenous participation. She was very positive and supportive to assist in these efforts.

Catherine Coon wrote that the next steps should demonstrate the value of observing system to support and embrace cultural issues, in particular, food security as it relates to climatic changes. She asked, “What are the ways we can interpret complex observing data in the Pan-Arctic context to lend value on issues with Indigenous concerns, and vice versa to embrace the co-production of shared knowledge across both scientific and Indigenous perspectives?” She also wrote that it would be valuable to promote the ROADS guiding principles more broadly and the lessons learned from the ROADS - RNA work that Roberto Delgado mentioned earlier.

Maribeth Murray recommended that the various report from the Arctic Observing Summits should be examined. The recommendations from these reports frequently identified SAON to undertake specific activities. Along similar lines, Vito Vitale stated that the SAON Implementation Plan is well established and that it also provides tasks and actions on which to build national work.

Doug Cripe suggested that a practical task would be engagement with Indigenous communities (e.g. implications for data usage), as well as work on the valuation of Arctic ecosystem services, and transitioning from project-oriented to sustainable observations.

Vito Vitale wrote in the chat box that organizations are structured to have a President of the Board, who is supported at the other end by individual works. He stated that it is very important to motivate these individuals and to communicate to them that their efforts have a purpose. To ensure this, principles and concepts need to be developed and communicated so that everyone (from the president to the individual workers) understand a clear target and goals. At the end of the day, it will be the groups of individuals who will implement the ideas and achieve the vision and goals.

Features of the National Structures/Organizations:

The following are features of an approach in developing strong SAON National Structures/Organizations:

- There was recognition that the SAON national structures/organizations should be task-oriented and that these tasks could focus on the development of the ROADS process. Many of the SAON actions need a broader national response that can be provided by national structures/organizations. Once the SAON ROADS process is more fully underway, it could provide the clear tasks as it will be critical to have the reach-back into the national subject matter experts through the national structures/organizations.
- There was broad agreement that the national structures/organizations are crucial to foster and build Indigenous participation in sustained Arctic observing. The national committees could make a very important contribution and difference in this area, and they need to include representation from governments, academia as well as Indigenous organizations.
- Diversity in the SAON national structures/organizations should be welcomed and recognized as each nation has their own approach, their own priorities, and their own structure and organization. This diversity could be seen as a strength. Rather than develop a uniform approach for all, it is preferable to work with what is available and work to respective strengths.
- There was recognition of a lack of clarity within some countries amongst the national organizations involved in Arctic observing activities (described as the “fog factor”). This lack of clarity could be addressed in part by strong SAON national structures/organizations with features of clear communication and cross-agency organization.

Possible Key Actions for the National Structures/Organizations:

Develop Key Tasks: There is a need for developing specific tasks including clear, measurable goals, objectives, and outcomes, for the national structures/organizations. This should also include identifying and supporting committed champions from across the broader observing communities. These leadership roles are important and also need adequate support in terms of financial resources, time and effort, access to facilities and data systems.

Build Indigenous participation in National Structures/Organizations: The national structures/organizations need to include representation from governments, academia as well as Indigenous organizations. It was discussed that countries need to “look inside” and to foster and bring forward Indigenous participation and efforts, and that the national committee would be an excellent forum for this.

Develop ROADS Shared Arctic Variables with Strong Indigenous Partners: The ROADS process has a very balanced diagram around Shared Arctic Variables (Figure 1) where the variables are identified at the intersection of what Indigenous communities are looking for, what regional science and decision making entities are looking for, and what the global networks have already prioritized. The National Structures/Organizations must engage in the ROADS process in an active manner and they also have an important role to play in conducting the groundwork and building relationships with Indigenous partners (e.g. to identify partners, and to come to agreements around how to partner on the ROADS process).

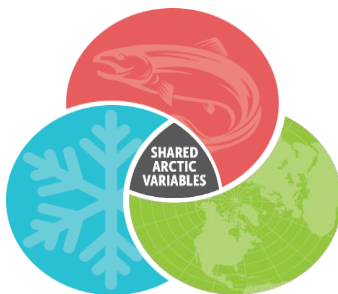


Figure 1: Shared Arctic Variables, SAON ROADS Process

Additional ROADS Process Specific Actions: In the immediate term, there are tasks associated with the need to familiarize funding agendas with plans/structure and get feedback; and deliberate the structure and composition of the ROADS Advising Panel. In the longer-term, there are tasks associated with the need to link national assessments of key observing system needs to identify candidate variables or Expert Panel topics; recommend Expert Panel topics or identify experts for engagement; and, foster on-going engagement with funding agencies and other partners in ROADS. Once the SAON ROADS processes are fully underway it will be critical to have the reach-back into the national subject matter experts through the national structures/organizations.

ADC Specific Actions: The national structures/organizations need to assign up to 2 appropriate national representatives to actively engage in ADC activities; to identify national project, programs, etc. involved in Arctic data and make ADC aware through the Mapping the Arctic Data Ecosystem (MADE) project; to engage in the development of an effective policy

framework to realize the vision and framework of the ADC; and to assist in identifying appropriate entities/persons to engage in ADC working group activities.

