ICARP IV Research Priority Team (RPT) 4

Final Report

Arctic Research Cooperation and Diplomacy

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1. Executive Summary

The Research Priority Team on Arctic Research Cooperation and Diplomacy (RPT 4) was established under the Fourth International Conference on Arctic Research Planning (ICARP IV) to examine how Arctic research cooperation and science diplomacy are evolving in a context of accelerating environmental change, geopolitical tension, and institutional disruption. While Arctic research remains central to global climate knowledge, regional governance, and international cooperation, the systems that support it are under increasing pressure from political instability, technological transformation, and uneven access to resources.

The scope of RPT 4 includes identifying key research needs and priorities related to effective international cooperation, such as joint funding strategies, connecting national and international funding agencies, effective international guidelines and legislation, ethical sharing of research infrastructure and data, as well as ensuring the value and contribution of Arctic research during times of geopolitical tension. It also focuses on pathways for understanding and, where possible, strengthening research cooperation, including research exchange programs and collaborative observing efforts amidst geopolitical constraints. The team considered how existing cooperation models are being tested and how they must be reimagined to operate effectively in a new, multipolar, and increasingly competitive global environment.

Research Needs

RPT 4 identified the following research needs:

1. Understand and enhance the resilience of Arctic research collaboration to political change, technological innovations, instability and shocks.
2. Recognize and implement knowledge co-production, Indigenous-led research, and prioritize capacity and inclusion of Arctic Indigenous Peoples and Arctic communities in research cooperation and diplomacy.
3. Examine Arctic research decision-making processes within and among states and strengthen research coordination mechanisms that enhance efficiency and effectiveness.
4. Leverage multilateral fora/bodies to support international Arctic research.
5. Strengthen and increase dialogue between researchers and decision-makers on critical Arctic issues.

Research Priorities

Based on these needs, RPT 4 identified the following priorities for Arctic research over the next decade (2025–2035):

1. Understand the characteristics of Arctic research cooperation and science diplomacy in a transforming world.
2. Enhance the resilience of systems of Arctic research cooperation.
3. Examine the effectiveness of Arctic science diplomacy.
4. Assess the impact of emerging technologies and innovations on Arctic research cooperation and science diplomacy.
5. Develop and implement principles of accessibility, inclusivity, and welcoming in Arctic research cooperation and diplomacy.

In addition to these RPT 4–specific needs and priorities, the report identifies a set of **cross-cutting ICARP IV research needs and priorities** that underpin effective Arctic research cooperation across all domains. These include strengthening Indigenous leadership and the recognition of Indigenous Knowledge; promoting interdisciplinary, equitable, and inclusive research; enhancing data sharing and interoperability within open science frameworks while respecting Indigenous Data Sovereignty; recognising Arctic research infrastructure as critical infrastructure; and advancing cooperative and innovative funding models. Addressing these cross-cutting issues is essential for ensuring coherence, resilience, and long-term impact across ICARP IV and related initiatives.

This report sets out a research agenda and implementation-oriented recommendations to inform ICARP IV outcomes and IPY-5 planning. By strengthening resilience, ethical governance, and inclusive practice, RPT 4 aims to support more robust and adaptive systems of Arctic research cooperation and diplomacy.

Henry Henson

2. Definition of the Focus of RPT 4

The International Arctic Science Committee (IASC) was created in 1990 to encourage and facilitate international consultation and cooperation for scientific research relevant to the Arctic. This was operationalised through scientific collaboration on previous International Conference on Arctic Research Planning (ICARP) processes, International Polar Year (IPY), and terrestrial, marine and social science working groups facilitating cross-border scientific and research collaborations. IASC represents a prime example of an institution that facilitates and enables Arctic research cooperation.

The decision to establish the *Research Priority Team on Arctic Research Cooperation and Diplomacy* (RPT 4) underscores the importance of this issue at this particular moment. Early in the planning process, the ICARP steering committee identified Arctic research cooperation and diplomacy as a new area of focus. The relevance and timeliness of addressing this priority cannot be underestimated given the current and evolving regional and global contexts.

The scope of RPT 4 includes identifying key research needs and priorities related to effective international cooperation, such as joint funding strategies, connecting national and international funding agencies, effective international guidelines and legislation, ethical sharing of research infrastructure and data, as well as ensuring the value and contribution of Arctic research during times of geopolitical tension. It also focuses on pathways for understanding and, where possible, strengthening research cooperation, including research exchange programs and collaborative observing efforts amidst geopolitical constraints. The team considered how existing cooperation models are being tested and how they must be reimagined to operate effectively in a new, multipolar, and increasingly competitive global environment.

While science diplomacy has previously been defined based on three functions (science for diplomacy, science in diplomacy, and diplomacy for science) drawing from a 2010 report by the Royal Society and the American Association for the Advancement of Science (AAAS).[1] A 2025 report by the same organisations provides an updated bi-functional definition, defining science diplomacy along the spectrum of *science impacting diplomacy and diplomacy impacting science*.[2] Many researchers have criticised how this function-based definition limits discussion concerning different applications of science diplomacy, and some are also drawing attention to the hard science bias in science diplomacy research and initiatives that could be examined through the use of alternative labels.[3]

The decision to establish a specific ICARP research priority team on this issue underscores movements within the Arctic research community to recognise the value of pluralistic approaches to research such as those undertaken within Indigenous Knowledge systems, and the social and health sciences and humanities. This was reflected in the early stages of RPT4's development when the team decided to emphasize "research" cooperation and diplomacy rather than "science" as holding equally legitimate claims to knowledge and diplomatic power while being more inclusive. This reflects commitments within the Arctic research community to harmonize research contributions from different epistemic communities.

Since the end of the Cold War, the circumpolar North has been regarded as an exceptional region, characterized by high levels of international research cooperation and governance centered on knowledge sharing and collective decision-making. The 1990s through 2020 period was especially favorable for Arctic research, seeing the establishment of IASC in 1990 and the Arctic Council in 1996. It fostered a sense of momentum, progress, and international optimism. Indigenous leadership advanced the objective of co-production of knowledge, emphasizing the importance of an equitable approach that recognizes Indigenous Peoples' rights and ensures their co-leadership and perspectives in research agendas.

[1] https://www.aaas.org/sites/default/files/New_Frontiers.pdf

[2] https://www.aaas.org/sites/default/files/2025-02/Final_Science%20diplomacy_15%20years%20on_report_WEB.pdf

[3] See also, Brown Burkins, M. (2025). Rethinking the Practice of Arctic Science Diplomacy. In E. Conde & C. Wood-Donnelly (Eds), Routledge Handbook of Arctic Governance. Routledge.

In recent years, however, the dynamics have shifted. While the last International Polar Year (IPY4) was planned and implemented during an era of exceptional international cooperation in the Arctic, and relative global stability, the Arctic now sits at a crossroads of rapid environmental change and increasing geopolitical tension, resulting in a changing landscape of international research cooperation. The global COVID-19 pandemic revealed vulnerabilities in the Arctic research ecosystem, prompting calls for more resilient systems including support for local research networks, stronger community engagement, and contingency planning. The pandemic highlighted the need to adapt and build more flexible, community-centered research programs and networks.

The full-scale invasion of Ukraine by Russia in 2022 deeply impacted Arctic diplomacy and research collaboration. Challenges related to data sharing, joint publications, conference participation, access to research sites, and researcher mobility have been exacerbated. These disruptions are compounded by other international and national shifts, such as recent domestic efforts in the United States to reduce its scientific enterprise. The long-term consequences of these developments remain difficult to estimate but are likely to influence Arctic research trajectories for years to come.

Taken together, these recent developments are diminishing the optimism that once characterized Arctic research cooperation and science diplomacy, revealing vulnerabilities within existing models. They also highlight the necessity of reinvigorating and rethinking the study and practice of research cooperation and science diplomacy within the Arctic, especially as the international landscape risks becoming more fragmented and competitive.

Despite disruptions, Arctic Indigenous Peoples have maintained lines of communication and cooperation across boundaries established between Russia and the West, the Arctic research community has gained significant momentum by advancing multinational cooperation and developing new collaborative funding partnerships. The surge in interest, and subsequent actions, must be harnessed and maintained. Effective cooperation in this context requires new approaches that emphasize resilience, inclusivity, and a broader recognition of diverse knowledge systems.

The ongoing evolution of science diplomacy provides important context for understanding the specific challenges and opportunities facing Arctic research cooperation. For much of the post–Cold War period, science diplomacy was characterized by an aspirational model, including a functional shared needs approach, emphasizing bridge-building, trust, and dialogue across geopolitical divides. This optimism resonated strongly in the Arctic, where knowledge-sharing and collective governance thrived. More recently, however, global shifts have accelerated a move toward transactional forms of science diplomacy, where scientific collaboration is increasingly treated as a bargaining chip within national strategies, contingent on short-term returns and alignment with national interests (e.g. Russia-Norwegian fisheries cooperation, US pressure on foreign governments to invest in Alaska). While this transactional logic can generate new resources, cost-sharing, and policy relevance, it also risks undermining the openness, inclusivity, and long-term resilience that Arctic research cooperation has historically depended upon. For RPT 4, this means not only studying how cooperation and diplomacy unfold in the Arctic, but also situating them within the larger transformation of science diplomacy, where aspirational, pragmatic, and transactional modes coexist and interact, often uneasily.

RPT 4 is unique because it is the first time ICARP has dedicated attention specifically to research cooperation and science diplomacy and because the field itself is still maturing, specifically in relation to the Arctic but also more generally. There are opportunities for both theoretical development and practical application. Most Arctic research cooperation currently relies on some form of diplomatic engagement, which is heavily influenced by political and geopolitical factors. Moreover, developments on the ground can have wide-ranging diplomatic repercussions, making the Arctic an important case study for understanding the role of international research cooperation and science diplomacy. This report represents a key milestone in Arctic research cooperation in uncertain times capturing the knowledge of actors from across the circumpolar region and beyond.

A key goal is to reconsider and more carefully define the assumptions that underpin Arctic research cooperation and science diplomacy. For example, to what extent can the Arctic research community safeguard research from misappropriation (e.g. protect sensitive information and intellectual property, prevent government interference, and maintain academic standards), while also striving to keep collaboration as open as possible? How can different knowledge systems be employed in tandem within research cooperation? Given the Arctic's importance in regulating the global climate system, its wealth of natural resources which are of global interest, and in light of growing geopolitical tension in the region, tackling issues pertaining to security, cooperation and collaboration has become especially urgent. The insights gained from Indigenous Peoples' engagement and governance are key to diplomacy going forward.

The Arctic continues to reveal the limits of current cooperation and diplomacy frameworks, highlighting the need for ongoing theoretical and practical development. From emphasizing security and resilience to fostering inclusivity, research contributions can help ensure Arctic governance remains knowledge-informed, diplomatically skilled, and adaptable to rapid change.

RPT 4 recognizes the importance of connecting our work with other ICARP RPTs on cross-cutting issues such as data, funding, infrastructure, observations, and Indigenous Knowledge, all of which complement the logic of research cooperation. These connections will facilitate integrated efforts and shared understanding, especially during implementation. While important and related, RPT 4 does not focus directly on the science-policy interface or the questions of politicization of science.

The current crises in Arctic research cooperation and diplomacy should be viewed not only as a challenge but also as an opportunity to harness the current surge in interest and initiatives, to ultimately expand and improve cooperation. It is essential to draw on the lessons learned from these challenges to devise measures and contingency plans that ensure viable alternatives and built-in redundancies should similar disruptions and tensions arise in the future. It is a reminder to avoid a return to status quo and to use this period to innovate and advance a more resilient, inclusive, and adaptive framework for Arctic research.

Gareth Rees

Ursula Enzenhofer

3. Priorities and Needs in Arctic Research for the Next Decade

3.1. Needs and Priorities specific to Arctic Research Cooperation and Diplomacy

3.1.1. Research Needs

The RPT 4 team recognised a number of overarching principles for research cooperation and diplomacy that inform the needs and priorities identified. They are not exhaustive but are used as normative and aspirational guideposts going forward.

Overarching principles

- Prioritize youth engagement and next-generation leadership within a safe and inclusive research environment.
- Strengthen Indigenous Peoples' leadership and research, and support co-production of knowledge, with explicit recognition of Indigenous rightsholders.
- Recognize the importance of different types of research, including policy-driven, governance and legal, natural and social sciences, health, multi/transdisciplinary, and applied research, such as the food, energy, water nexus.
- Improve the capacity to translate knowledge, interpret data, and contextualize evidence effectively including developing mechanisms for novel forms of science communication.
- Promote diversity and inclusivity in terms of gender, age, culture, and geography.
- Articulate and uphold high ethical standards in Arctic research.
- Ensure that the outcomes of research cooperation and diplomacy meet societal needs and support healthy ecosystems with respect for non-human life.
- Enhance trust, reciprocity, and mutual benefit through transparency, respect, and equitable sharing of contributions and outcomes among all research partners.
- Ensure research security and integrity by safeguarding sensitive data and infrastructure while upholding ethical standards, transparency, and scientific rigor.

