

Forum: Advisory Panel on the Question of Antarctica

Issue: United Nations support for multinational research activities in Antarctica

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Introduction

Among the continents of the Earth, Antarctica is the one that has the most recent discovery. According to the oral condition Antarctica was first seen by the Polynesian explorer, Tamarareti. Its discovery by Europeans though, dates back to 1520, when the famous Portuguese sailor Magellan was circumnavigating the world to prove its sphere shape. Additionally, the British naval officer James Cook further explored the sub-antarctic region. Ever since the research in Antarctica has been accelerating with a wide range of nations involved in the process. Currently, there are 70 research stations operated by 40 plus countries from all around the world. While global worldpowers like Russia and the U.S. all have research stations, Argentina and Chile lead the pack, with 13 and a dozen stations, respectively (Antarctica Cruises). These research stations have one ultimate goal: to collect scientific information. The scientific disciplines studied in the area include glaciology, astronomy, and meteorology. Additionally, it must be highlighted that the most important treaty on Antarctica which is the “Antarctic Treaty” suggests any kind of military activity is prohibited in the region.

The UN, while ensuring that the Antarctic Treaty is abided by all signatories aims to promote cooperation for research and development in Antarctica. The UN has the Commission for Conservation of Antarctic Marine Living Resources (CCAMLR). Just as these specific Antarctica focused organizations, the United Nations Educational, Scientific and Cultural Organization (UNESCO) itself and its subsidiary bodies like the Intergovernmental Oceanographic Commission (IOC) also support research in Antarctica. The International Thwaites Glacier Collaboration and the Southern Ocean Observing System are examples of these projects.

Definition of Key Terms

UNESCO: An organization of the United Nations that aims to build peace through international cooperation, in Education, the Sciences and Culture.

Antarctica Treaty: An international agreement that has provisions such as promoting Antarctica’s peaceful use, freedom of scientific investigation and exchange of scientific observations and results.

Antarctic Treaty Consultative Meeting (ATCM): An annual gathering of Antarctic Treaty signatories

to discuss policy, management, and scientific cooperation in Antarctica.

Antarctic Specially Protected Areas (ASPAs): Designated regions within Antarctica that are protected for scientific, environmental, or cultural reasons, limiting human activities to minimize impact.

International Polar Year (IPY): Periodic initiatives involving coordinated multinational research efforts in the polar regions, including Antarctica, to advance scientific understanding of these environments.

Polar Code: Regulatory standards established by the International Maritime Organization (IMO) to ensure the safety of ships operating in polar waters, including those conducting research expeditions in Antarctica.

General Overview

There have been a lot of different multinational research activities in Antarctica. The early multinational efforts were especially significant. The first multinational research activities in Antarctica date back to the early 20th century, with expeditions led by pioneering explorers such as Roald Amundsen, Robert Falcon Scott, and Ernest Shackleton. Early expeditions uncovered valuable geological insights into Antarctica's ancient past. For example, the discovery of fossils by the Swedish Antarctic Expedition (1901-1904) led by Otto Nordenskjöld provided evidence of Antarctica's prehistoric biodiversity, including evidence of ancient plants and marine life. The late 19th and early 20th centuries witnessed pioneering multinational expeditions that laid the foundation for Antarctic research. Led by Belgian explorer Adrien de Gerlache, the International Antarctic Expedition (1897-1899) aimed to conduct scientific research in Antarctica. Although primarily Belgian, the expedition included scientists from Norway, Britain, and Sweden. Their voyage aboard the "Belgica" resulted in significant discoveries, including the first documented wintering in Antarctica by a multinational team, setting the stage for future research. The British Antarctic Expedition (1907-1909), led by Ernest Shackleton, included scientists from Australia, New Zealand, and Norway. This expedition made groundbreaking discoveries, such as the first ascent of Mount Erebus and the approximate location of the South Magnetic Pole. Their findings in geology and biology laid the groundwork for subsequent Antarctic research endeavors. Led by Sir Douglas Mawson, the British, Australian, and New Zealand Antarctic Research Expedition (1929-1931) involved scientists from the three countries. Their contributions ranged from geological surveys to biological collections, and their establishment of research stations, including Mawson Station, furthered Antarctic science. The Norwegian-British-Swedish Antarctic Expedition (1949-1952), led by John Schjelderup Gjæver, focused on glaciology, meteorology, and geology. With scientists from Norway, Britain, and Sweden, the expedition's findings paved the way for future research efforts in Antarctica.

Operation Deep Freeze (1955-1956), spearheaded by the United States, marked significant

multinational collaboration in logistical support and scientific research. This initiative, aided by countries like New Zealand, Australia, and Great Britain, played a vital role in establishing a permanent scientific presence in Antarctica and expanding international cooperation. These early multinational efforts underscored the importance of collaboration in Antarctic research, leading to the establishment of the Antarctic Treaty System. Their discoveries continue to shape our understanding of Antarctica's unique environment and contribute to global scientific knowledge.