CON Specific Actions: Active involvement in CON activities requires the participation of persons who can speak on behalf of national (and organizational) projects, as well as have the support of a national co-ordination team on observational capacities. As well, there continues to be a need to conduct inventories of national observational capacities. An additional task is the need for assessments and recommendations on observational activities in support of Arctic Societal Benefit Areas (SBAs) which require the baseline knowledge (supported with an inventory) of national observing capacity.

Develop Pilot Projects: There were several suggestions of pilot projects that might be led by other organizations that could help in the SAON ROADS process. Possible pilot projects included: the Arctic PASSION project that is coming online as part of the EU Arctic Cluster; the Arctic HYCOS project that aims to collect and share hydrological data and information for the Arctic basin to enable better climate research and predictions in the Northern Hemisphere; and, the AOS WG efforts on food security.

Engage with Other Pan-Arctic Observing Efforts: Most SAON members are also engaged in other Arctic observing efforts such as the Arctic Observing Summit Working Groups, and the Arctic Council Working Groups. Finding ways to better coordinate on efforts was seen as important. There is a need to re-invigorate the connection and dialogue with SAON in regards to biodiversity monitoring across the pan-Arctic and across multiple ecosystems - for example, the efforts of the Arctic Council Working Group, Council of Arctic Flora and Fauna (CAFF) that is working on the Circumpolar Biodiversity Monitoring Program (CBMP).

Review of the Arctic Observing Summit Reports: The various reports from the Arctic Observing Summits should be examined as the recommendations from these reports frequently identified SAON to undertake specific activities.

Share Contact Points of Other International Observing Efforts: There is a willingness within both the WMO and GEO to share the contacts of the WMO Focal Points and the GEO Principal contact information with SAON.

ANNEX 1 - Agenda

SAON Governance Review

Workshop #3 – National SAON Organizations

Champion: Mikko Strahlendorff, SAON Board Vice-Chair

Date – April 14, 2021 10:00 – 1:00 Eastern

Objectives of workshop:

- 1) *To review the intention and purpose of National SAON Organizations*
- 2) *To review current consideration of, and growing interest from others in, the National SAON Organizations*
- 3) *To identify a Way Forward with recommendations and next steps*

Agenda

10:00 Introductions

10:05 Reference to the Code of Conduct <https://www.assw2020.is/code-of-conduct>

10:10 Review and confirmation of above workshop objectives

Part A – Background on the Intention and Purpose of the National SAON Committees

10:15

Overview of the intention and purpose of National Committees (Jan Rene Larson)

Intention and purpose as stated in:

- SAON Implementation Plan – roles and responsibilities, 2017
- External Review of SAON – recommendations, 2016
- Results of “State of Readiness” survey of SAON Board members, 2018

Part B – Current Considerations and New Interest in National Organizations

10: 30

Overview of Presentations by current National Committees, including USA, Finland, Canada, and Iceland); are there common approaches; themes; challenges; issues?
(Mikko Strahlendorff)

Considerations from the CON and ADC workplans on what the National Organizations should be/actions they need to undertake (Lisa Loseto and Peter Pulsifer)

Considerations from the SAON ROADS process on what the National Organizations should be/actions they need to undertake? (Sandy Starkweather)

Emerging Interest in SAON's National Organizations; can these be leveraged? Could national contact points be shared? Are mandates aligned and complementary? (Jan Rene Larson; Rodica Nitu; Nicole Biebow, Doug Cripe)

- EU-PolarNet 2
- World Meteorological Organization (WMO)
- Group on Earth Observation (GEO) – networking for ArcticGEOSS
- What other global or regional initiatives have national contact points? (e.g. International Oceanographic Committee (IOC) of UNESCO – UN Decade of Ocean Science)

11:15 Short Break

Part C – Way Forward, identify practical steps that will advance the National Organizations

11:30 Discussion of the following questions

- How to motivate stronger and more active participation?
- How to design the National Organizations to more clearly “get benefits back” for effort invested?
- What might be 2 or 3 practical “tasks” for the National Organizations to focus on (e.g. drawing from CON and/or ADC workplans; specific task(s) from ROADS process; from the current National committees?)
- How best to increase Indigenous participation in the National Organizations (as an introduction to SAON; means of engagement and capacity building, and future recruitment to leadership roles?)
- Would it be valuable to have the Senior Arctic Officials more active? If so, what might be possible actions/steps?
- Is there are need at this time for “guidelines, mandates, Terms of Reference” at this time?
- Are there other opportunities to be leveraged to help?

12:45 Wrap Up and Next Steps

Participants (approximately 20)

- Sub-set of SAON Board National members to have one national representative
- SAON ROADS, CON and ADC leads
- Indigenous participants (e.g. Permanent Participants)
- Global observing initiatives (e.g. WMO – Rodica Nitu; GEO – Doug Cripe; EU PolarNet 2 – Nicole Biebow)
- AMAP and IASC Secretariat representatives
- AOS representative

Pre-reads:

- SAON Implementation Plan, section
- SAON External Review (2016), Recommendations
- Arctic article: Summary Report of State of Readiness on Arctic Observations (based on surveys)
- Governance Workshop Reports – ROADS Advisory Panel and CON

ANNEX 2

SAON National Organizations/Structures Workshop, April 14th, 2021

– List of Participants

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