RPT 4's 5 most urgent research needs are presented in the table below. Each research need includes a description and a rationale for why it was included in this report

Research Need	Description of the Research Need	Rationale why included in this report
1. Understand and enhance the resilience of Arctic research collaboration to political change, technological innovations, instability and shocks.	In the context of a changing world order and an unpredictable future, we need to develop an understanding of: 1. how these changes impact what Arctic research is prioritized 2. how Arctic research is done (data collection, data sharing, transnational partnerships, etc.) 3. approaches to Arctic research cooperation (bilateral initiatives, mini-lateral/regional and institutional cooperation) 4. who is involved in Arctic research, who the research serves, 5. how research may serve other functions (diplomatic, relationship building, communication channels, security/military interests, etc.), and 6. how this research informs policy (environmental protection, sustainable development, emergency management, etc.). This also leads to questions about how to advance research without compromising national security interests.	From global pandemics and geopolitical tensions to political instability, Arctic research is facing many challenges. These contribute to weakening some aspects of Pan-Arctic research cooperation, hinder the collection and sharing of data, widen knowledge gaps, and carry the potential for incomplete or inaccurate research findings. In contrast, technological innovations and growing international interest in the Arctic are transforming how research is conducted and the range of actors involved. To be able to respond to these challenges, there is a need for a more nuanced understanding of the present landscape of Arctic research collaboration and how it is impacted by geopolitics and larger shifts. This knowledge can be used to develop informed strategies to: 1. help mitigate challenges and sustain or enhance the resilience of critical Arctic research and research infrastructure in the face of political change, instability, and shocks; 2. support research communities to maintain flexibility and adaptability; and 3. inform approaches for re-establishing research cooperation, where and when appropriate.

Research Need	Description of the Research Need	Rationale why included in this report
2. Recognize and implement knowledge co-production, Indigenous-led research, and prioritize capacity and inclusion of Arctic Indigenous Peoples and Arctic communities in research cooperation and diplomacy.	There is still significant work needed for Indigenous Knowledge and research practices to be respected and recognized within the realm of Arctic research cooperation and science diplomacy. Understanding the theoretical and practical implications is timely and crucial. Collectively learning how Indigenous Peoples are redefining and shaping research cooperation and diplomacy in the Arctic could contribute to designing a roadmap for inclusive Arctic research cooperation. More work is needed to implement Indigenous Peoples' research and ethical recommendations within systems of Arctic research cooperation and diplomacy. It is also important for the Arctic research community to advance efforts to recognize and support Indigenous Peoples' rights and sovereignty (UNDRIP 2007).	Over the last several decades, Arctic Indigenous Peoples have dedicated significant effort to having their knowledge, perspectives, rights, and interests recognized and included in Arctic research, diplomacy, and policymaking. There are a growing number of Indigenous research recommendations for community, regional, pan-Arctic, and international levels (ICARP IV Indigenous Participants Statement 2025; Herrmann et al. 2023; ICC 2022; ITK 2018; etc.)
3. Examine Arctic research decision-making processes within and among states and strengthen research coordination mechanisms that enhance efficiency and effectiveness.	While there are increasingly frequent attempts to improve coordination among decision-making processes, there are still significant barriers to operationalizing the coordinated Arctic research needed and to which the research community generally aspires. Perhaps more concerning, current political shifts and instabilities are creating new constraints and more challenging conditions for cooperation and there is the risk that Arctic research might be disproportionately subordinated by state strategies, including being potentially weaponized/co-opted/leveraged for military, strategic, or geopolitical purposes. 1. Continuing to advance coordinated Arctic research requires dedicated effort to develop and sustain research decision-making processes, including the development and implementation of Arctic research principles, joint programs, shared funding models, and research protocols. 2. Identifying successful models for cooperation and establishing common metrics (e.g., joint publications, student exchanges, and shared grants, sharing of data and information) is essential for assessing the effectiveness and efficiency of these collaborations, ensuring measurable impact and long-term success. 3. Further coordination efforts through advancing successful models of data governance, interoperability, and harmonization across national and cultural boundaries.	Arctic research cooperation is shaped and enabled by decision-making processes both within and among states and Indigenous Peoples' institutions. These national and international decision-making processes involve, to varying degrees, governments, Indigenous rights-holders, academia, public and private funding institutions, the private sector, NGOs, and other stakeholders. These various processes define key aspects of Arctic research, including priority setting, resource allocation, infrastructure needs, and conditions and criteria for research and data policies. Recent events, such as the temporary suspension of Canada, Finland, Iceland, Kingdom of Denmark, Norway Sweden, and the United States' participation in Arctic Council's activities following Russia's invasion of Ukraine, indicate that while Arctic research cooperation can serve as a peace-building mechanism, it can also be the subject to international tensions. There is a need to develop a stronger understanding of the interrelationship between Arctic research cooperation, diplomacy, and geopolitics (e.g. Under what conditions can cooperation continue, what constitutes watershed/breaking point, etc.).
4. Leverage multilateral fora/bodies to support international Arctic research	In a rapidly changing environment, there is a need to identify/examine the impacts of unstable geopolitical dynamics on Arctic research and to what extent institutions can play a role in mitigating ongoing (geo) political developments. Such understanding can help leverage their support to Arctic research as well as inform pathways for ensuring more robust/resilient Arctic research moving forward. It could also facilitate exchange of information and data between and among research institutions and partners, reveal existing gaps, improve synergies and reduce redundancies (if any). Lastly, it could help with pooling resources, including research funding.	While much Arctic research is driven by nationally determined agendas and priorities, circumpolar and international bodies and organizations also play a key role in fostering international Arctic research. Some of those institutions are well established, such as the Arctic Council (AC), the Intergovernmental Panel on Climate Change (IPCC), and World Meteorological Organization (WMO). Some are more recent initiatives, such as the Arctic Science Ministerial meetings, the Arctic Science Funders Forum, and the 2018 Central Arctic Ocean Fisheries Agreement (CAOFA). However other important/relevant instruments, including the 2017 Agreement on Enhancing International Arctic Science Cooperation, while formally in force, remain to be operationalized and implemented, and still others are in the planning stage (e.g., the pan-Arctic Ocean Regional Alliance – ArORA).

Research Need	Description of the Research Need	Rationale why included in this report
5. Strengthen and increase dialogue between researchers and decision-makers on critical Arctic issues	Continuing to strengthen communication pathways, frameworks for the exchange of information and ideas, and mechanisms for dialogue between researchers and decision-makers is critical to ensure evidence-based decision-making and research that responds to the present and future opportunities and challenges in the Arctic and globally. Research cooperation during times of political instability and tension can play an important role in sustaining diplomatic ties and relationships when more formal mechanisms are disrupted, damaged or broken. Acknowledging these essential functions of Arctic research cooperation highlights the importance of strengthening the capacity of researchers and decision-makers to communicate and translate information and knowledge across the research/policy/decision making interfaces and to develop and implement strategies to increase engagements among the actors in those spaces. However, it is also important to actively consider the risks of connections between researchers and decision-makers and consider where, when and how the Arctic research community can sustain appropriate and important dialogue with decision and policy makers, while also protecting research integrity and ethics.	Arctic research cooperation serves multiple objectives. At its most basic, it enables research that depends on accessing data, knowledge systems, places, and infrastructure across borders in remote areas with small populations, limited infrastructure, and difficult operating conditions. Cooperation is critical to the conduct of excellence in Arctic research, and, by extension, central to informing diverse decision-makers at local, regional, national, and international levels, including Arctic Indigenous Peoples, private sector, and other stakeholders about critical Arctic-specific and global issues impacting the Arctic. The importance of the research-to-policy interface has been central to Arctic research cooperation for several decades through institutions like the Arctic Council, Polar Code, CAOFA, IPCC and other UN system entities as well as sectoral IOs. Knowledge derived from Arctic research, as well as the Indigenous Knowledge, is transferred and applied within the decision-making frameworks of regional organisations such as the European Union and ASEAN.

Benjamin Rabe

3.1.2. Priorities for Arctic Research

Priorities for Research	Reason why this should be an ICARP IV Priority
1. Understand the characteristics of Arctic research cooperation and science diplomacy in a transforming world.	Considering the characteristics of Arctic research cooperation and science diplomacy in a transforming world can inform our understanding of the evolving intersection of research cooperation and geopolitics in a region of increasing strategic importance. While traditionally viewed as a platform for fostering trust and regional stability, Arctic research now exists within a landscape marked by rising geopolitical tensions and shifting security dynamics. To navigate this complex environment, it is crucial to develop comprehensive, systematic theoretical and analytical frameworks that recognize both the cooperative and competitive dimensions of Arctic research. Such frameworks can help us to understand how the region's research is influenced by, and in turn influences, diplomacy and geopolitics. Advancing our understanding can inform both theory and practice. **Consider to what extent an environment of geopolitical competition reshapes how states establish and project influence in the Arctic:** Countries strategically vie for scientific presence, economic security, resources, infrastructure, and data control, using these assets as mechanisms of geopolitical leverage. This raises questions about whether research assets can serve as tools for trust- and confidence-building measures and/or whether they can exacerbate mistrust and heighten security concerns. Identifying the conditions under which international research collaboration contributes to confidence and regional stability, versus situations where it intensifies competition, is vital for informing policy and diplomatic practice. Equally important is understanding how regional norms and diplomatic practices persist despite worsening conflict, political relations, and what mechanisms support their resilience. These insights can guide efforts to uphold stability and foster productive cooperation amid geopolitical turbulence. **Balance openness in Arctic research cooperation with national security imperatives:** Understanding the tensions that may exist between international research cooperation and national security in the Arctic is important in the current context. Determining to what extent a balance can be achieved at international, national, and local levels requires detailed analysis and well-informed policy frameworks that adapt to the shifting security landscape. This not only supports scientific progress, but also mitigates security risks associated with dual-use research—where academic and military applications often intertwine. In this context, there is an urgency to develop open science principles upheld by ethical guidelines and practices (Dryák-Vallies, M. et al.2025). **Gain a deeper understanding of Arctic diplomacy ecosystems and the role(s) of science diplomacy:** The scholarship on science diplomacy remains underdeveloped. Advancing this field requires more rigorous theories and methodologies that accurately capture distinctive geopolitical, environmental, social and cultural realities. The Arctic provides an important and timely case for informing this work. Diplomacy as practiced by Arctic Indigenous Peoples may be insightful. This work can provide framework(s) to the practice of science diplomacy. The Arctic's governance frameworks, regional norms, and diplomatic practices shape both the opportunities and challenges for research cooperation. A nuanced grasp of these elements can improve strategies to enhance the role of science diplomacy in reducing tensions, fostering mutual understanding, and advancing regional stability.
2. Enhance the resilience of systems of Arctic research cooperation.	Recent disruptions have highlighted the urgent need to better understand both the vulnerabilities and resilience of the systems of Arctic research cooperation. The dual crises of a global pandemic and geopolitical ruptures, including among Arctic states, exposed how quickly even well-established international collaborations and scientific campaigns can be disrupted leading to cancelled field works, disrupted data streams, and severed cross-border communication, projects and partnerships. The continuity of long-term Arctic research efforts can be also hampered by domestic political shifts and developments, as well as wider societal trends. Research into, and actions to support, the resilience of Arctic research cooperation can contribute to the integrity, continuity, and effectiveness of research in a rapidly changing and sensitive region. **Ensure that collaboration mechanisms are robust and redundant:** Given current geopolitical tensions, it is important that Arctic research cooperation does not rely on single channels susceptible to disruption. Current risks include political conflicts, political measures such as economic sanctions, and regional geopolitical tensions, which could halt or impair communication and data sharing. Characterizing these risks and their instability allows us to inform and design resilient systems—such as multiple communication pathways, flexible agreements, and adaptive institutional frameworks—that can withstand shocks and maintain operational continuity. Research into and work to leverage diverse research cooperation mechanisms, partnerships, and data steward methods reduces vulnerability and can contribute to ongoing research despite disruptions. Leverage existing international decentralized data sharing initiatives, such as federated data systems that allow for varying data sovereignty priorities. "Secure long-term public access to data through resilient international governance structures to preserve rights of the public" (Dryák-Vallies, M. et al., 2025). **Recognize, collaborate with, and support a leading role for Arctic Indigenous Peoples and Arctic communities in research cooperation:** Recognize that Indigenous Peoples have their own research methodologies and means of evaluation. This involves systematically assessing existing institutions, procedures, decision-making processes, and evaluation matrices, focusing on Indigenous evaluation practices. Establishing culturally-responsive, co-designed success indicators that capture community-defined outcomes such as language revitalization, intergenerational knowledge transfer, or cultural preservation. Developing relevant measures that balance international policy impact with community priorities ensures that evaluations are inclusive and meaningful. Such metrics would reflect the diverse values and goals of Indigenous Peoples and Arctic communities, fostering more equitable and impactful research cooperation. Support Indigenous-led research, data sovereignty, and implement the research recommendations put forth by Indigenous Peoples. Furthermore, the COVID-19 pandemic vividly exposed the vulnerabilities of Arctic research—highlighting how reliance on centralized infrastructure, international supply chains, and distant institutions can hinder research. Supporting the leadership and capacity development of Arctic Indigenous Peoples and Arctic communities and fostering meaningful community-based research partnerships that respect Indigenous Knowledge in its own right can contribute to inclusive, adaptive, and robust Arctic research cooperation systems.