Yet, in the modern world there are new important multinational research activities in Antarctica.

The International Thwaites Glacier Collaboration (ITGC): This multinational research activity focuses its studies on the Thwaites Glacier. The glacier is located in West Antarctica. It is crucial for research as it acts as a linchpin, meaning it holds back the flow of neighboring ice streams. By doing so, it prevents the global sea-rise as the neighboring glaciers would not get destabilized. IYGC, which studies this Antarctic system, was established in 2018 by the United States' National Science Foundation (NSF) and the United Kingdom's Natural Environment Research Council (NERC). The collaboration include scientists from nations like the U.K., the U.S., South Korea, Sweden, Germany and New Zealand. To improve the understanding of the processes leading to the retreat of this glacier scientists come together. The techniques used in the studies include satellite remote sensing, airborne surveys, and on-the-ground measurements. While UN facilitates dialogue between scientists, stakeholders, etc. to amplify the collaboration between states its contribution to technical research infrastructure is limited. Additionally, ITGC collaborates with the UN-related Intergovernmental Panel on Climate Change (IPCC). With that ITGC's findings can be incorporated into global assessments of climate-related risks.

The Southern Ocean Observing System (SOOS): Established in 2011, this research focuses on the Southern Ocean near Antarctica. The Southern Ocean expands from the coastline of the continent to the northern boundaries of the Southern Hemisphere's ocean basins. The Southern Ocean helps to regulate the climate of our Earth. It absorbs and stores heat, carbon dioxide and nutrients. It influences global ocean circulation patterns. Hence, this research is important for forecasting Earth's future climate status. SOOS's operation relies on observing platforms and data repositories helping to store the knowledge from those observations. These observational assets include research vessels, autonomous underwater vehicles (AUVs), moored buoys, floats, gliders, and satellite sensors, which collect data on various aspects of the ocean environment. The data collected consists of temperature, salinity, currents, sea ice cover, and biological productivity. SOOS has regional and thematic working groups, enabling scientists to leverage complementary expertise and generate insights into Southern Ocean dynamics.

The Antarctic Circumnavigation Expedition (ACE): This scientific endeavor, aiming to advance comprehension of the Antarctic region. Organized by the Swiss Polar Institute, ACE works with numerous international partners. This expedition took place between December 2016 and March

2017. The ACE expedition was conducted aboard the Russian research vessel Akademik Treshnikov, which was equipped with state-of-the-art scientific instruments and laboratories to support a wide range of research activities. The expedition closely followed a circumnavigation path. ACE's research focused on Antarctic ice sheets and their contribution to sea level rise globally. Another goal was to decipher the marine ecosystem in Antarctica. Marine biologists collected samples of plankton, krill, and other marine organisms to study their distribution, abundance, and physiological responses to changing environmental conditions. Meanwhile, oceanographers were studying the carbon cycle in ways such as carbon sequestration. The expedition's findings have contributed to international scientific assessments, such as those conducted by the Intergovernmental Panel on Climate Change (IPCC), and informed policy decisions related to climate change mitigation and adaptation.

International Ocean Discovery Program (IODP): This program focuses on researching Earth's history, structure, and dynamics through ocean drilling. This program was established in 2013 builds upon the legacy of its predecessors, the Ocean Drilling Program. Over 20 nations contribute to research. The drilling into the seafloor and recovering sediment and rock cores take place to enable scientists to understand the past climate conditions. Therefore, tectonics is a highly critical field for this research, helping to understand the seafloor spreading and plate tectonics driving activities in the oceans. Plate motion magma creation, and crustal accretion are just a few areas where study is concentrated on. IODP operates through a network of research vessels, drilling platforms, and scientific facilities located around the world. Drilling operations are planned by a group of international scientists.

Polar Prediction Project (PPP): The Polar Prediction Project (PPP) is an international initiative, it puts its emphasis on the Arctic and Antarctic. It holds the aim of improving weather and climate predictions in polar regions. Its launch year being 2013, it has the feature of having one of the UN-related organizations directly involved with the matter, which is the World Meteorological Organization (WMO). In addition to that, the World Climate Research Programme (WCRP) also facilitates the project.

One of the key objectives of the PPP is to provide improved forecasts of extreme weather events. These events consist of meteorological disasters like blizzards, storms, and rapid changes in sea ice conditions. These events have crucial impacts on local communities, infrastructure, and ecosystems. If humanity can better predict these events, we will be more prepared in polar regions and mitigate the potential risks associated with climate change and increasing human activity in the Arctic and Antarctic.

