



Forum of Arctic Research Operators

FARO Annual Meeting 2023

ASSW 2023 Vienna, Austria

Minutes

1. Opening Session: led by Jennifer Mercer, FARO Chair (30 minutes)

Jennifer Mercer welcomed all participants to this FARO annual meeting.

The meeting minutes from annual meeting 2022 were approved without any comments.

The Agenda was approved without any changes.

Quick round of introductions of National Points of Contact (NPOC) and other participants attending the meeting.

Report from chair:

- This year is the 25th year anniversary of FARO!
- ExCom met monthly.
- Workshop report published in Polar Record:
 - *Ruck, K., Arndal, M., Biebow, N., Dahl, J., Flått, S., Granskog, M., . . . Willmott, V. (2022). International access to research infrastructure in the Arctic. Polar Record, 58, E30. doi:10.1017/S0032247422000249 (https://www.cambridge.org/core/services/aop-cambridge-core/content/view/B639D488877FDC7EDA862C451D06E5B2/S0032247422000249a.pdf/international_access_to_research_infrastructure_in_the_arctic.pdf)*
- Facilitated second workshop “The Future of Research Infrastructure in the Arctic” – Brussels, October 2022.
- Developed 5-year Strategy for FARO, based on external review.
- New country requesting information on joining FARO (Brazil).

2. Updates from Countries

Focus on:

1. General updates.
2. Highlighting large future projects.
3. Efforts to reduce environmental impacts (on vessels, stations etc.).

4. General information on availability/opportunities for international infrastructure access in the next 2 years (*e.g.*, vessel access, station access, resource sharing opportunities).

The country updates are available online at the [website](#)

- Canada: Canadian Arctic Research was severely impacted by the pandemic, but last year the activity has significantly rebounded. In May 2022, the CINUK programme partners announced the 13 successful projects funded under the Canada-Inuit Nunangat-United Kingdom Arctic Research Programme. CHARS: During 2022 international researchers accounted for approximately 25% of visiting researchers to CHARS and about 30% of researcher days. There seems to be a shifting of research activities from Russia to Canada because of international tensions. Both OneWeb and Starlink internet constellations are operating in the Canadian Arctic.
- China (oral presentation, no slides): Not much to report in 2022 due to Covid-19. China has 2 research stations; one in Ny Ålesund, Svalbard and CIAO in Iceland, operated by Iceland. Long term monitoring program for 3 years starts now that cover both stations. Research Expedition to the Arctic ocean planned 2023, including a visit to the stations.
- Czech Republic: Not represented (no presentation).
- Denmark: overview of the infrastructures in Greenland that consist of nine research stations. Four of them are owned by Danish institutions, four of them are owned by Greenland institutions, and one is owned by US National Science Foundation. There are three research vessels in Greenland, M/V Sanna, M/V Porsild and M/V Tarajoq. Technical University of Denmark (DTU) is planning the construction of a new research vessel for operations in the waters around Denmark and Greenland. The ship is planned to start operation in 2026. Budget: 50 mio. EURO.
- Greenland: The Government of Greenland has made its first national research strategy. The document defines how research in Greenland should develop over the next eight years and in which areas investments should be concentrated. Focus on: Research must benefit Greenland and have an international outlook, Expansion of the psychological research infrastructure, and Ethical Guidelines and inclusion of Indigenous and local knowledge in research.
- France (oral presentation, no slides): France released a new polar strategy for the first time. The focus is on the Antarctic but there will be activities in the Arctic, especially in Greenland. MoU between AWI and IPEV. Contract with Kingsbay for 5 more years. Work with Greenland on research projects. More electrical vehicles, better insulation of buildings, more wind power at the station in Svalbard. Remote access to the station is also possible.
- Finland: Not represented (no slides).