Priorities for Research	Reason why this should be an ICARP IV Priority
Continued 2. Enhance the resilience of systems of Arctic research cooperation.	**Prepare Arctic researchers to operate within an environment marked by uncertainty and instability:** This reality necessitates a proactive approach to assessing and managing risk—identifying specific risks like environmental emergencies, transport disruptions, or legal and regulatory challenges—and developing preparedness measures. Establishing contingency plans, fostering cross-border cooperation, and investing in autonomous or remote monitoring technologies can significantly enhance resilience. **Maintain people-to-people connections:** Continuing to build strong, trust-based relationships among researchers, institutions, and governments, where possible, facilitate coordination and information sharing during crises. Educational exchanges, youth networks, cultural exchanges, and joint training programs create a sustainable foundation of trust and shared understanding, which are vital in times of instability. These interpersonal connections are often the first lines of defense against breakdowns in cooperation and can foster innovative solutions to emerging challenges. **Continue to assess and improve the ability to work across borders:** Regulatory harmonization, mutual recognition of permits, and adaptable legal frameworks allow researchers to navigate complex bureaucratic landscapes. Recognizing and addressing these regulatory requirements ensures research can continue smoothly, even amid changing political climates. **Examine the role of non-state actors and supranational entities in systems of Arctic research cooperation:** As official diplomatic and international research collaboration mechanisms and channels become weakened or constrained by geopolitical tensions and political changes, there is an opportunity to examine and reflect on the current and potential roles of diverse non-state actors (e.g. civil society organizations, non-governmental organizations, academic institutions, think tanks) and supranational entities (European Union) in science diplomacy and Arctic research cooperation. Considering formal and informal roles of these actors (e.g. facilitation of dialogue/provision of platforms for dialogue, complementary streams of funding) can provide a more nuanced understanding and expose new pathways for advancing research and diplomatic priorities.
3. Examine the effectiveness of Arctic science diplomacy.	Research into the effectiveness of Arctic science diplomacy is important to ensure that efforts achieve meaningful, sustainable, and equitable outcomes. As Arctic governance and diplomacy become increasingly complex and decentralized, understanding what works—and what doesn't—is fundamental to devising strategies that optimize resource use, foster trust, and generate tangible benefits. **Assess the effectiveness of Arctic science diplomacy:** This involves evaluating how scientific evidence impacts diplomatic relationships and, conversely, how diplomatic strategies impact scientific cooperation. Effective science diplomacy should foster trust, transparency, and shared goals—principles that are especially vital in the Arctic, where geopolitical tensions have increased. The greatest knowledge gap in this area remains the absence of comprehensive and measurable indicators that would allow for an assessment of the effectiveness of science diplomacy. While there are, e.g., indicators for measuring the effectiveness of the internationalisation of science, there is still no methodology that enables evaluating the effectiveness or impact of science diplomacy. There is a need to develop such rigorous evaluation methodologies that can reveal the conditions under which science diplomacy succeeds or falters—be it through joint research initiatives, diplomatic protocols, or international agreements—informing future strategies to strengthen these efforts. **Understand and recognize the leadership of Arctic Indigenous Peoples in Arctic science diplomacy:** Arctic Indigenous Peoples have demonstrated extraordinary diplomacy and put forth Arctic research recommendations that need to be implemented at every scale (ICC 2022; ITK 2018; Greenland 2022; Roadmap 2023). Each report calls for Indigenous leadership at all levels, from funding programs and research prioritization initiatives (like ICARP) to individual projects. They also call for investing in Indigenous-led capacity building within communities. Having Indigenous leadership will likely increase the effectiveness of research projects through increased relevance to society, foster trust, increase community-based science, and create tangible benefits. The increased effectiveness could be assessed through co-produced evaluation (see Priority 2). **Explore polycentric and decentralized approaches to research priority setting and steering:** The Arctic spans multiple jurisdictions, rightsholders and stakeholders, and knowledge systems. Recent developments have weakened existing institutions, such as the Arctic Council, that have served as core institutions in regional research priority setting, science diplomacy and international cooperation. Examining governance models and evaluating their effectiveness can help develop flexible frameworks that accommodate diverse interests—governments, Indigenous Peoples, scientists, and non-state entities. Understanding the equity and efficiency of these models (uptake and resilience balanced against cost and interoperability) can inform efforts to allocate resources more effectively and build resilient collaboration networks. **Identify effective tools and instruments of Arctic science diplomacy:** Examining and learning from existing frameworks—such as the Central Arctic Ocean Fisheries Agreement—and emerging initiatives—like research strategies, science agreements, codes of conduct, and assessments— can provide valuable insights. Evaluating their success, limitations, and adaptability helps tailor approaches that address current instabilities, mitigate risks, and promote effective science diplomacy. Additionally, understanding how these tools can be leveraged to meet broader research and diplomatic objectives.

Priorities for Research	Reason why this should be an ICARP IV Priority
4. Assess the impact of emerging technologies and innovations on Arctic research cooperation and science diplomacy.	Technological innovations offer new avenues for remote collaboration, data sharing, and capacity building but also introduce complexities related to dual-use concerns, cybersecurity, and technological asymmetries. Assessing their impacts on Arctic research cooperation and diplomacy involves developing rigorous, theory-informed approaches that examine how such technologies both facilitate and challenge existing research and diplomatic practices. Considering the security and ethical concerns associated with dual-use research involves developing robust oversight mechanisms and best practices that promote transparency and responsible conduct. **Consider the role and impact of AI in Arctic research cooperation and science diplomacy:** The versatility of AI applications in research is being increasingly recognised and leveraged. Artificial intelligence is a complex umbrella term used to describe a series of analytical tools. Like any new research methodology, careful analysis of safe and justifiable design, implementation and maintenance is necessary - especially where Indigenous Peoples' data or resources are involved and potentially impacted. AI tools may help to overcome interdisciplinary barriers, enabling researchers to address fundamental questions more rapidly and effectively. AI tools also may create a new channel and mode of interdisciplinary communication. These technologies may also aid in making scientific info more accessible to Arctic Indigenous Peoples and Arctic communities for use in decision-making. A challenge, however, lies in the discrepancy in the level of digitalisation of resources across knowledge systems, disciplines, and languages, a gap which may deepen with the spread of AI and thus feed into the broader phenomenon of the so-called digital divide. One of the consequences may be bias in models that are trained predominantly on knowledge and data from the Western scientific system. This may result in the neglect of other knowledge systems and languages, the reproduction of false or harmful assumptions, and the wider range of phenomena encompassed by the notions of model hallucination and bias. Another critical issue in this context concerns the ethics of collecting and using Indigenous data, particularly when it is done without free, prior, and informed consent (FPIC), as well as the risks of misinterpreting or misrepresenting of Indigenous Knowledge. **Examine the opportunities and risks of emerging technological developments, including technology asymmetries:** Emerging technological developments present both opportunities and risks for Arctic research collaboration. Among others, the increasing use of uncrewed aerial vehicles (UAVs) for high-resolution spatial data collection is transforming possibilities for monitoring or altering ecosystems, infrastructure, and cultural heritage at local scales. This development has the potential to shift research capacity from large national or international programmes toward more locally led initiatives, increasing the scope for co-produced research and spatially distributed collection of data. At the same time, the growing availability of tools for gathering and analysing Arctic landscape data underscores the need for clear standards on data documentation, interoperability and sovereignty. Moreover, rapid technological advances risk reinforcing or creating technology asymmetries—uneven distributions of capabilities, infrastructure, and access across states, Arctic Indigenous Peoples, private companies, and research institutions—which could shape whose needs, knowledge and priorities are represented in Arctic research and governance. **Reflect on the security concerns related to the increasing role of technology in Arctic research cooperation and diplomacy:** The increasing role of advanced technologies in Arctic research raises significant security concerns with the potential to affect international research cooperation in the region. Dual-use concerns are particularly pronounced as many of the technologies central to the conduct of scientific research—such as satellite-based observing systems, drones, and artificial intelligence platforms—are also highly valuable for military and strategic purposes. Growing geopolitical tensions raise the likelihood that critical satellite infrastructure, already central to polar monitoring and disproportionately relevant to Arctic operations, could be treated as strategic assets, potentially leading to tighter restrictions on data sharing or vulnerability to cyberattack. Moreover, scientific cooperation in the Arctic increasingly depends on secure communication networks, on premise and cloud-based data repositories, and software platforms—all of which are vulnerable to intrusion, disruption, or manipulation. These dynamics underscore the need for robust cybersecurity measures, transparent governance frameworks, and carefully balanced policies that safeguard scientific openness while addressing legitimate security concerns (the principle of "as open as possible, as closed as necessary" Arctic international scientific cooperation and TRUST principles for data repositories).
5. Develop and implement principles of accessibility, inclusivity, and welcoming in Arctic research cooperation and diplomacy.	Arctic research is uniquely placed to enhance cooperation in an increasingly fragmented geopolitical system]. Arctic research serves as a vital platform for continued international cooperation and diplomacy, during periods of heightened political tensions and times of peace. For scientific diplomacy to be effective (see priority #3) and resilient, it must be built upon a foundation of accessibility, inclusivity, safety, and a welcoming environment. These principles are fundamental to building the trust and shared understanding needed for meaningful collaboration between researchers, regional, national and international policymakers, and Indigenous Peoples and Arctic communities. Further, these principles are central to the rationale of IASC. The IASC Handbook of Procedures & Guidelines (2023), for example, highlights "IASC is committed to ensuring that the opportunities provided through its internal and external processes, activities and events are delivered in ways that support participation regardless of nationality, ethnicity, religion, race, sex, gender identity, sexual orientation, economic status, disability, physical appearance, age or career status." (P.5). This focus on a more equitable "how" of conducting research is what strengthens Arctic research's role as a diplomatic tool, fostering a more responsible and effective approach to addressing shared polar challenges. Likewise, applied research with clear societal benefit that impacts Arctic communities positively, and is communicated effectively, will contribute to science diplomacy. Whilst there has been some strong progress made on codes of conduct for conducting research in the Arctic (Ropars et al., 2023), the lack of robust research ethics infrastructure, combined with the regions' unique geopolitical context and the evolving status of science diplomacy, presents researchers with distinct challenges that require further clarification and safeguards. Implementing measures that enhance inclusivity, safety, and accessibility will create a more just and equitable research environment as well as strengthen the quality and relevance of the research itself through a diversity of perspectives and a healthier, more resilient community.

