# Arctic Science Diplomacy: Adapting and Surviving Through Regional Consensus

**Yulia Zaika**
Senior Researcher, Luzin Institute for Economic Studies, Kola Science Centre of the Russian Academy of Sciences; Head of International Department, Federal Research Centre "Kola Science Centre RAS"; ISIRA Secretary, International Arctic Science Committee (IASC)
*E-mail: y.zaika@ksc.ru*

**Abstract**

Science diplomacy (SD) has emerged as a critical discourse at the intersection of its epistemological foundations and practical application. However, the current geopolitical climate demonstrates that SD lacks a unified, holistic approach and remains a developing phenomenon. It increasingly operates through distinct regional frameworks. This regional dimension is nowhere more pronounced than in the Arctic these days, where diplomatic strains have led to fractures within the scientific community. This commentary argues that rather than signalling the demise of Arctic SD, these hurdles are forcing its constructive transformation. It posits that while science is inherently holistic, its diplomatic and decision-making practice is rooted in regional particularities. The Arctic case reveals how SD is demonstrating remarkable institutional flexibility. By examining current adaptations—from informal networks, connections, and dialogues to specific formal stand-alone cases—this paper concludes that Arctic SD is not disappearing but adapting and surviving in various forms. It offers recommendations for scientists and policymakers to foster resilient cooperation under constraint.

## Science Diplomacy and its Regional Peculiarities

SD, being an urgent discourse, is currently traversing profound and complex changes against a backdrop of global geopolitical challenges that go far beyond those encountered during its epistemological maturation. As members of the scientific community, researchers bear a responsibility to critically examine and document this transforming landscape, furnishing essential historiographic evidence for SD as a discipline.[1]

A key observation is the growing regionalisation of SD. While science itself aims for universal truths, the practice of diplomacy through science and decision-making is deeply influenced by geography, history, and immediate political interests.[2] SD is not a monolith; it is a multifaceted practice shaped by spatial, administrative, and epistemic scales. National and regional approaches differ markedly, influenced by physical geography (access to resources, shared ecosystems) and human geography (cultural ties, historical relationships).[2]

## The Arctic Case: A Crucible of Regionality and Fragmentation

The Arctic has long been held up as a prime example of peaceful scientific cooperation, a 'zone of peace'. However, the post-2022 geopolitical shifts have fundamentally disrupted this narrative. The suspension of formal cooperation with Russia within the Arctic Council, the primary intergovernmental forum, created a

clear rift, leading many to declare the end of 'Arctic exceptionalism' and the emergence of a 'fragmented' or 'broken' Arctic.[1] This fragmentation is arguably the starkest example of SD's regional vulnerability. In parallel, several prominent organisations—including the University of the Arctic and the International Arctic Science Committee—have formally suspended or restricted their collaborative structures. Consequently, the scientific community has witnessed the emergence of more cautious mechanisms, informal modalities of communication and joint engagements.

One such mechanism is known as "*track-two diplomacy*"—an unofficial, non-governmental dialogue that allows individuals and groups to interact outside official state channels, as opposed to the primary '*track-one diplomacy*'.[3] The goal of such is to create a safe space for participants to explore ideas, build trust, and develop innovative solutions to complex problems without the constraints of official state positions.[4] In the Arctic context, these interactions have been instrumental for maintaining scientific collaboration on issues like permafrost thawing and climate monitoring.[5] Unlike the formal government-to-government track, these informal networks provide a space to develop trust and explore joint solutions, even when official relations are strained.

Focusing solely on fragmentation overlooks a more nuanced and critical story: Arctic science dialogue is transforming, not disappearing.[6]