- Germany: All AWI platforms are free to use for external researchers (including Polarstern), and there is no fee if your project time is funded – so just apply. This year there will be many Greenlandic projects. AWI is member of ISAFFIK platform that support research and collaboration. Samoylov station is no longer possible to use, and the long time series are now gone. AWI Projects will move to other sites in the Arctic, outside Russia.
- Iceland: Iceland is building a new research vessel (70 m), delivered in 2025. The government is drafting a strategic plan complimenting the Arctic policy released in 2021. Marine SABRES project (EU HORIZON), marine biodiversity conservation and sustainable and resilient blue economy in the Arctic, Macaronesia, and Tuscan Archipelago. New vessel emphasis on minimizing oil usage and minimizing environmental impact of vessel operation. Governmental Green Steps program encourages reducing, reusing and recycling. No official pathway to apply for access, personal networking and collaboration. There are five terrestrial research stations in Iceland, four of them are in INTERACT and allow access.
- Italy: Update on the Arctic Station “Dirigibile Italia” in Ny-Ålesund Svalbard. Large future projects and investments: PRA (Arctic Research Programme) funded by Italian Ministry for University and Research for studies over the Arctic (3 calls for projects up to now), has been renewed for two more years (1 M€/y). SENTINEL Holthedalfonna ice drilling campaign in Svalbard. Campaign will take place in April 2023. The station will have an electric car for moving people and weights in and around the Ny-Ålesund from 2023. New version of the Italian Arctic Data Center is available <https://iadc.cnr.it>
- Japan: Call for Early Career Scientists’ proposal for R/V Mirai 2023 Arctic cruise” from not only Japan but also other countries. The Arctic Data archive System (ADS) aims to develop an Open Science infrastructure for Arctic research, and will promote the mutual distribution of the Big Data of Arctic research. In ArCS II, observation and research sites in the Pan-Arctic are allocated as ‘International Collaboration Sites’ under MOUs with key Arctic institutes to promote advanced joint studies by precisely monitoring changes in the area and to utilize them as on-site platforms for capacity building of ECRs. New research icebreaker for the Arctic Ocean. The construction of a new research icebreaker for the Arctic Ocean is ongoing and Japan hopes that the first (trial) observation cruise will be conducted in JFY2026 and later.
- Korea: Icebreaker ARAON is going to support 11 science projects in the area of Bering / Chukchi / East-Siberian / Beaufort sea by three science Cruise legs; 59 days Science Cruises with three legs. 3 times port-call at Alaska local port for Refueling & passenger changes. Since April 2022, KOPRI has been carrying out a Next Generation Icebreaking Research Vessel building project, Timeframe is from 2022-2026 (5 Years) and a budget of approx. USD 220 Million.

- Netherlands: New National Research Vessel Anna Weber van Bosse (delivery mid-2025), Prepared for methanol fuel, autonomous vehicles on-board: ROV, AUV, gliders. Ice strengthened. Antarctic tourism programme PT-REPAIR. Scientific Expedition Edgeøya Svalbard July 2023 with TV crew onboard. New funding calls 2023: Antarctic call-for-proposals, focus on Rothera region and Arctic calls for science proposals are coming soon.
- Norway: A New Central Arctic Observing System under implementation. Work on sea ice in the Central Arctic Ocean. Sustainable development of the Arctic Ocean (SUDARCO) (2022-2026). Several cruises with RV Kronprins Haakon, RV Johan Hjort, RV Kristine Bonnevie and RV G.O. Sars. Researcher days at Ny-Ålesund Research Station was in 2022 almost back to normal after the Covid-19 pandemic.
- Portugal: No infrastructure, but project based activities utilizing existing infrastructures. Portugal is working on a polar research strategy plan. Arctic projects:
 PERMANOM –Structural Characterization of Natural Organic Matter in Permafrost Thaw Lakes in winter Season.
 TERNOver - How variation on Omega-3 may affect breeding performance of marine avian species?
 THAWPOND-NWT – Remote sensing analysis of vegetation and thaw pond colour dynamics in the continuous permafrost zone: from local to regional (Northwest Territories, Arctic Canada).
 TROPHICHANGE IV - Can trophic interactions alleviate environmental change effects at high latitudes? (Iceland). Their researchers follow the rules in terms of reducing the environmental impact.
- Poland: Infrastructures include Polish Polar Station in Hornsund on Svalbard, Research vessel OCEANIA, Scientific-Training vessel HORYZONT II, Adam Mickiewicz University Polar Station in Petuniabukta (seasonal station June-September since 2015), Nicolaus Kopernicus University Polar Station in Kaffioyra (seasonal station May-September since 1975), University of Wroclaw Polar Station BARANOWKA (seasonal station May-October since 1971). New investments and development of the observation network in Svalbard: CRIOS – Cryosphere Integrated Observatory Network on Svalbard. Several stations have solar panels installed and are testing them. Planning a Polar research strategy and a Polar data strategy.
- Sweden: Overview of infrastructure: Abisko Scientific Research Station, Icebreaker Oden. Expedition The ARTofMELT (Atmospheric rivers and the onset of sea ice melt) will fulfill data gap from MOSAiC. Planned expedition with Russian icebreakers were cancelled in 2022. Effects to reduce environmental impacts: Abisko is installing geothermal heating, electrical vehicles and reducing energy usage. A new Swedish climate neutral research icebreaker for heavy ice conditions. Polar connect: “Hybrid” Telecom and Research Infrastructure. Far North Fiber project (Company: Far North Digital, LLC) is a 14,000 km (Japan to Europe) subsea fiber optic cable system with landings in United States, Canada, and dual landings in Japan and Europe