Priorities for Research	Reason why this should be an ICARP IV Priority
Continued 5. Develop and implement principles of accessibility, inclusivity, and welcoming in Arctic research cooperation and diplomacy.	**Empower and elevate underrepresented voices in the polar community:** This is the cornerstone for making Arctic research cooperation more accessible, inclusive, and welcoming, as it is an active strategy to address systemic issues that have historically affected underrepresented groups within the polar community. The key mechanisms for empowering underrepresented voices are intentionally boosting their visibility, providing structured mentorship, and ensuring robust support. Visibility is increased by actively including these individuals in decision-making roles and committees, a diplomatic action that ensures diverse perspectives directly shape international research agendas. Structured mentorship forges a resilient, interconnected network of future leaders essential for long-term cooperation. Finally, robust support—from funding to safe environments—demonstrates a foundational respect for all partners, which is the bedrock of the trust required to foster a more equitable model of international science cooperation. **Engage underrepresented peoples and groups in Arctic research through targeted initiatives:** Engage underrepresented peoples and groups in Arctic research through targeted action. Utilise focused education and outreach on relevant polar themes. Integrate Arctic research into existing public education frameworks to create cohesive research literacy. Expand grassroots outreach to connect with new communities and promote equitable research. Illuminate diverse academic and non-academic career pathways to increase awareness of all opportunities. Foster dedicated community-building initiatives at all career levels to support recruitment and retention. These actions actively dismantle systemic barriers to participation and help build a resilient, versatile, and equitable future. **Address bias, prevent harassment to safeguard science diplomacy:** The efficacy of the science-diplomacy instrument is exceptionally vulnerable, as incidents of bias or persecution across countries, cultures and genders can undermine international research partnerships, and escalate into diplomatic complications. Addressing bias and developing measures to instill respectful engagement with robust research ethics infrastructure, guidelines, policies, and transparent reporting measures across organisations would safeguard cooperative endeavors from disruption and instill accountability of actions. This would cultivate the trust necessary for research to function as a reliable and enduring diplomatic bridge. Further, it is paramount that within institutions, individuals are trained to have a solid educational base in dealing with issues of safety, ethical conduct, and inclusivity. **Define success metrics to measure progress in inclusion, accessibility, and belonging:** To translate intentions into institutional practice, robust mechanisms of accountability are necessary. Defining clear success metrics for grants, projects, and organisations is the primary instrument for tracking and driving progress in inclusion, accessibility, and belonging. The ICARP IV process presents a unique and timely opportunity to pioneer a set of globally-recognised guidelines, policies with reporting mechanisms, and success metrics to measure progress in inclusion, accessibility, and belonging for the entire international Arctic research community. By facilitating a collaborative, international dialogue to establish these shared benchmarks, ICARP IV can promote a consistent and transparent standard of ethical conduct for research cooperation. Due to the fundamental importance of this priority, the IASC Task Force's present a unique opportunity to continue to work on this issue, fundamental to the ethical guidelines of IASC and critical for ensuring an accessible, safe, inclusive, and welcoming research environment.

Gareth Rees

3.2. Cross-Cutting Needs and Priorities

Cross-cutting needs and priorities are defined as not only relevant for one of the RPT topic areas specifically, but instead cutting across several of the seven topic areas:

- RPT 1: The Role of the Arctic in the Global Earth System
- RPT 2: Observing, Reconstructing, and Predicting Future Climate Dynamics and Ecosystem Responses
- RPT 3: Understanding the Dynamics and Resilience of Arctic Social-Ecological Systems to Foster Sustainable Futures
- RPT 4: Arctic Research Cooperation and Diplomacy
- RPT 5: Co-Production and Indigenous-led Arctic Research
- RPT 6: Education and Knowledge-Sharing In and About the Arctic: Research and Practice
- RPT 7: Technology, Infrastructure, Logistics, and Services


Gareth Rees

3.2.1. Cross-Cutting Research Needs

These priorities align strategically with the forthcoming International Polar Year (IPY-5) and provide a strong foundation for a future Arctic research strategy that is resilient, collaborative, and impactful at local and global scales.

Research need	Description of the research need	Rationale why included in this report
Indigenous Leadership and Knowledge Recognition.	Recognition of Indigenous Peoples' leadership in Arctic research; recognition and inclusion of Indigenous Knowledge; adoption of co-production principles and methods; development of Indigenous-led initiatives; capacity-building for researchers by Arctic Indigenous Peoples and for Indigenous Peoples to engage in Arctic research cooperation and diplomacy.	Feasible through co-designed research programs. High impact by ensuring culturally legitimate, community-driven outcomes. Scales across all research as a foundation for trust and collaboration.
Interdisciplinary, equitable, and Inclusive Research.	Promotion of holistic Arctic research that integrates natural sciences, social sciences, and humanities; inclusion of SSH in Arctic education and research; inclusion of diverse knowledge systems, cultures, geographies, ages, genders, etc.	Feasible through funding structures mandating interdisciplinarity. High impact for addressing complex, interconnected challenges. Scales across climate, community, governance, and development research.
Data Sharing and Open Science.	Building upon interoperable data-sharing protocols (ie standardization); safeguarding continuity of observations (ie continuous support and funding); exploration of employing cooperative governance models that support Indigenous Data Sovereignty; open science frameworks; and co-production practices are essential.	Feasible by leveraging the Sustaining Arctic Observing Network (SAON) Roadmap for Arctic Observing and Data Systems (ROADS) and existing catalogues. High impact for science, policy, and security. Global scale as Arctic data are critical for climate forecasting and resilience planning.
Research Infrastructure as Critical Infrastructure.	Recognition of research stations, satellites, icebreakers, and networks as critical infrastructure requiring sustained funding.	Feasible through integration with national critical infrastructure frameworks. High impact by securing long-term capacity. International scale through shared infrastructure use and cost efficiency.
Cooperative and Innovative Funding Models.	Establish multilateral funding sources and engage philanthropic and private actors to support sustained Arctic monitoring and research. Include fairness and feasibility within funding schemes.	Feasible via multilateral partnerships and philanthropic organisations. High impact for continuity and diversifying funding sources.

3.2.2. Cross-Cutting Priorities for Arctic Research

Priorities for research	Reason why this should be an ICARP IV Priority
1. Strengthening Indigenous-led governance and decision-making in Arctic research.	Strengthening Indigenous-led governance in Arctic research is critical for ensuring that research practices are equitable, inclusive, and aligned with the needs and rights of Indigenous Peoples. This priority addresses historical inequities, supports self-determination, and fosters long-term partnerships that enhance the relevance and impact of Arctic research. By prioritizing Indigenous-led governance, ICARP IV can set a global standard for ethical and impactful research that benefits both Indigenous Peoples and the broader scientific community.
2. Related to multidisciplinary and recognition of all relevant academic fields.	Promoting interdisciplinary research on Arctic issues. Leveraging different types of research, including policy-driven, governance and legal, natural and social sciences, health, multi/transdisciplinary, and applied research, such as the food, energy, water nexus.
3. Enhance data interoperability in the open science frameworks.	One of key cross-cutting priorities identified by RPT4 is the development and implementation of robust data-sharing protocols that enhance interoperability within open science frameworks. Data interoperability can be strengthened at multiple levels—such as the project level (metadata standards), the use level (datasets), and the algorithm level (modeling). Each facet supports open science frameworks and it contributes to a more connected data ecosystem, enabling the reuse of information across borders and disciplines. Each facet supports open science frameworks and reuse of data across borders. By leveraging international standards, semantic best practices (i.e. controlled vocabularies), and engaging in active international communities of practice (i.e. Arctic Data Committee), and respecting Indigenous data sovereignty, Arctic researchers can enhance current interoperability initiatives while strengthening cross-border collaboration and enhance ethical data-sharing and protection. By increasing data literacy in the Arctic, Indigenous Peoples can better leverage and/or adapt existing standards to support their own decision-making avenues. Interoperability enables the harmonization of western data systems with community-based monitoring and Indigenous Knowledge, while maintaining Indigenous data sovereignty. Ensuring the continued collection and accessibility of Arctic data amid diverse and compounding disruptions—ranging from environmental to geopolitical—is essential. Supporting decentralized data systems can improve access and resilience, while reducing reliance on physical presence in northern regions. Federation of data sharing systems additionally mitigate risks posed by physical and cyber threats that could render science operations vulnerable to accidental or hostile breaks, as data sovereignty decision-making lies within the original host repository and can adhere to varying legal systems. Finally, existing small-scale or object-specific data trust models may offer valuable lessons for developing a similar, collaborative data governance framework for the Arctic.
4. Map critical (international) Arctic research infrastructure.	There is an ever-growing discussion about critical research infrastructure of various kinds in the Arctic, which reflects a recognition of their importance both in government budgets and in relevant risk assessments. As investments in Arctic security and defence increase, identifying opportunities for dual use infrastructure should also be considered. However, a concise and policy-relevant definition of international Arctic research critical infrastructure is yet to be developed. The Sustaining Arctic Observing Networks' (SAON) Roadmap for Arctic Observing and Data Systems (ROADS) explicitly recognizes "Arctic observing and data systems (…) as critical infrastructures to support decision-making and understanding across sectors in the Arctic and globally" (Starkweather et al., 2021). There have been efforts to catalogue those assets, with two of the most comprehensive ones — "European Polar Infrastructure Catalogue" and "INTERACT Station Catalogue"—produced by EU-funded research projects. There is also a newer registry looking to map all Polar observation sites "Registry of Polar Observing Networks". Existing asset catalogues, and their alignment with the criteria commonly used in national critical infrastructure assessments, could provide a foundation for advancing and formalizing the concept of Arctic research critical infrastructure. Such an assessment could inform and give researchers and policymakers a de-facto baseline of what must be protected, funded, and maintained if Arctic research—and the services society derives from it—is to remain resilient in the future.
5. Transform Arctic research funding systems.	"Current funding structures are inadequate for supporting the collaborative, relationship-based research that polar science requires. There is a strong consensus around the need to more justly distribute funding across diverse communities and groups and to better distribute long-term funding that encourages collaborative resource sharing. Multiple priority statements call for funding cycles that support relationship building, reduce barriers to international collaboration, and eliminate unpaid labor in research. This transformation should reduce institutional gatekeeping in research processes, enabling direct community funding mechanisms."(Dryák-Vallies, M. et al., 2025) Diversify evaluation criteria for research. When assessing the outcomes of research programs/projects or monitoring activities, evaluation criteria are often overly focused on traditional scientific impact and do not place sufficient attention on the research needs of Arctic communities. Usefulness should be evaluated in various forms, not solely based on metrics like the number of papers published. To ensure the continuity of critical Arctic monitoring and observation programs, it is worth examining the potential for establishing international funding pools and "emergency" agreements that can sustain essential research operations in the event of a withdrawal or disruption by any participating country or funder. Crucial monitoring must be operationalized and implemented stably, independent of political situations, similar to the Global Telecommunication System (GTS) for meteorological observations (forecast). In addition, recognizing the growing influence of non-state actors in international affairs, consideration should be given to the roles that private entities—including philanthropic organizations and commercial operators active in the Arctic—could play in supporting Arctic research activities.

Wenkai Guo

4. Recommendations to Implement the identified Priorities for Arctic Research

Below find tables that outline recommendations regarding how to implement each of the RPT 4 priorities for research. These proposed actions are meant to inform implementation of ICARP IV and IPY-5, and inspire further discussion. They are not comprehensive or exhaustive.

Priority 1: Understand the characteristics of Arctic research cooperation and science diplomacy in a transforming world.	
Spatial scale:	• Locally: implementation should prioritize community-based monitoring, integration of Indigenous knowledge systems with clear free, prior and informed consent processes to ensure research is trusted and relevant for those directly affected. • Regionally cooperation can be advanced by establishing shared labs, vessels, and logistics hubs between neighboring states creating cost-effective platforms and strengthening cooperation. • At Pan-Arctic level efforts should focus on developing coordinated observation networks, harmonized data standards and ethical frameworks. • Globally Arctic research and science should be embedded into international diplomatic arenas on climate, biodiversity and security.
Time scale:	• 0-2 years: develop open-science ethics frameworks and pilot studies on cooperation vs competition, science diplomacy workshop • 2-5 years: expand field campaigns and establish shared infrastructures, 5-10: Institutionalize interoperability across countries and institutions
Funding requirements and potential sources:	Funding will be required to support comparative research projects, interdisciplinary workshops, and sustained engagement between researchers, diplomats, Indigenous leaders, and policymakers. Potential sources include national research councils, international funding mechanisms (e.g. Horizon Europe, NSF Arctic programs), philanthropic foundations supporting science diplomacy, and targeted ICARP or IPY-5 implementation funds.
Infrastructure needs and requirements:	Requirement to prioritize Indigenous Data Sovereignty best practices while working to engage in science diplomacy in the Arctic. SHARE principles (IARPC, 2023)
Data needs and requirements:	Data requirements include access to qualitative and quantitative information on Arctic research projects, institutional cooperation mechanisms, funding flows, and diplomatic engagement practices. Where relevant, these data should be governed in accordance with Indigenous data sovereignty principles and ethical research standards, and made interoperable to support comparative and longitudinal analysis.

