

# InfoNorth

## Prospects for Further International Cooperation in the Central Arctic Ocean: Report of a Roundtable Conference at Tongji University, Shanghai

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### INTRODUCTION

THE CENTRAL ARCTIC OCEAN (CAO) is gaining increasing prominence due to its legal status, ecological and cultural significance, and resource potential (ICC, 2024; PAME, 2025). As a high seas area, all nations enjoy access to the region for purposes such as navigation, overflight, laying submarine cables and pipelines, fishing, and scientific research. These rights, however, are accompanied by the obligation to protect the marine environment and its resources.

At present, climate change is opening new possibilities for activities such as commercial shipping, deep-sea mining, and fisheries in the CAO (Pan and Huntington, 2024). Among them, fisheries have already been addressed through an international legal instrument: The Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean (CAOFA; Government of Canada, 2018). This agreement sets a precedent for responsible and precautionary governance.

In April 2025, a diverse array of Chinese and visiting scholars from Canada, Japan, Portugal, Russia, and the United States, including Arctic Indigenous Peoples, met at Tongji University in Shanghai for an event titled, Marine Living Resources Cooperation and Governance: A Roundtable Discussion on Further Cooperation in the Central Arctic Ocean. Participants' areas of expertise ranged widely, including oceanography, political science, international law, and Indigenous rights. The roundtable discussion followed the example of a similar event held at the same location in January 2015, which focused on CAO fisheries (Harrison et al., 2020). The purpose of the event was to foster dialogue and to explore what actions are needed now and what might be pursued in the future to address emerging activities in the CAO. Here we present a brief summary of the discussions in each of the three areas, followed by our concluding observations.

### SHIPPING

As Arctic sea ice continues to recede, the potential for commercial shipping in the high seas of the CAO (Transpolar Sea Route) is gradually increasing, and shipping activity throughout the broader Arctic region is on the rise (Stevenson et al., 2019). The current governance framework for shipping in the CAO primarily relies on regulations established by the International Maritime Organization (UN), notably the Polar Code, which provides targeted guidance for navigation in polar regions. However, in the face of the CAO's complex and dynamic environmental conditions and the growing interest in Arctic shipping, existing mechanisms reveal significant risks and governance gaps, especially considering the conditions of the CAO. First, there is a lack of effective emergency response capacity. Second, the environmental risks associated with Arctic shipping are particularly pronounced. Third, the CAO is increasingly becoming entangled in complex geopolitical dynamics. Furthermore, all activities in the CAO will involve shipping, so effective governance of shipping is essential to CAO governance as a whole.

### DEEP-SEA MINING

As is the case in other oceans, the Arctic seabed holds mineral resources, including oil, natural gas, and strategically important metals such as scandium, nickel, and cobalt, offering significant potential for deep-sea mining (Kislyakov et al., 2024). It is also an attractive region for subsea cables that could connect Europe and East Asia. However, deep-sea mining and similar seabed activities in the CAO face numerous, significant challenges beyond those facing deep-sea mining elsewhere, underscoring the complex interplay of environmental,

economic, technological, legal, and geopolitical factors shaping its future. Most of the CAO seabed lies within the extended continental shelves (ECS) as delineated by Arctic coastal states, leaving only a small area under international jurisdiction. The ECS boundaries, however, have extensive overlap (Baker, 2020), and the countries involved are likely to need considerable time to agree on appropriate boundaries. The International Seabed Authority is responsible for the governance of deep-sea mining in areas beyond national jurisdiction, but its approach is still developing. At the regional level, there is currently no dedicated governance mechanism specifically tailored to deep-sea mining in the high seas of the CAO. The recently concluded Agreement Under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction (BBNJ; United Nations, 2023) adds an additional complication as well as an incentive to create a regional approach. The complication is the potential introduction of another multilateral governance mechanism applicable to the CAO, one involving countries around the world. This creates an incentive for a regional approach that would make further action under the BBNJ Agreement unnecessary, leaving Arctic affairs in the hands of Arctic countries and those with a demonstrated interest in the region.