(Norway/Finland and Ireland). SMART Subsea Cables in the Arctic Science – 2 cables out of 16 are dedicated to science. Call for coupling of science to the cables is soon coming out.

- Switzerland: 12 new Arctic science projects funded from 2022 budget. New agreements for research collaboration including the Arctic with Canada (INQ), Germany (AWI), Greenland (NIS) and Japan (NIPR). Swiss Polar Institute moved to new premises in Sion, Valais in December 2022. Working on: 1. A transparent mechanism to mutualise fieldwork within approved grants (e.g. offer data collection opportunities to others through funded projects - “suspended data/samples”), 2. Compensation/support scheme between users and owners of infrastructure (e.g. instead of paying carbon offsets – contribute to a common fund to renovate Arctic stations?) (Maybe something for FARO to help with?). 3. Devising mechanisms to deliver critical mass technology challenges for clean(er) polar science.
- UK: The Canada-Inuit Nunangat-United Kingdom Arctic Research Programme 2021-25. Equal, respectful and empowering Inuit, Canadian and United Kingdom participation in projects, governance, research, publication and data ownership. BIOPOLE will determine how climate change at both poles affects the nutrient export that drives the global carbon cycle and primary productivity. RRS Sir David Attenborough Potential Arctic science cruises in summer 2024. NERC Arctic Research Station, Ny-Ålesund, Svalbard is planning for a full season in 2023.
- USA updates: National Strategy for the Arctic Region (NSAR). Bering Task Force on the Northern Bering Sea Climate Resilience Area. Recapitalization of Summit Station, Greenland. Joint NASA/NSF workshop: Future of Greenland Ice Sheet Science (FOGSS) meeting. IARPC/United States Arctic Observing Network (U.S. AON) Board released report "On the Need to Establish and Maintain a Sustained Arctic Observing Network". International Cooperative Engagement Program for Polar Research (ICE PPR) MOU. The U.S. Army Engineer Research and Development Center’s Cold Regions Research and Engineering Laboratory: creation of 3 new facilities (Treat Island, ME; Fairbanks, AK; Hanover, NH) for the testing of coatings to withstand/mitigate ice adhesion/corrosion. Reducing Environmental Impact: New Summit Station aims to reduce human presence. R/V Sikuliaq is designed to have the lowest possible environmental impact, including a low underwater radiated noise signature for marine mammal and fisheries work.