Implementation: **Implementation actions:**	**How to implement the actions:**	**Who to address the actions:**
Consider to what extent an environment of geopolitical competition reshapes how states establish and project influence in the Arctic		
Assess collaboration dynamics: identify when research fosters trust versus when it heightens mistrust/ competition	Conduct case studies of past Arctic research projects and with decolonisation in mind; interview scientists, diplomats, and Indigenous leaders and knowledge holders to understand cooperation vs. competition triggers; assess extractive vs. reciprocal practices; and analyze outcomes in terms of policy impacts, trust, and conflict.	Research organizations, Indigenous Peoples organisations, and Universities
Balance openness in Arctic research cooperation with national security imperatives		
Conduct “research and security” tabletop exercises with relevant experts and officials.	Co-design and deliver these activities with government officials, Arctic Indigenous leaders, Arctic researchers, and security and defence experts.	Could be implemented by joint initiative of researchers and relevant government bodies

Priority 1 *continued*: Understand the characteristics of Arctic research cooperation and science diplomacy in a transforming world.		
Implementation: **Implementation actions:**	**How to implement the actions:**	**Who to address the actions:**
Gain a deeper understanding of Arctic diplomacy ecosystems and the role(s) of science diplomacy		
Conduct a systematic review and mapping of relationships between formal institutions (e.g., Arctic Council, UNCLOS processes, Indigenous organizations) and informal networks (e.g., scientific working groups, NGO coalitions, etc.)	Survey, literature review and analysis of how institutions and networks connect (i.e., how information flows, shared funding, co-sponsorship of research, joint scientific outputs, etc.)	Research organizations, Universities and Indigenous organizations.
Map regional norms and diplomatic practices: examine how norms persist despite political tension and what mechanisms support them	Review legal agreements, codes of conducts and governance structures; track how these frameworks are functioning during times of political tension; identify practices and mechanisms that maintain cooperation	Research organizations, Universities and Indigenous organizations.
Develop policy and guidance tools: translate findings into frameworks for diplomacy, scientific cooperation and conflict mitigation	Synthesize lessons into policies and guidelines for research collaboration and science diplomacy	National Ministries and foreign affairs in cooperation with researchers and Indigenous organisations.

Priority 2: Enhance the resilience of systems of Arctic research cooperation.	
Spatial scale:	• Local: Support community-based research capacity, local observing systems, and Indigenous-led research initiatives that enhance continuity and adaptability. • Regional: Strengthen regional research networks, shared infrastructure, and coordination mechanisms among neighboring Arctic states and Indigenous institutions. • Pan-Arctic: Enhance resilience through diversified, redundant, and interoperable systems for research coordination, data sharing, and observing across the circumpolar Arctic. • Global: Connect Arctic research cooperation to global research, climate, biodiversity, and security frameworks to ensure continuity, visibility, and support.
Time scale:	• 0–2 years: Assess vulnerabilities, map critical infrastructure, document lessons learned from recent disruptions (e.g. COVID-19, geopolitical shocks). • 2–5 years: Pilot and strengthen redundant cooperation mechanisms, develop resilience metrics, and establish new coordination and communication pathways. • 5–10 years: Institutionalize resilient systems, governance models, and funding mechanisms that can withstand future shocks.
Funding requirements and potential sources:	Targeted funding is required to support resilience-focused research, coordination mechanisms, infrastructure assessments, and contingency planning. Potential sources include national research councils, international and pan-Arctic organizations (e.g. IASC, UArctic), Arctic Council–related funding mechanisms, philanthropic foundations, and dedicated calls linked to IPY-5.
Infrastructure needs and requirements:	Sustained support for Arctic research infrastructure (e.g. observing systems, research stations, vessels, data platforms, communication networks, and logistics hubs) is essential. Infrastructure should be assessed and treated as critical infrastructure, with attention to redundancy, interoperability, cybersecurity, environmental vulnerability, and equitable access. Particular emphasis should be placed on supporting locally based and Indigenous-led infrastructure to enhance resilience and reduce reliance on centralized or vulnerable systems.
Data needs and requirements:	Enable long-term data stewardship through continuous support for data sharing, archiving, and stewardship. Promote interoperable, decentralized, and federated data systems that respect Indigenous Data Sovereignty, enhance resilience to political and technical disruptions, and ensure continuity of long-term Arctic observations.

Priority 2 *continued*: Enhance the resilience of systems of Arctic research cooperation.		
Implementation: **Implementation actions:**	**How to implement the actions:**	**Who to address the actions:**
Ensure that collaboration mechanisms are robust and redundant		
Lessons from COVID-19 Disruptions: Building from earlier work (Petrov et al. 2020), conduct a comprehensive study on how the Arctic research community at large coped with 2020-2022 COVID-19 disruptions to distill lessons on what worked and which mechanisms proved effective and efficient, and what failed.	A study could be either commissioned by one of the international Arctic organizations (IASC, UArctic), organizers of the IPY-5, or a dedicated call could be opened by one of the science funding organizations.	One or more of the organizations listed in the second column:. International Arctic organizations: IASC, UArctic, IPY-5 Planning Group, science funding organizations.
International Arctic research critical infrastructure: 1. Develop a concise and policy-relevant definition/Formalize a concept of international Arctic research critical infrastructure 2. Develop a systematic map of its elements 3. Rigorously assess the vulnerability of those assets to environmental, infrastructural, and (geo)political stressors 4. Propose/develop and set adequate safeguarding mechanisms in place	Organize a workshop at one of the major Arctic conferences (e.g. ASSW) bringing together experts from various fields and groups/organizations(e.g. FARO, INTERACT) Arctic infrastructure experts (RATIC, ACEP, and others), those with experience in assessments of national critical infrastructure.	Organization of the workshop should receive funding support possibly in preparation toward the next IPY but laying out work/workplan extending beyond it. Arctic conference conveners - e.g. IASC - ASSW Arctic research coordination groups - e.g. FARO, INTERACT Arctic infrastructure experts - e.g. RATIC, ACEP, POAwg.
Support an assessment of how the Arctic Observing Summit (AOS) is supporting prioritization of and building resilience within observing infrastructure, data sharing and interoperability, and information services.	IASC and SAON, hosts of AOS, call for an assessment of AOS. A dedicated call by one of the science funding organizations.	AOS Co-Chairs IASC and SAON Science Funding Organizations
Strengthen existing and, where necessary, create open-access platforms to share best practices, data, high-level project metadata, and policy-relevant findings.	Joint workshops and exchange schemes can serve as starting points to build trust and common frameworks.	National science foundations, international and pan-Arctic organizations, universities and local research institutions.
Communication redundancy: 1. map and assess strengths and weaknesses of existing transboundary mechanisms/ institutions for Arctic research cooperation, information exchange, and data sharing (Arctic Council, IASC, IASSA, Nordic Council of Ministers, UArctic, SAON, etc.) and provide recommendations. 2. Based on this analysis, support and invest in maintaining and, where necessary, strengthening existing mechanisms / institutions to reduce dependency on specific institutions, and adopt a broader systems approach to facilitate resilient communication.	1. This could be conducted as a distinct research project commissioned by one of the established institutions or a specific academic institution with relevant expertise. 2. This would require recognition of the analyses by states engaged in Arctic research and transboundary institutions and a commitment by them to support and invest in multiple communication mechanisms.	1. Researchers with relevant expertise 2. States involved in Arctic research and existing transboundary institutions (Arctic Council, IASC, IASSA, Nordic Council of Ministers, UArctic, SAON, etc.)

Priority 2 *continued*: Enhance the resilience of systems of Arctic research cooperation.		
Implementation: **Implementation actions:**	**How to implement the actions:**	**Who to address the actions:**
Ensure that collaboration mechanisms are robust and redundant		
Diversify connections: 1. Identify opportunities to build or strengthen ties with relevant global institutions (e.g. research councils, UN bodies, associations) with complementary mandates and/or shared policy interests (e.g. fisheries, climate, biodiversity, shipping) 2. Support, facilitate and enhance international activities, such as UN Decades, that provide a platform to diversify connections, geographies and institutions as well as support science diplomacy in action by providing the possibilities for everyone to be involved (e.g. International Science Decade of UNESCO). 3. Where appropriate, consider more flexible membership arrangements to enable the inclusion of new partners and the ability to adapt to changing research cooperation environments.	1. This could be undertaken by any individual or multilateral institutions conducting Arctic research or involved in the science-policy interface. 2. This could be undertaken by any individual or multilateral institutions conducting Arctic research or involved in the science-policy interface. 3. This could be undertaken by any individual or multilateral institutions conducting Arctic research or involved in the science-policy interface.	1. Individual and multilateral institutions. 2. Individual and multilateral institutions. 3. Individual and multilateral institutions.
Establish safeguards: 1. Where possible, build neutral consortia, and/or distributed hosting of shared information and data into research projects and institutions collaborations. 2. Where possible, encourage standardization of research procedures and data to support interoperability and continuity.	1. This could be adopted by research partners or established as a requirement of research funding. 2. This could be adopted by research partners or established as a requirement of research funding. Making it a priority of IPY - 5 would increase its impact/ effectiveness.	1. Research project leads, research institutions, governments, funders. 2. Research project leads, research institutions, governments, funders.
Risk assessment and management: 1. Develop metrics for Arctic research institutions and Arctic research cooperation generally to enable monitoring of resilience and adaptability to change. 2. Using these resilience metrics, conduct simulations and stress testing of Arctic research institutions and cooperation mechanisms. 3. Use analyses above to inform changes to specific institutions, partnerships, and/or collaborations.	1&2. This could be conducted as a distinct research project commissioned by one of the established institutions or a specific academic institution with relevant expertise. 3. This could be undertaken by individual institutions, partnerships, and/or collaborations.	1&2. Researchers with relevant expertise 3. individual institutions, partnerships and/or collaborations.
Recognize, collaborate with, and support a leading role for Arctic Indigenous Peoples and Arctic communities in research cooperation		
Develop and implement an evaluation framework, informed or developed through Indigenous methodologies, that assesses progress in how international Arctic research initiatives and institutions implement recognition of Indigenous Knowledge, support self-determination, and address the diverse priorities of Arctic Indigenous Peoples.	Support development through a funded community-of-practice for Indigenous scholars and evaluation specialists	Indigenous scholars and evaluation specialists
Develop recommendations for funding systems to support Indigenous-led research to overcome systemic barriers to current funding structures.	Support a pan-Arctic network of networks research activity to support knowledge exchanges and mutual resources to develop recommendations. It is important to have space at ASSW as well as have conveners within communities.	Indigenous leadership in community-driven research, Indigenous scholars and Knowledge Holders, and experts in funding structures.
Prepare Arctic researchers to operate within an environment marked by uncertainty and instability		
Develop risk preparedness training modules for Arctic researchers, including field safety, legal and diplomatic issues, and cybersecurity orientations	This could be developed by individual academic institutions, national or international academic associations, or governments and made available to researchers.	IASC, UArctic

Priority 2 *continued*: Enhance the resilience of systems of Arctic research cooperation.		
Implementation: **Implementation actions:**	**How to implement the actions:**	**Who to address the actions:**
Maintain people-to-people connections		
Establish regular joint workshops and exchange programs among local, national, and global research institutions.	Actions should be implemented through co-designed programs that bring together local, national, and global research institutions.	National science foundations, international and pan-Arctic organizations, universities and local research institutions, Indigenous Peoples organisations and IK holders
Continue to assess and improve the ability to work across borders		
Establish a dedicated working group on research regulation to promote harmonized cross-border standards/procedures for Arctic research.	This could be undertaken bilaterally or multilaterally by Arctic states and with engagement of Indigenous Peoples organisations.	Arctic states and Indigenous Peoples organisations

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Priority 2 *continued*: Enhance the resilience of systems of Arctic research cooperation.		
Implementation: **Implementation actions:**	**How to implement the actions:**	**Who to address the actions:**
Examine the role of non-state actors and supranational entities in systems of Arctic research cooperation		
Explore the roles of non-state actors in Arctic research cooperation/systems	This would entail engagement of Arctic stakeholders including non-Arctic states, Indigenous organisations through workshops and surveys.	Arctic research organisations and Indigenous organisations.