## FISHERIES

The CAOFA is a landmark international accord (Calderwood and Ulmer, 2023). The agreement clearly outlines the rights and obligations of participating states, aiming to ensure the responsible use of fishery resources as previously inaccessible areas become exposed because of diminishing sea ice. It serves as a model of precautionary cooperation and inclusive governance. The agreement commits the parties to an initial 16-year Joint Program of Scientific Research and Monitoring, placing a strong emphasis on incorporating both scientific research and the traditional knowledge of Indigenous Peoples, recognizing that the Arctic is their home. The CAOFA includes Arctic coastal states as well as non-coastal states on equal terms, reinforcing the principle of inclusivity in polar governance. It exemplifies a proactive, cautionary approach that could serve as a model for governance for other sectors in the CAO. Some matters, however, remain unresolved, such as the pathway to creating a regional fisheries management organization, if and when fishing is permitted in the CAO. The relationship between the CAOFA and BBNJ Agreement is also unclear. Finally, there is the question of whether to add new members to the CAOFA, which has not yet happened, although some countries have shown interest in joining. While inclusion is attractive in principle, there may be limits to the willingness of Arctic and Arctic-engaged states to accept states with a lesser stake in Arctic affairs.

## CONCLUSIONS

We hope that the roundtable discussion and this summary will stimulate broader discussions on international cooperation in the CAO to better address emerging challenges, build mutual understanding, and foster more effective and responsible international cooperation in the region. This idea is consistent with the findings of the Working Group on Integrated Ecosystem Assessment for the Central Arctic Ocean (PAME, 2025) and recent conferences involving Chinese and international scholars (Li et al., 2025; Pan and Huntington, 2025). Arctic Indigenous Peoples have also voiced hopes that future governance of the high seas in the CAO will reflect the inclusive model used in the CAOFA, which set an important precedent for Indigenous participation. However, while that agreement provides a useful model for future approaches, it cannot simply be replicated for different activities such as shipping and deep-sea mining. Each activity poses unique regulatory, environmental, and jurisdictional challenges that must be carefully addressed through inclusive, precautionary, ecosystem-based governance that starts with a focus on the CAO, strengthens research and monitoring, and takes into account the cumulative impacts of all human activities in the region.

A few themes are evident from the discussion so far. First, continued cooperation in the Arctic is essential, even amid geopolitical tensions. This approach is exemplified by both historical practices and the current implementation of the Joint Program of Scientific Research and Monitoring under the CAOFA. There is a pressing need to improve governance mechanisms for other sectors in the CAO. Preventive and systematic governance is essential. The CAO cannot be treated as a space for unchecked industrial experimentation or innovation.

Second, there is an ongoing debate over whether existing governance mechanisms are adequate for addressing the specific governance needs of the CAO. Given that Arctic coastal states and non-Arctic states often have diverging interests, a one-size-fits-all governance model may not be feasible. The recent adoption of the BBNJ Agreement, which applies to the CAO, suggests the need for a region-specific management body to address Arctic issues, rather than relying solely on global agreements. While existing mechanisms provide a solid foundation, they are a patchwork of agreements, widely considered insufficient to address the emerging challenges of governance to address the unique conditions of the CAO and the cumulative and overlapping impacts of various human activities in the region.

Third, the meaningful participation of Inuit and other Arctic Indigenous Peoples is vital, particularly in drawing on both Indigenous knowledge and scientific knowledge. Successful models of collaboration already exist, such as the CAOFA, which set a new international precedent by incorporating both knowledge systems. Additionally, it is

important to engage Arctic Indigenous youth to ensure the intergenerational transmission of traditional knowledge and to support their growing role in the region's governance and research frameworks.