3. Thematic discussions

- **INTERACT Elmer Topp-Jørgensen (15 minutes)** on *Reducing carbon footprint of Arctic research* Together with APECS, INTERACT has made a handbook on *Reducing carbon footprint of Arctic research*. This handbook attempts both to summarize existing knowledge and to offer solutions for researchers who want to reduce CO₂ emissions related to their research

activities. One of the most significant areas under individual control is travel. There are tips for scientists, conference organisers, institutions and the role of funding agencies. See the guidebook: <https://eu-interact.org/reducing-co2-emissions-from-arctic-science/>

- **EPB guest speaker Pjotr Elshout** EPB has an Action Group on Environmental Impacts since 2018. FARO is represented by the secretariat. The group is a polar group, thus focusing on both regions and to exchange experiences. The group is now launching a new report on *Reducing environmental impacts of Arctic research*. The report is meant for people who need to know the first basics of environmental impacts associated with Polar research to make them aware of the potential issues. The report includes information on environmental impact, types of research, logistics and legal frameworks. Will soon be available online.

Discussion based on the two presentations about reducing environmental impact of science:

It was discussed how to disseminate this important info to scientists. Suggestions included sharing the information through national networks and programmes. People should be made aware of this information before they apply for field work. People need to coordinate field work better, to make sure not to take similar measurements the same place as other researchers did and be better at sharing of data. In Greenland the Arctic hub tries to coordinate research to avoid redundancy. In Norway there are flagship projects so researchers coordinate themselves – collaboration is the best. Suggestions to make a session, on the next FARO Annual meeting, on what new technologies that are being used (such as experiences with electric vehicles). Remote access should be promoted – station staff may have time to help and test new things, especially in the winter.

It was also commented that some donors/Funding agencies are primarily interested in getting excellent science results and focus less on climate and environmental impacts when issuing grants. FARO and FARO members should raise such issues to the national research councils and other funding bodies. Expeditions should be coordinated much more internationally – maybe something for FARO to work on. Where are the interests going, where are the gaps? FARO should focus on the priorities together with IASC/ICARP IV.

4. Updates from other organizations and projects, 5 minutes each (30 minutes)

- COMNAP – Dirk Menedoht

COMNAP is an international association of the 32 national Antarctic programs. There are 117 facilities which includes 68 research stations, 38 Year-round (winter-over population) and 30 Seasonal (summer-only population). More than 500 research projects supported per year.

COMNAP work on several safety related risks: Search & Rescue Workshop IV (2019) & Workshop V (June 2023), Tsunami & Natural Hazards Awareness Project and Aviation. Reduce Plastic Pollution; understanding sources of plastics; Take action on micro-plastics and supporting the COMNAP Sustainability Statement. Avian Flu Heightened Risk Consultations with SCAR & IAATO on Avian Flu Advice.

- Asian Forum for Polar Sciences (AFoPS)– Siti Aisah Alias

AFoPS is an Asian polar organization dedicated to advance of polar research & cooperation in Asia, since 2004. Regional alliance with a global perspective. The 6 Members are China, Japan, South Korea, India, Malaysia and Thailand. The Observers are: Australia, New Zealand, Turkey, Sri Lanka, Pakistan, Egypt, Iran, Indonesia, and the Philippines. Country chair and secretariat of AFoPS is on a two-year term. Malaysia (NARC) chaired AFoPS from 2021-2022. Current chair is Thailand. Major AFoPS activities includes Research Collaboration, Cooperative Project, Human Exchange and Inter-Organizational Cooperation. Invitation/Fellowship Programs to facilitate cooperation in research/operation: NIPR Invitation Program, KOPRI Fellowship Program. Also, bilateral MoUs between AFoPS members for joint research on research cruises and polar stations. Joint Workshops and Trainings. MOU with IASC and SCAR for Cooperation in Polar Research. Joint meeting between AFoPS and the EPB for information sharing on polar research and infrastructure. AFoPS Future Plan includes among other things; Strengthen the AFoPS Secretariat, Roadmap for the next decade, Deepen intra-Asian and international cooperation on polar research. Facilitate more Asian countries and scientists to undertake research in the polar regions. Promote the importance of the connectivity of polar region to the global ecosystem especially in the Asian region. More information: <https://afops.org/home/about>