Priority 3: Examine the effectiveness of Arctic science diplomacy.		
Spatial scale:	Research institutions at the local, national, and global levels should engage in regular collaboration with policy advisory capacity to foster mutual understanding, build consensus, and promote place-based solutions that also address global challenges.	
Time scale:	Relevant now, with initial frameworks and pilot collaborations to be established in the next 5 years, and long-term monitoring, joint projects, and policy advisory mechanisms to be sustained and expanded over the next 10 years.	
Funding requirements and potential sources:	Funding is required to support collaborative projects that bring together research institutions at the local, national, and global levels.	
Infrastructure needs and requirements:	Leverage open science frameworks and open access data sharing where ethically appropriate.	
Data needs and requirements:	Comparable and interoperable datasets covering Arctic research projects, cooperation practices, and policy outcomes, developed in accordance with Indigenous data sovereignty principles and supported by open-access protocols to promote transparency, inclusivity, and long-term usability.	
Implementation: **Implementation actions:**	**How to implement the actions:**	**Who to address the actions:**
Assess the effectiveness of Arctic science diplomacy		
Develop and test a measurable set of Arctic science diplomacy indicators	This could be done as a dedicated research project by a research or consortium with the relevant expertise.	Researcher or consortium
Understand and recognize the leadership of Arctic Indigenous Peoples in Arctic science diplomacy		
Strengthen Indigenous-centered research publications that explore Indigenous leadership in International Arctic Research	Develop a model for such a report within IASC, guided by the Standing Committee on Indigenous Involvement	IASC Standing Committee on Indigenous Involvement and strengthened early career fellowship opportunities for Indigenous scholars and creative communicators within IASC
Develop co-assessment of effectiveness of Indigenous leadership, that is inclusive of Indigenous evaluation.	Develop culturally-responsive indicators of effectiveness with Indigenous Peoples and scholars.	Permanent Participants, IASC Standing Committee on Indigenous Involvement, Indigenous leadership within Arctic research, and Indigenous scholars.
Explore polycentric and decentralized approaches to research priority setting and steering		
Identify and assess the characteristic of decentralized research institutions and consider lessons learned for resilience	This could be conducted as a dedicated research project by a researcher or consortia with relevant expertise.	Researcher or consortia
Conduct scenario-based exercises designed to deepen understanding of decentralized research decision-making processes.	This could be conducted as a dedicated research project by a researcher or consortia with relevant expertise.	Researcher or consortia
Identify effective tools and instruments of Arctic science diplomacy		
Build policy advisory capacity within research institutions to connect scientific outcomes with decision-making.	Policy advisory capacity can be strengthened by training local researchers, and linking scientific findings directly to decision-making processes.	National science foundations, international and pan-Arctic organizations, universities and local research institutions.

Priority 4: Assess the impact of emerging technologies and innovations on Arctic research cooperation and science diplomacy.		
Spatial scale:	Pan-Arctic with global implications	
Time scale:	Relevant immediately, core implementation and impact evaluation over the next 5-10 years.	
Funding requirements and potential sources:	Funding is required for expert assessments, workshops, data access, etc. Potential sources: Arctic Council Project Support Instrument (PSI), NSF Arctic research grants, EU Horizon Europe calls for science diplomacy, etc.	
Infrastructure needs and requirements:	AI model training	
Data needs and requirements:	Standardized datasets on Arctic environmental variables. Interoperable and decentralized data systems that incorporate Indigenous data sovereignty best practices and principles (FAIR & CARE). Leverage and socialize the IASC Data Statement (2026) to engage with data sharing, AI, and data ethics more broadly.	
Implementation: **Implementation actions:**	**How to implement the actions:**	**Who to address the actions:**
Consider the role and impact of AI in Arctic research cooperation and diplomacy		
Develop AI ethical guidelines for Arctic research	This could be developed and adopted at the national level or through international research bodies (e.g. IASC, IASSA, UArctic) or funders	National or international research bodies or funders in partnership with Arctic Indigenous Peoples.
Examine the opportunities and risks of emerging technological developments, including technology asymmetries		
Conduct interdisciplinary expert panels to map tech impacts, identify where existing national / international legal frameworks are unlikely to provide sufficient safeguards	Should start with a scoping study reviewing existing literature and case studies	Lead responsibility with RPT-4 co-chairs
Reflect on the security concerns related to the increasing role of technology in Arctic research cooperation and diplomacy		
Identify critical technology dependencies for Arctic research	This could be conducted as a dedicated research project by a researcher or consortium with relevant expertise	Researcher or consortium

Gareth Rees

Priority 5: Develop and implement principles of accessibility, inclusivity, and welcoming in Arctic research cooperation and diplomacy.	
Spatial scale:	The IASC 2022 Handbook highlights that, "IASC is committed to ensuring a safe, productive and welcoming environment for all. Instances of conflict of interest, discrimination or harassment will be addressed by appropriate procedures developed by the Executive Committee, in consultation with the Council, as needed". This means that steps should be taken within IASC's organizational structure, specifically through the creation of a new Task Force on this topic. This would ensure that appropriate procedures, education and research is undertaken on the topic to uphold IASCs ethical principles. It should be noted that risks attached to research cooperation and diplomacy come in two groups. Primary risks include issues with data security, espionage, dangerous environmental factors and other factors directly related to the geopolitical and environmental situation where as; secondary risks refer to identity aspects such as nationality, gender or career stage that can be exploited in relation to the primary risks. The Task Force could emphasise three key priorities listed here. 1. Empower and elevate underrepresented voices in the polar community 2. Engage underrepresented and at risk groups in polar science through targeted initiatives 3. Address bias, prevent harassment to safeguard science diplomacy
Time scale:	Relevant now and for the next 10 years.
Funding requirements and potential sources:	Work towards this action should be primarily undertaken through the creation of a new Task Force focused on ensuring an accessible, inclusive, safe and welcoming Arctic research environment. This would mean that funding already directed to IASC could be utilised for this process. A Task Force requires limited resources but requires engagement by relevant stakeholders.
Infrastructure needs and requirements:	In order to create a safe and inclusive space for sharing and collaboration, a dedicated Task Force under the IASC organizational structure should be established to gather key partners and assess effective means of implementation. This Task Force should co-produce with multi-scalar institutions such as universities, ministries, and agencies, ensuring representation across different levels of governance and expertise on a circumpolar level including both national and community priorities. Particular attention should be given to the specific needs and priorities of Indigenous Peoples and Arctic communities, recognizing their unique contexts and knowledge systems. The initiative should also emphasize the development of strong and diverse Communities of Practice, supported by widely shared and accessible tools, resources, and guidelines. Furthermore, creating safe spaces that foster equity, encourage diverse collaboration, and provide meaningful support for early-career professionals will be essential for long-term sustainability and impact. Considering there has been interest in this topic across the RPTs a core team should be established to work on this Task Force further.
Data needs and requirements:	Considering the geopolitical situation, there needs to be serious consideration given as to data collected regarding researcher harassment and the potential for the utilisation of this data for perpetuating harassment. The Task Forces original point of departure should be ensuring the resilience of the Task Force itself in terms of data collection and utility. Increasing data literacy among both Indigenous and non-Indigenous actors is essential to ensure informed consent within open science frameworks, data governance, and stewardship. This requires strong alignment in data sharing and ownership policies, grounded in shared respect for data sovereignty and intellectual property rights.

Implementation: **Implementation actions:**	**How to implement the actions:**	**Who to address the actions:**
1. Create a Task Force on Implementing ethical principles of research cooperation and diplomacy within the IASC structure. 2. Find interested academic and IASC personnel to establish a mandate and code-of-conduct 3. Encourage participation of rightsholders and stakeholders with focus on underrepresented groups 4. Create a program in institutions that encourages the implementation of ethical research cooperation and diplomacy guidelines as well as other relevant polar education factors 5. Develop circumpolar guidelines on researcher safety within a research cooperation and diplomacy framework during uncertain geopolitical times 6. Grow and prioritize physical and emotional well being within Arctic research	This should be undertaken within a specific IASC Task Force (Implementation Action #1)	Individuals who have shown high interest during the ICARP process should continue this work under the IASC structure. Careful consideration should be given to include ,multiple nationalities, specially circum-Arctic including underrepresented groups (Implementation Action #2)

Priority 5 *continued*: Develop and implement principles of accessibility, inclusivity, and welcoming in Arctic research cooperation and diplomacy.		
Implementation: **Implementation actions:**	**How to implement the actions:**	**Who to address the actions:**
Empower and elevate underrepresented voices in the polar community		
Increase visibility of underrepresented groups (Implementation Action #3)	Have underrepresented groups as keynotes, leadership positions, and support their participation in meetings, conferences, and within working groups Create paid community and early-career advisory boards; set speaker/panel quotas with transparency; fund co-chairs from underrepresented groups; require diverse slates for awards/committees; cover honoraria and travel/childcare; publish annual diversity stats.	Convening bodies: An original point of departure for the Task Force should be to establish key stakeholders as part of the IPY process. An early analysis includes: IASC, ASSW, AOS, Arctic Council, Arctic Circle Assembly, UArctic, journals and publishers, Indigenous organizations & Universities
Provide robust support and structured mentorship to underrepresented and at risk groups (Implementation Action #4)	Funding support: • support education opportunities • travel support: fieldwork, cultural exchanges with Arctic Indigenous Peoples, conferences/meetings Mentorship • develop onboarding processes to conferences and working groups (e.g. ASSW and IASC WG) • have points of contact to provide guidance and contact • have a point of contact for difficult conversations (e.g. issues with co-workers or supervisors) • ensure those in positions of trust are educated (through i.e. dedicated trainings) to deal with primary and secondary risks of research cooperation and diplomacy	It is important institutions and the staff working within them who engage with under-represented groups have understanding and skills to handle specific issues regarding underrepresented and at risk groups beyond purely paying lip service to these issues.
Engage underrepresented peoples and groups in Arctic research through targeted initiatives		
Create polar literacy toolkits for school with higher populations of underrepresented groups (Implementation Action #4)	The Task Force should create a polar literacy tool kit which can be both used to educate and develop the Task Forces understanding on issues relating to accessibility, inclusivity, safety and welcoming.	These could be co-produced by Arctic-focused academic institutions and associations with organizations that represent specific underrepresented groups.
Engaging underrepresented groups in polar science through targeted education and outreach on polar themes, career pathways, and community-building at different career levels (Implementation Action #4)	Launch Arctic pathways program (school – undergrad –grad – community researcher); run mentorship circles and near-peer coaching; offer micro-credentials on Arctic ethics and data sovereignty; fund community-led workshops in-region; provide travel and bursaries and hybrid access.	National programs; universities; UArctic; APECS; community schools; Polar Knowledge Canada; NGOs; museums and science centres.
Address bias, prevent harassment to safeguard science diplomacy		
Development of Arctic/circumpolar safety guidelines (Implementation Action #3)	Create a Task Force under the IASC structure to target groups to draft a comprehensive report on Arctic/circumpolar research cooperation and diplomacy safety guidelines and ensure these are implemented in practice through Implementation Action #4.	IASC should act as primary convenors for these guidelines. Key stakeholders should be assessed in accordance with IASC's code of conduct.
Planning and teaching safe, inclusive, and accessible fieldwork and other research related endeavors (Implementation Action #4)	Create or employ existing training programs, provide materials for orienting researchers new to Arctic research, make means of communication accessible to all persons doing field work, conferences and daily practices.	All institutions engaged in Arctic research.
Appropriately addressing bias, preventing harassment, and creating consistent and supportive reporting measures at individual and institutional levels (Implementation Action #4)	Ensure that researchers have emergency support and knowledgeable points of contact. Due to the uncertainty of the research cooperation and diplomacy situation which is consistently evolving, it should be considered that this process is not linear and will require long term investment and training.	This should be undertaken in iteration between the IASC Task force, the IASC organizational structure, the core actors targeted and in particular institutions and the individuals who work within them.
Prioritizing and addressing the mental and physical well-being of polar researchers (Implementation Action #6)	Create or employ existing training programs, provide materials for orienting researchers new to Arctic research, make means of communication accessible to all persons doing field work, ensure that researchers have emergency support and knowledgeable points of contact.	Universities, research consortiums, research logistics providers, field schools, etc.