Finally, scientific diplomacy is key to bridging trust gaps in Arctic governance. Strengthening the synergy between law and science and establishing cross-sector coordination mechanisms is imperative. Joint scientific missions can help reveal trends in ecosystem dynamics and resource distribution, offering a stronger empirical basis for policymaking. Capacity-building efforts—especially involving Arctic Indigenous youth—should be expanded. Academic exchanges, collaborative training programs, and inclusive forums can foster cross-cultural dialogue and empower the next generation of Arctic stewards.

The CAO is a vital component of the global marine

ecosystem and climate system. Its governance is emblematic of broader trends in global ocean governance. We hope that the 2025 CAO roundtable at Tongji University will make a meaningful contribution toward a sustainable Arctic future rooted in mutual respect and understanding.

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## Permafrost Conferences and Observing Networks: Contributions to International Co-Operation and Monitoring

by Jerry Brown

### INTRODUCTION

**P**RIOR TO 1963, FORMAL MULTINATIONAL CO-OPERATION related to permafrost research and engineering was extremely limited, particularly with the former Soviet Union. Access to Soviet institutions and literature relied predominantly on publications documented by the U.S. Library of Congress in its Bibliography on Cold Regions Science and Technology (Yerg, 1951). Permafrost-related citations continue to be added to the COLD bibliographic database at the American Geosciences Institute (<https://www.coldregions.org>).

Multinational communications were greatly facilitated with the First International Conference on Permafrost (ICOP), which was held in November 1963 at Purdue University, West Lafayette, Indiana. The conference was the first formal international gathering of scientists and engineers working on permafrost and had representation from 12 countries. There were three Soviet participants and 17 published Soviet papers in the proceedings. The conference was the formal start of multinational permafrost co-operation and exchange of information.

Another permafrost-related international activity in the 1960s was led by the International Geographical Union Commission on the significance of periglacial phenomena: in summer 1969. This commission held a conference in Yakutsk, Siberia, that was attended by 50 foreign participants. The conference included a memorable field excursion on the Lena and Aldan Rivers and a viewing of the expansive ice-rich and loess-like Yedoma deposits. The conference was facilitated by academician P.I. Melnikov and was a de facto dress-rehearsal or dry run for the more complex Second ICOP, which took place in Yakutsk in 1973.

This paper describes activities and accomplishments of past ICOPs and the implementation of long-term monitoring programs. It is anticipated that these continuing activities and accomplishments will contribute to the planning of and contributions to International Polar Year 2032–33.

### PERMAFROST CONFERENCES

International conferences on permafrost provide opportunities to report recent research results. They are also a forum for coordinating and reporting long-term observations of key permafrost indicators and their changes as part of the Global Terrestrial Network Permafrost (GTN-P). These conferences bring together international scientists and engineers and, more recently, an increasing number of early-career researchers.

Twelve ICOPs have been held between 1963 and 2024: three each in Canada and the United States, two in Russia, and one each in China, Germany, Norway, and Switzerland. A total of 4153 individuals from 45 countries have participated. Starting in 2001, there have also been regional conferences in nine countries.

Following the first conference in 1963 at Purdue University, the second conference was convened in Yakutsk in 1973, organized by P.I. Melnikov, director of the Melnikov Permafrost Institute of the Russian Academy of Sciences in Yakutsk, Siberia. That conference had 400 participants from 16 countries. Two volumes of its proceedings were published by the U.S. National Research Council.

The Third ICOP was convened in 1978 in Edmonton, Alberta, and included a Chinese delegation. Translations of Russian and Chinese papers were published by the National Research Council of Canada.

The International Permafrost Association (IPA) was formally organized in 1983 during the Fourth ICOP held in Fairbanks, Alaska. Since then, both the ICOPs and regional permafrost conferences have been organized under the auspices of the IPA. A summary of the first eight conferences was published by Brown and Walker (2007), followed by reports of the 2008, 2012, and 2016 conferences (Brown et al., 2008; May et al., 2012; Brown and Stanilovskaya, 2014; Scholten et al., 2017). A 50-year history of international co-operation with Soviet and Russian permafrost colleagues was presented at the Tenth ICOP in 2012 in Salekhard, Russia (Brown, 2012).