- Polar Observing Assets Working Group – Bill Manley

The Polar Observing Assets working group (POAwg) facilitates the discovery and interoperability of information about research and monitoring assets in polar regions: sites, transects, observatories, projects, and networks or systems. FARO is represented by the secretariat. POAwg will be building a registry of polar observing networks. Observing assets includes infrastructure (for example stations, facilities, plots, moorings, observatories, stationary platforms, community-based observations) and mobile platforms (for example buoys, vessels, aircraft, floats, gliders, UAVs, AUVs, animal-borne sensors). Activities include projects (research projects, studies, and other activities typically funded or coordinated by an agency or program within a defined timeframe), campaigns (scientific cruises, expeditions, aircraft operations, fieldwork, and other planned routes or completed activities) and initiatives (coordinated ongoing efforts including organizations, networks, observing systems, and programs). The challenge is a lack of interoperability (custom metadata structures, custom vocabularies, lack of machine-readable access and duplicated time and effort). Main tasks: 1. Create a registry of polar observing networks, documenting asset-related metadata standards, semantic technologies, and transfer protocols in use. 2. Build crosswalks and facilitate existing tools for translation across standards. 3. Create recommendations for adoption and implementation of established solutions. Make data more Findable, Accessible, Interoperable, and Reusable (FAIR). See [POAwg \(polarobservingassets.org\)](http://polarobservingassets.org)

- IASC (ICARP IV status) – Gerlis Fugmann

ICARP - International Conference on Arctic Research Planning would like to have input from FARO on the ICARP IV. Focus to discuss the state of Arctic science, and to consider the most urgent knowledge gaps and Arctic research priorities and needs for the next decade. ICARP IV Conference will be held during ASSW 2025 from 21 – 28 March 2025 in Boulder, Colorado, USA. The ICARP IV is the primary tool to determine the Arctic scientific goals and directions for the upcoming Fifth International Polar year (IPY) 2032-2033. How to engage: Participate in one of the ICARP IV engagement activities throughout the year, or organize your own activity. Submit outcomes from your projects that are relevant to the ICARP IV process or submit a statement via the call for statements. More information:

<https://icarp.iasc.info/engagement>

- The Pacific Arctic Group - PAG – Jackie Grebmeier

PAG is a group of organizations and individuals with a Pacific perspective on Arctic science; it is an affiliate of the IASC and has as its mission to serve as a Pacific Arctic regional partnership to plan, coordinate and collaborate on science activities of mutual interest. PAG continues to develop and implement long-term monitoring activities such as: Distributed Biological Observatory (DBO), Pacific Arctic Climate Ecosystem Observatory (PACEO), and Central Arctic Ocean (CAO). Expeditions in 2023 include: 1. July 2023-CCGS Sir Wilfrid Laurier, Canada and USA. 2. August 2023 KOPRI Arctic Ocean Expedition Plan-RV ARAON. 3. Distributed Biological Observatory (DBO)- Ecosystems & Fisheries Oceanography Investigations (EcoFOCI) September 10-October 4, 2023. More information: [The Pacific Arctic Group \(PAG\) \(arcticportal.org\)](https://arcticportal.org)

5. FARO 5-Year Strategic Plan (by Katy Smith and Kate Ruck from NSF)

The draft Strategic Plan for FARO was presented. In the Fall of 2020, FARO initiated a review and the review report was released in February 2022. ExCom has been developing a Strategic Plan based off this report. Once the Strategic Plan is finalized, next steps and actions will be identified to fulfill the goals outlined in the Strategic Plan. NPOC's were asked to comment on the draft before March 17, and then ExCom will review and address all comments. The Strategic Plan will then be posted to FARO website and distributed to NPOCs.

The goals and activities need to be discussed, and input should be requested from NPOCs. Important that FARO look at the longer perspective.

6. Open floor for discussion on Fostering Safe and Inclusive Working Environments in the Field

(With guests from NSF: Rhonda Davis, Peggy Hoyle, Sarah Williams, and Alexandra Isern)

NSF delegates introduced their wish for an open discussion on how to foster safe and inclusive working environments in the field. The aim was to share experiences, learn from each other, and to have an open

dialogue with the FARO community. Important to remember the cultural differences, especially in a closed environment as the Arctic.