Priority 5 *continued*: Develop and implement principles of accessibility, inclusivity, and welcoming in Arctic research cooperation and diplomacy.		
Implementation: **Implementation actions:**	**How to implement the actions:**	**Who to address the actions:**
Define success metrics to measure progress in inclusion, accessibility, and belonging		
Co-develop evaluation framework with underrepresented groups, especially with Indigenous Peoples (Implementation Action #3)	Convene a workshop to develop an evaluation framework. Create a paid community and early-career advisory boards. Implement framework within meetings, programs, projects, etc. for transparency	Pan-Arctic convening bodies: IASC, SAON, IASSA
Defining new success metrics for grants, projects, and organizations to concretely measure progress in inclusion, accessibility, and belonging (Implementation Action #3)	To promote accountability and inclusivity, key performance indicators (KPIs) should be adopted to track progress across multiple dimensions. These may include the percentage of underrepresented co–principal investigators or lead authors, the proportion of the budget allocated to community partners, retention and mentorship outcomes, and accessibility compliance rates. Additional metrics could measure the number of plain-language and multilingual products developed, such as progress reports and annual community reports. Dashboards should be created to visualize these indicators, and reporting on them should be required as part of end-of-grant deliverables to ensure transparency and continuous improvement.	Funders; IASC; journals; institutions

Gareth Rees

5. Recommendations on how to track the Implementation of the ICARP IV Outcomes over the next decade?

Implementation Action	How to track?	Who to track?	How to include in the IPY-5 planning?
Based on recommendations provided in reports from RPTs, create an ICARP IV Implementation & Monitoring Framework to bring together proposed actions and measures to track them		ICARP IV International Steering Committee and/or IASC Council to produce such documents	The document would facilitate incorporation of ICARP IV priorities into the IPY planning.
Turn the existing ICARP IV website into a regularly updated ICARP IV outcomes "dashboard"	Like IPBES' TRACK mechanism, provide space to record, document and share examples of the use of ICARP IV outputs in scientific articles, research, statements etc. Invite submissions of and list Arctic projects and actions (e.g. funding calls) explicitly referencing ICARP IV and its priorities.	Additional secretarial support is required to continue with tracking/ monitoring implementation of ICARP IR (IASC-hosted ICARP IV Secretariat function)	
Encourage integration of ICARP IV tracking into funding and reporting cycles	Funding calls referring to ICARP IV outputs and requesting to identify in the applications relevant ICARP IV outcomes (proposed action - its tracking could be through a proposed dashboard website) Encourage inclusion in research plans (list them on the dedicated website)	Facilitated by Arctic Science Funders Forum (ASFF) Supported by IASC Council	
Actively support implementation of ICARP priorities linked to IPY5 This should be done through the active and working institutional mechanisms of IASC and other organizations involved in planning process of IPY5 This could be also done in a form of unique road-map, for example: Introducing ICARP priorities to IASC WG work plans -> Developing the AG on implementation -> Collect updates and reviews each year (biennial) -> Approve at IASC Council -> Publish the SAS Special Volume with Implementation Review and Recommendations -> Address the recommendations to IPY5 working bodies The road-map can also include qualitative and quantitative indicators (number of conferences, meeting, events, seminars, projects, publications on relevant topic)	By including the specific priorities to the work plans of relevant IASC WGs and working structures\ bodies of partner organizations involved in IPY5 planning. After each (or on biennial bases) ASSW publicizes the SAS (State of Arctic Science) Report with the special section on overview\review (or even special SAS volume) of implementation of each priority which will help to track it. But also possibly organize the special IASC structure for such a task - Action group on Priorities implementation Track which will help to review the process along the period towards the IPY5 and will produce the recommendations on how to foster the process. Implementation review: • Progress toward outcomes • Gaps and under-resourced priorities	Active working bodies and structures of IASC and its partner organizations Results to be presented to IASC ExCOm and at IASC Council meeting for further consideration and approval	Deliver the reports (special SAS volumes) to the IPY5 Planning Group for further consideration

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Appendix: About RPT 4

1.1. Approaches / Methods used to complete the RPT 4 tasks

RPT 4 adopted a mixed-methods, collaborative, and iterative process combining:

- **Review of existing literature, policy frameworks, and institutional practices:** Drawing on the knowledge and expertise of RPT 4 members, input received through the ICARP online engagement portal, and feedback received during consultations.
- **Brainstorm ideas and issues:** Using an open and inclusive process, RPT 4 sought to identify emerging issues, key concepts, knowledge gaps, and research needs. The input of RPT 4 team members and the broader community of researchers and practitioners were collected.
- **Establish thematic sub-groups:** Sub-groups were identified to organize discussions and further work. The groups included:
  - *Objectives/impact* led by Michaela Coote
  - *Challenges* led by Yulia Zaika
  - *Funding* led Tetsuo Sueyoshi
  - *Tools* led by Zia Madani
  - *Durability* led by Gareth Rees

  An additional *Academic* sub-group led by Maribeth Murray was created later in the process to allow those with academic expertise related to Arctic research cooperation and diplomacy to focus on academic questions and issues.
- **Identify initial research needs:** Based on the research and discussions of the sub-groups, AI was used to identify potential *RPT 4 research needs*. RPT 4 members then provided feedback and input, which resulted in the development of 5 draft research needs that were presented for feedback through formal and informal consultation activities.
- **Prepare *priorities for research* and *implementation plans*:** Following general and specific feedback on the RPT 4 research needs, a series of RPT 4 priorities for research were developed
- **Iterative consultations, drafting, and peer review**: Through regular team meetings, webinars, workshops, and breakout groups (including, events at Arctic Circle 2024 and 2025, ICARP IV and Arctic Science Summit Week ASSW 2024–2025) as well feedback received via the ICARP website and the final report review process, the RPT 4 research needs and priorities were continuously revised.

As the RPT 4 team moved from identifying the research needs related to Arctic research cooperation and diplomacy, we discussed and received feedback on the criteria that we should use to select 5 specific priorities. Below are the criteria that were identified to guide our work.

Criteria for priorities

1. A combination of “research priorities” and “priorities for research”
2. Actionable/feasible within 10 years
3. Measurable within 10 years
4. Fundable
5. Implementable via the ICARP process
   5.1. What is ICARP best positioned to tackle?
   5.2. Is ICARP the right mechanism?
6. Linked to articulated needs
7. Size of the impact
8. Recognizable and useful to our specific audiences
9. Specificity/precision
10. Most urgent priorities

Gareth Rees

1.2. Overlaps and Synergies with other RPTs

RPT 4 has connections to all other ICARP IV Research Priority Teams.

RPT 1: The Role of the Arctic in the Global Earth System

RPT 1 highlights the Arctic's critical role within the global Earth system and emphasizes the need for sustained, coordinated observation and modeling to understand Arctic amplification, feedbacks, and tipping points. From the perspective of RPT 4, these priorities depend fundamentally on robust international research cooperation.

Key linkages include:

- **Coordination and governance of pan-Arctic observing systems**
  The long-term, high-resolution observing networks and modeling efforts called for in RPT 1 require stable frameworks for international coordination, shared access to infrastructure, data exchange, and continuity across political cycles—central concerns of RPT 4.
- **Linkages between Arctic research and global governance processes**
  RPT 1 underscores the global implications of Arctic change. RPT 4 strengthens the science diplomacy pathways through which Arctic research informs global policy arenas, ensuring that Arctic knowledge continues to shape international decision-making despite increasing geopolitical fragmentation.

RPT 2: *Observing, Reconstructing, and Predicting Climate and Ecosystem Dynamics*

RPT 2 focuses on integrated observing systems, reconstructions, and predictive modeling across Arctic environments. These activities are inherently collaborative and reliant on cross-border cooperation.

Key linkages include:

- **Shared data systems and coordination mechanisms**
  RPT 2's emphasis on long-term, interoperable data and modeling requires governance arrangements that support data sharing while addressing research security, ethical considerations, and Indigenous data sovereignty—issues explicitly addressed by RPT 4.
- **Resilience of collaborative research under political disruption**
  Large-scale, multinational modeling and prediction efforts depend on cooperation mechanisms capable of functioning during periods of political tension. RPT 4 contributes by examining how Arctic research cooperation can be designed to remain resilient under such conditions.

RPT 3: *Understanding the Dynamics and Resilience of Arctic Social-Ecological Systems*

RPT 3 centers on Arctic communities, social-ecological resilience, and sustainable futures. From the standpoint of RPT 4, these priorities highlight the importance of inclusive and responsive research cooperation frameworks.

Key linkages include:

- **Strengthening research–policy–society interfaces**
  RPT 3 emphasizes research that supports decision-making and community well-being. RPT 4 complements this by focusing on the institutional and diplomatic mechanisms that connect researchers, policymakers, Indigenous organizations, and other actors across scales.
- **Supporting transdisciplinary and multi-actor collaboration**
  RPT 3's transdisciplinary approach aligns with RPT 4's emphasis on cooperation models that bridge disciplinary, sectoral, and jurisdictional boundaries in Arctic research.

RPT 5: *Co-Production and Indigenous-led Arctic Research*

RPT 5 articulates Indigenous-led research and co-production as foundational principles for Arctic research. RPT 4 strongly aligns with this agenda while focusing on enabling structures at the international level.

Key linkages include:

- **Institutionalizing Indigenous leadership within research cooperation systems**
  RPT 5 defines normative principles for Indigenous leadership and co-production. RPT 4 addresses how international cooperation frameworks—including funding arrangements, partnerships, and multilateral institutions—must evolve to operationalize these principles in practice.
- **Broadening diplomacy beyond state-centric models**
  RPT 4 complements RPT 5 by recognizing Indigenous Peoples and organizations as central actors in Arctic research cooperation and diplomacy, alongside states and scientific institutions.

RPT 6: *Education and Knowledge-Sharing In and About the Arctic*

RPT 6 emphasizes education, capacity building, and knowledge-sharing as critical to the sustainability of Arctic research. From an RPT 4 perspective, these elements are core components of effective research cooperation.

Key linkages include:

- **Capacity building as a long-term investment in cooperation**
  Training, mobility, and exchange programs highlighted in RPT 6 contribute directly to trust-building, network formation, and shared understanding—key foundations for resilient research cooperation emphasized by RPT 4.
- **Supporting plural and inclusive knowledge systems**
  Both RPTs stress the importance of integrating Indigenous, local, and scientific knowledge. RPT 4 situates this integration within international cooperation frameworks, emphasizing institutional support and ethical engagement.

RPT 7: Technology, Infrastructure, Logistics, and Services

RPT 7 addresses the technological and infrastructural foundations of Arctic research. RPT 4 focuses on the cooperation arrangements required to sustain and share these assets.

Key linkages include:

- **Governance of shared research infrastructure and logistics**
  RPT 7 identifies infrastructure as a long-term, shared investment. RPT 4 addresses the diplomatic, legal, and coordination mechanisms necessary to enable equitable access, shared use, and long-term sustainability.
- **Emerging technologies, AI, and research security**
  Both RPTs recognize the growing importance of digital technologies and remote access. RPT 4 adds a governance perspective, examining how these technologies reshape cooperation, trust, and security in Arctic research.

Veronica Coppolaro

1.3. Other RPT 4 Issues

The following sections highlight **additional issues and considerations** that RPT 4 examined in the course of its work and that the team considered important to acknowledge explicitly. In some cases, these sections **expand on themes introduced earlier in the report**, providing additional context or depth; in others, they surface issues that were raised during deliberations but not fully captured elsewhere. Together, they reflect cross-cutting principles, institutional dynamics, and emerging developments that shape Arctic research cooperation and diplomacy and that warrant recognition alongside the research needs, priorities, and recommendations presented above.

1.3.1 RPT 4 Overarching Principles

Research security means ensuring that Arctic research cooperation is safeguarded against vulnerabilities that could compromise its integrity, accessibility, and continuity. This includes protecting sensitive data and infrastructure from misuse, ensuring that international collaborations are not exploited for purposes contrary to ethical or legal standards, and balancing openness in knowledge-sharing with necessary safeguards against politicization or exploitation. In this context, research security is complementary to research integrity. While integrity focuses on ethical conduct and standards within research, security emphasizes the resilience of research systems against external threats, disruptions and misuse.

Trust, reciprocity, and mutual benefit are foundational to sustainable Arctic research cooperation and diplomacy. Building trust requires transparency, accountability, and respect amongst all involved, including Indigenous rights holders, researchers, and states. Reciprocity emphasizes fair exchange, in that it ensures partnerships are not extractive but acknowledge and value all contributions, whether financial, logistical, intellectual, or cultural. Mutual benefit highlights that research cooperation should produce outcomes that are meaningful for all parties, rather than disproportionately serving the interests of a single state, institution or community. Together, these principles ensure that cooperation is not merely transactional but based on lasting relationships that strengthen the resilience and legitimacy of Arctic research.

1.3.2 The European Union and Arctic Research Cooperation

The role of the European Union is multifaceted:

1. three of the eight Arctic states are members of the EU, and if we also include Norway and Iceland, which are in a close legal relationship with the Union through the European Economic Area, this organisation cannot be overlooked; and
2. The binding character and primacy of EU law over national law is also highly significant, and has a fundamental impact on the principles EU states adopt and implement. For instance in scientific cooperation or economic policies. For example, the EUs identification of so-called “crown jewel” technologies as a strategic-autonomy priority in the economic sphere is likely to be reflected in forthcoming principles governing research and innovation.

Research, innovation and space policy (Articles 179–190) (EU, 2016) fall within a form of shared competence in which the EU may define and implement programmes, while member States retain their competences and EU action does not entail harmonisation of national laws. The principal instrument of research and technological development policy is the multi-annual framework programme, which defines the objectives, priorities, and financial support package - illustrating how the EU can exert substantial influence through indirect governance tools, notably funding and programme design. The potential of the EU also lies in its regulatory power, i.e. the effects on actors beyond its immediate addressees. This is reflected in the research priorities established in the new EU framework programme for research and innovation (Horizon Europe), as well as to the recent recommendations and normative acts concerning research security, such as:

- Regulation (EU) 2021/821 of the European Parliament and of the Council of 20 May 2021 setting up a Union regime for the control of exports, brokering, technical assistance, transit and transfer of dual-use items (OJ L 206, 11.6.2021, p. 1).
- European Commission. (2024). White Paper on Options for Enhancing Support for Research and Innovation Concerning Dual-Use Potential.
- European Commission: Directorate-General for Research and Innovation. (2022). Tackling R&I foreign interference: staff working document. Publications Office of the European Union.
- Council of the European Union. (2024, May 23). Council Recommendation on Enhancing Research Security. Official Journal of the European Union, C 3510, 30.5.2024.