**Signs of Adaptation and Survival:**

1. **Institutional (organisational) flexibility:** While formal, state-led cooperation is stalled, other channels are thriving. Informal networks, professional associations such as the International Arctic Science Committee (IASC), and some university-led collaborations are stepping in to fill the void.[6,7] These 'track-2' dialogues are pivotal for risk reduction and confidence-building.[8] One vivid example is the International Science Initiative in the Russian Arctic (ISIRA), an advisory group of the IASC, which continues to preserve open community meetings and official-level discussions.[9]
2. **Techno-diplomacy and shared challenges:** Focus has shifted to pressing, non-political issues where cooperation is indispensable. Initiatives on resilient infrastructures in the Arctic (such as roads, buildings, pipelines, power lines, ports), permafrost thaw, and sustainable energy are creating new platforms for *techno-diplomacy*.[10] The shared existential threat of climate change acts as a strong catalyst for continued interaction.
3. **Global and regional synergies:** New, more inclusive frameworks are emerging to strengthen scientific cooperation and engagement across regions and the Global South. For instance, UNESCO's International Decade of Sciences for Sustainable Development has endorsed initiatives such as "From the Arctic for the Arctic: Science Diplomacy for a Sustainable Future of the Region and Its People" (FORAS), led by researchers at the Kola Science Centre (Russian Academy of Sciences). This project aims to foster open dialogue among BRICS and SCO countries, creating a platform that transcends the current geopolitical impasse by including diverse Arctic and non-Arctic stakeholders.[11,12] The FORAS project is an example of institutional adaptation through new alliances within global organisations such as UNESCO.
4. **Redefining practices and navigating narratives:** There is a growing consensus that Arctic SD must be redefined. The ICARP IV process (The Forth International Conference on Arctic Research Planning)7 highlights the need for research cooperation that is resilient to political shocks and inclusive of all stakeholders. Crucially, there is an increasing (though still insufficient) emphasis on centring the rights and knowledge systems of Arctic Indigenous Peoples, moving beyond a purely state-centric model.[13] Another instructive example lies in the strategic reconfiguration of the language itself (navigating narratives). Current geopolitical fissures and divergent national restrictions have compelled researchers to adopt more flexible narrative frameworks. In instances where explicit "cooperation" is restricted, "coordination" has emerged as a pragmatic substitute, preserving substantive interactions to continue, while mitigating legal and political risks.

**What's the future of Arctic SD?**

The future of Arctic SD lies not in attempting to restore a pre-2022 status quo but in embracing adaptive models of cooperation under constraint.[6] The 'regional shortcuts'—bilateral (small-scale) and individual collaborations, Indigenous knowledge co-production, joint infrastructure projects—are the most viable routes for sustaining scientific exchange. These pathways acknowledge the holistic nature of scientific inquiry while respecting the inescapable reality of regional politics. On the other hand, the international polar science community is currently preparing and refining its scientific agendas in anticipation of the upcoming Fifth International Polar Year (IPY) 2032–2033—an event that will mark 150 years of multinational polar science cooperation in pursuit of a shared, peaceful future. Historically, the IPY initiative has evolved considerably since its inception in the 1890s, shifting from a paradigm centred on geographical discovery and territorial conquest to one emphasising international unity and scientific cooperation, as exemplified by the Fourth IPY in 2007–2008.

**Conclusion and Recommendations**

The Arctic case demonstrates that SD is an adaptive phenomenon. The current pressures are not destroying it but are forcing it to evolve, become more flexible, and find creative workarounds. While it may have lost its 'holistic' facade at the high political level, it is gaining resilience, diversity, and practical relevance at the regional and grassroots levels. The consensus on Arctic cooperation is shifting from passive stability to active, strategic resilience. Arctic SD is not dead; it is adapting to survive and will likely emerge more robust for the next challenges, including the Fifth International Polar Year (IPY) in 2032.[6]

In light of the preceding analysis, several practical recommendations are proposed for those actively involved in Arctic science diplomacy.

**For Scientists:**

1. Embrace 'Shareable/Open' Science: Differentiate between basic research data, which can be openly shared, and higher-risk outputs. Practices that separate these can enable partial collaboration even under restrictive conditions.[8]
2. Invest in Informal Networks: Prioritise professional networks and trust-building at individual and institutional levels. These 'track-two' connections are vital for maintaining dialogue when state-level relations are strained.
3. Integrate Indigenous Knowledge as a Norm: Actively and equitably co-create knowledge with Indigenous Peoples, moving beyond tokenism to genuine partnership. This is not just ethical but analytically essential.[13] The integration of Indigenous Knowledge into Arctic science is perhaps the most profound example of epistemological adaptation in SD. It contests the traditional hierarchy of knowledge and suggests that SD must be pluralistic, which is especially important during times of tension.

**For Policymakers:**

1. Protect Scientific Exchanges: Design exemptions for scientific cooperation and data sharing, recognising it as a matter of global public good and a tool for long-term stability, not just a foreign policy lever.
2. Support Flexible Funding Mechanisms: Create funding streams that can accommodate political changes, supporting non-governmental and interdisciplinary initiatives that can operate independently of state-level tensions.
3. Champion Science as a Bridge: Actively use international research forums and science envoys (ambassadors) to create and maintain channels for dialogue. SD should be acknowledged as a strategic investment in resilience, not a reward for good behaviour.[14]

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