How to report issues? Some stations have a made a code of conduct that needs to be signed. Evaluation forms are often collected at stations, but are they asking the right questions regarding harassment, etc.? Often the reporting comes late. It is important to talk to people, as things may not be reported otherwise. Normalize conversations. Training is important as people may change during long field periods, and it is important to learn to be respectful of each other's culture. NSF will have another session during ASSW 2023 focusing on this.

7. Administrative business: Jennifer Mercer, FARO Chair (20 minutes)

- i. The FARO Secretariat - 2022 finance report.

Invoices for the annual fee 2023 will be sent out in April 2023.

Financial report: Our income in 2022 was 27.010 euro with 18 member countries having paid the annual fee. There was a request to waive Poland's annual dues for 2022 so they can use their funds to support Ukrainian scientists and students who have left Russia. It was conveyed to Poland that FARO was aware Poland would not be paying their annual dues in 2022.

The expenditures were 30.585 euro. This means that the balance of the year is -3.575 euro, and 47.855 euro is carried over to 2023.

Expenditures: Almost all the budgeted salary for 2022 was used by the FARO secretariat.

Travel: Approximately 8000 Euro spent on travel to the workshop in Brussels: The Future of Research Infrastructure in the Arctic.

2438 Euro was spent on open access for the paper in Polar Record: International access to research infrastructure in the Arctic.

As planned 5000 Euro was spent on honorariums to the review committee.

- ii. 2023 budget.

The travel budget is set at the same level as in previous years (before the pandemic).

Overall - the total budgeted expenses are in line with the expected income in 2023.

It was agreed by all NPOCS that the Secretariat can hold 8000 Euro for discretionary spending in 2023.

Greenland will start to pay the member fee in 2023.

- iii. No elections needed (no expiring terms).
- iv. Next FARO Annual meeting will be held during ASSW 2024 in Edinburgh, United Kingdom, 21 - 29 March 2024.
- v. Any other business.

Brazil has requested information on joining FARO. The chair and secretariat will contact them with information about FARO, and Brazil should be invited to our next annual meeting as an observer, if interested.

8. Wrap up: Jennifer Mercer (5 minutes)

A final toast to celebrate FARO's 25 years anniversary.

Participants

FARO National Points of Contact (NPOCs)

Canada	James Drummond
China	Dr. Huigen Yang from PRIC
Denmark	Morten Rasch
France	Yan Ropert-Coudert
France	David Renault
Germany	Dirk Mengedoht
Iceland	Anna Olafsdottir
Italy	dr. Mauro Mazzola
Japan	Takuji Nakamura
Korea	Dr. Sung-Ho KANG
Netherlands	Dr. Daan Blok
Norway	Nalan Koc
Portugal	Maria Teresa C Cabrita
Poland	Piotr Glowacki
Sweden	Åsa Lindgren
Switzerland	Daniele Rod
UK	Henry Burgess
USA	Jennifer Mercer

Presenters

FARO	Kate Ruck
FARO	Katy Smith
FARO	Marie Arndal
FARO	Elmer Topp-Jørgensen
EPB	Pjotr Elshout
PAG	Jackie Grebmaier
POAwg	Bill Manley
IASC/ICARP	Gerlis Fugmann
AFoPS	Siti Alias (AFoPS)

NSF	Rhonda Davis
NSF	Peggy Hoyle
NSF	Sarah Williams
NSF	Alexandra Isern

Other

Participants	Korea	Mr. Sunhwi KIM
		Mr. Seonung CHOI
		Frank Rack (NSF)
		Ian Rudkin (BAS)
China	Yang Yang	
	Honglei Li CAA	
	Yulia ISIRA	
	Anna Komr	
	Renee Crain	
Greenland	Nuka Larsen	
	Daniel Lyberth Hauptmann	

FARO

Secretariat	Marie Forst Arndal
	Elmer Topp-Jørgensen