- Commission Recommendation (EU) 2021/1700 of 15 September 2021 on internal compliance programmes for controls of research involving dual-use items under Regulation (EU) 2021/821 of the European Parliament and of the Council setting up a Union regime for the control of exports, brokering, technical assistance, transit and transfer of dual-use items (OJ L 338, 23.9.2021, p. 1).
- Commission Recommendation (EU) 2023/2113 of 3 October 2023 on critical technology areas for the EU's economic security for further risk assessment with Member States (OJ L, 2023/2113, 11.10.2023.

These are only a few examples of legal acts and strategic documents, and do not include the extensive body of legislation relating to employment – including research and development work – and the use of new technologies in science, such as AI, biotechnology, quantum technologies, or semiconductors. This complex regulatory environment has a direct impact on many scientific activities undertaken in the Arctic and Antarctic. It should also be recalled that one of the EU's key instruments of influence, and a manifestation of its presence in these regions, is the funding of numerous international research projects through its framework programmes for research and innovation. The EU, which has made a substantial contribution to financing polar research (to date, total expenditure under Horizon 2020 and Horizon Europe on Arctic research projects has amounted to EUR 474 million) (European Commission 2025), not only provides financial support but also acts as an agenda-setter, shaping the standards and principles of international scientific cooperation through its regulatory and policy frameworks.

1.3.3 AI, Emerging Technologies and Research Cooperation

The versatility of AI applications in science is increasingly recognised, with their role situated along a continuum ranging from *searching* (primarily information retrieval and analysing the state of knowledge in a given field) to *discovery*(assisting in the identification of relationships, patterns and regularities within large datasets, which may in turn lead to scientific breakthroughs). Artificial intelligence helps to overcome interdisciplinary barriers, enabling researchers to address fundamental questions more rapidly and effectively. AI tools also create a new channel and mode of interdisciplinary communication. This technology may even provide an opportunity to build more effective bridges between the Western scientific system and Indigenous traditional knowledge. Through AI, it may become easier and quicker to combine the methodologies and achievements of both systems of knowledge. A challenge, however, lies in the discrepancy in the level of digitalisation of resources across these knowledge regimes, a gap which may deepen with the spread of AI and thus feed into the broader phenomenon of the so-called digital divide.

The most commonly applied AI tools in research today are large language models (LLMs), such as those developed by Google, Microsoft or Meta. These systems are proprietary and operate largely as "black boxes": their architecture, training data and decision-making processes are not transparent. This raises serious concerns for research integrity. Key risks include:

- uncertainty about the origin of training data, with potential infringements of copyright;
- the inability to trace or verify sources;
- the phenomenon of hallucination, where models generate non-existent facts or references.

These risks are particularly acute for early-career researchers, who may become over-reliant on AI tools in ways that undermine critical thinking, creativity and independence.

LLMs are also increasingly used to draft grant applications and review academic work, raising additional questions of research ethics, intellectual property, and data security. Outputs generated by AI fall into the public domain because current copyright law recognises only human authorship. This legal gap complicates questions of ownership and liability, while it also remains difficult to distinguish reliably between human-written and AI-generated texts.

Another challenge lies in researchers' limited understanding of how AI systems function and of the wider social and legal consequences of their use. Addressing these gaps requires new interdisciplinary competences and clear ethical guidelines.

AI systems have broad dual-use potential and play a crucial role in processing large datasets, decision-making, and forecasting on the basis of data analysis. For this reason, risk assessments increasingly focus on such aspects of AI as high-performance computing, cloud and edge processing, data analytics, computer vision, natural language processing, and object recognition. The growing use of imaging, visualisation, audio recording, and conversion and analysis techniques supported by AI models is creating new and highly effective research methods. At the same time, however, there is a risk of unauthorised access to sensitive data. This may also concern environmental data, which acquires particular significance in the context of current geopolitical tensions. Geolocation data, data on the state of the natural environment, precipitation levels, deforestation and the like are dual-use data and may be subject to processes of so-called weaponisation. Data obtained through remote sensing methods – for example, via satellite technology or drone surveys – may also include sensitive information such as images of private individuals. This represents another dimension of how the concept of sensitive data is evolving under the impact of technological progress, including the spread of AI in

research. The scientific community has for some time, both in national and international fora, been calling for clarification of the concept of sensitive data in research and for greater precision on how such data may be exploited in ways that infringe the rights of others, and how their distortion or misinterpretation may result in discriminatory effects.

Finally, AI risks exacerbating inequalities in academia, contributing to "digital colonialism". Marginalised groups, who already face disadvantages in publishing and career development, may fall further behind in an AI-driven research environment (Heidt, 2024)

Other technological developments also have potential implications for research collaboration in the Arctic. Remote Sensing data from satellites continue to increase in technical quality, spatial and temporal resolution, and the number and diversity of high-level data products is also expanding rapidly. Earth-observation programmes such as the European Space Agency's Copernicus Sentinel missions and NASA's Landsat series now provide freely available, systematically calibrated datasets with near-global coverage, including the entire circumpolar north. These underpin an expanding range of arctic applications, from permafrost and vegetation monitoring to sea-ice mapping (e.g. Platel et al. 2025, Bartsch et al. 2025)

While this trend has been evident for more than a decade, the recent emergence of reliable, high-functionality open-source data portals and cloud-based processing environments has transformed accessibility. Platforms such as Google Earth Engine, ESA's Sentinel Hub, and NASA's AppEEARS enable users to visualise and analyse multi-temporal satellite imagery directly in a web browser, removing the need for local computing infrastructure or specialised software. This has significantly lowered the barriers to entry, allowing smaller institutions, arctic communities, and countries with limited resources to participate more actively in area-specific research. For example, local researchers in Canada have used Sentinel-2 data within Google Earth Engine to monitor tundra vegetation recovery after wildfires (Roteta et al. 20201), and researchers in Greenland now routinely generate their own glacier-change analyses using Copernicus open data (e.g. How et al. 2025)

Recent geopolitical and logistical constraints on fieldwork, including the SARS-CoV-2 pandemic and ongoing restrictions on collaboration with Russia, have substantially increased the importance of remotely-sensed data for maintaining continuity in long-term monitoring networks. Studies of thermokarst and infrastructure stability on the Yamal Peninsula, for example, now rely almost exclusively on satellite-based deformation monitoring and optical imagery (e.g. Tashebaeva et al. 2021)

The recent emergence of uncrewed aerial vehicles (UAVs, or "drones") as platforms for spatial data collection is dramatically altering site-specific research possibilities. Sensors - even simple cameras - mounted on UAVs offer a level of spatial detail much finer than achievable by any satellite based system, and a far greater degree of user control. UAVs equipped with multispectral or LiDAR sensors can deliver centimetre-scale data on vegetation structure, erosion, and cultural-heritage features at relatively low cost (Lintott and Rees 2023). In Greenland, community-based heritage teams have used small drones to document coastal erosion affecting archaeological sites, while Inuit organisations in northern Canada employ UAVs to map safe sea-ice travel routes and near-shore hazards. Similarly, the complementarity of drone-based data and Indigenous knowledge in Sámi reindeer herding is currently under investigation (e.g. https://nibio.no/en/projects/air-herd-exchanging-knowledge-of-drone-use-in-traditional-reindeer-herding) Together, these developments are shifting aspects of research capacity from large, nationally or internationally funded programmes towards locally led and co-produced efforts, enhancing capacity for spatially distributed data collection across the Arctic. Initiatives such as Sustaining Arctic Observing Networks (SAON) and the EU-funded Arctic PASSION project explicitly support this decentralised model of observation, recognising that open data, accessible technology, and community participation are essential to a resilient and equitable Arctic research ecosystem. [Refs]. However, the accelerating use of remote sensing also introduces ethical and governance challenges that are only partly addressed by existing frameworks. The United Nations Principles Relating to Remote Sensing of the Earth from Outer Space (1986) establish that sensing of another state's territory should primarily serve the interests of the "sensed state" and of humanity as a whole, yet they predate both high-resolution commercial imaging and community-based applications. In the Arctic, where much research takes place on Indigenous lands and waters, questions of data ownership, consent, and cultural sensitivity are increasingly prominent. High-resolution imagery can inadvertently reveal information about, for example, settlements, hunting routes, or sacred sites, conflicting with principles of Indigenous Data Sovereignty (IDS) and the CARE Principles (Collective Benefit, Authority to Control, Responsibility, and Ethics) that guide responsible data use. Organisations such as the Inuit Circumpolar Council, Saami Council, and Arctic Athabaskan Council, alongside the Arctic Data Committee and SAON, are now developing guidance on ethical data management and co-production with Indigenous partners. Addressing these emerging legal and ethical questions, and the increasingly prominent issue of dual-use remote sensing technologies, will be essential to ensure that the democratisation of Arctic remote sensing strengthens rather than undermines trust, and promotes equitable collaboration.

1.4. RPT 4 Membership

Members came from Arctic states, non-Arctic states, Indigenous organizations, universities, and research councils, including participants from social sciences, natural sciences, and policy communities. The team's collective competence spans international law, political science, Indigenous knowledge, environmental governance, and research management, as well as practical experience of field-based international research collaboration, ensuring a multidisciplinary foundation for addressing Arctic cooperation and diplomacy.

RPT4 Members are listed below in alphabetical order by last name. The order does not reflect the extent of individual contributions/the level of contribution of individual members.

Name	Affiliation	Country
Co-Chairs		
Jennifer Spence	Belfer Center, Harvard Kennedy School	United States
Malgorzata Smieszek-Rice	Arctic Monitoring and Assessment Programme (AMAP) / UIT The Arctic University of Norway, The Norwegian College of Fishery Science	Norway
Tom Barry	University of Akureyri	Iceland
Members		
Elena Adasheva-Klein	Yale University / New York University	United States
Jenny Baeseman	Baeseman Consulting	United States
Renuka Badhe		Netherlands
Christine Barnard	ArcticNet	Canada
Ebru Caymaz	Canakkale Onsekiz Mart University	Türkiye
Chuan Chen	Peking University	China
Michaela Coote	University of Lapland (Arctic IR) & Network of Arctic Researchers, Ireland | Ireland	Ireland
Roberto Delgado	National Science Foundation (US)	United States
Dalee Sambo Dorough	University of Alaska Anchorage	United States
Matthew Druckenmiller	National Snow and Ice Data Center, University of Colorado Boulder	United States
Charlotte Gehrke	Nord University	Norway
Annegret Hannawa	Universitá della Svizzera italiana	Switzerland
Osamu Inagaki	Kobe University	Japan
Jihoon Jeong	Korea Polar Research Institute (KOPRI)	Republic of Korea
Michael Karcher	Alfred Wegner Institute (AWI)	Germany
Hajime Kimura	JAMSTEC	Japan
Monika Kusiak	Institute of Geophysics Polish Academy of Science	Poland
Hanna Lappalainen	University of Helsinki	Finland
Onur Limon		Türkiye
Liza Mack	Denali Commission	United States
Zia Madani	Kobe University and University of Saskatchewan	Japan / Canada
Ana Manero-Salvador	University Carlos III	Spain
Maribeth Murray	University of Calgary	Canada
Gareth Rees	Scott Polar Research Institute, University of Cambridge and International Science Initiative in the Russian Arctic (ISIRA)	United Kingdom

Name	Affiliation	Country
Members *continued*		
Margaret Rudolf	University of Alaska Fairbanks	United States
Alexander Sergunin	St. Petersburg State University	Russian Federation
Margit Hildegard Simon	NORCE	Norway
Ping SU	Tongji University	China
Tetsuo Sueyoshi	National Institute of Polar Research (NIPR)	Japan
Kanagavalli Suryanarayanan	University of Akureyri	Iceland
Monika Szkarłat	Maria Curie-Skłodowska University	Poland
Manish Tiwari	National Centre for Polar and Ocean Research	India
David Velázquez	Universidad Autonoma de Madrid	Spain
Chantelle Verhey	Arctic Data Committee	Canada
Marco Volpe	University of Lapland	Finland
Yulia Zaika	Kola Science Centre of Russian Academy of Sciences | IASC Secretariat (ISIRA Group)	Russian Federation

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