Major Parties Involved and Their Views

Argentina: Interestingly, Argentina holds the greatest amount of research centers in Antarctica. Argentina's research in Antarctica is supported by a network of scientific research stations and field

camps operated by the Argentine Antarctic Institute (IAA), the country's leading agency for polar research. The IAA is important for coordinating the operations of several permanent research stations on the Antarctic Peninsula and South Shetland Islands. They also have control over seasonal field camps, these camps are usually in more remote areas of the continent. These facilities serve for logistical support and infrastructure for scientific expeditions. Obviously, they are also used as living accommodations for researchers and support staff.

Alongside research facilities, Argentina is a participant in international collaborative research projects in Antarctica. Argentina promotes strong partnerships with other American nations such as Chile, Brazil, and the United States. Argentine scientists are actively joining expeditions, sharing data and resources, and contributing to multinational scientific efforts such as the International Thwaites Glacier Collaboration (ITGC) and the Southern Ocean Observing System (SOOS).

United States of America: Currently, the U.S. holds a robust and diverse research program in Antarctica, conducted primarily under the auspices of the United States Antarctic Program (USAP). These efforts are enhanced by the National Science Foundation (NSF). For instance, the glaciology field is a major focus of the U.S. Scientists study Antarctic ice cores with the purpose of reconstructing past climate conditions. They monitor ice sheet dynamics using satellite imagery, they work on modeling future changes in ice mass and sea-level rise. Some research stations of the US are the McMurdo, Amundsen-Scott South Pole, and Palmer research stations. They provide logistical support and infrastructure for glaciological fieldwork and data collection. Additionally, the U.S. research vessels, such as the Nathaniel B. Palmer and the Laurence M. Gould, conducts expeditions for oceanographic research.

China: China, a rising global power, is also involved with research in Antarctica. They own research stations like Zhongshan and Kunlun provide platforms, and have research vessels, such as the Xuelong (Snow Dragon). Their research differs slightly from nations like the U.S. in a way which focuses on environmental monitoring and conservation efforts in the region. They assess impacts of human activity in the region, which relates to their goals on environmental stewardship.

Timeline of Events

1520	Exploration of Antarctica by the Europeans
2013	IODP's establishment
2013	Polar Prediction Project's launch
December 2016 - March 2017	ACE Expedition

2018	The International Thwaites Glacier Collaboration (ITGC)' s launch
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UN Involvement

Antarctica, the southernmost continent on Earth, holds a unique position in global scientific research. What is fascinating about it is its pristine environment, extreme conditions, and crucial role it tackles in regulating Earth's climate and ocean systems. As with all important world matters, the United Nations (UN) plays a significant role in facilitating and coordinating international efforts to study Antarctica's environment. It works on understanding its processes, and addressing challenges related to topics like climate change and biodiversity preservation in the region. This article explores the UN's involvement in Antarctica research, highlighting key initiatives, partnerships, and contributions to advancing scientific knowledge and promoting international cooperation in polar science. UN's work focused on developing and supporting Atlantic research include:

The Antarctic Treaty System (ATS): The Antarctic Treaty System (ATS) lies at the core of the UN's engagement in Antarctic research. Instituted in 1959, it forms a comprehensive framework aimed at governing human endeavors in Antarctica, conserving its distinct environment, and fostering global scientific collaboration. Serving as the bedrock of the ATS, the Antarctic Treaty outlines guidelines for the peaceful utilization of Antarctica, explicitly forbidding military operations, mineral extraction, and nuclear experiments on the continent. Furthermore, the Treaty champions scientific exploration as a fundamental pursuit in Antarctica and facilitates the sharing of scientific knowledge and data among signatory nations.

Scientific Committee on Antarctic Research (SCAR): The United Nations aids Antarctic research by endorsing and working alongside the Scientific Committee on Antarctic Research (SCAR), an interdisciplinary organization founded in 1958 to oversee and advance scientific exploration in Antarctica. SCAR acts as a hub for global scientists to unite in research endeavors, exchange information and skills, and explore critical scientific inquiries concerning Antarctica's environment and climate. With financial and operational backing from the UN, SCAR conducts research expeditions, organizes workshops and conventions, and facilitates the distribution of its research outcomes to policymakers, stakeholders, and the wider public.

Intergovernmental Panel on Climate Change (IPCC): The involvement of the United Nations in Antarctic research is also apparent in its support for the Intergovernmental Panel on Climate Change (IPCC). IPCC is an independent scientific organization established by the UN Environment Programme (UNEP) and the World Meteorological Organization (WMO) in 1988. The IPCC examines recent scientific literature on climate change, including research from Antarctica, and produces comprehensive reports aimed at informing policymakers and the public about the causes, effects, and potential strategies for addressing climate change. In its reports it presents the finding of the

multinational research activities in Antarctica. By integrating Antarctic research into its assessments, the IPCC underscores the region's importance in understanding global climate dynamics and projecting future climate scenarios.

United Nations Decade of Ocean Science for Sustainable Development (2021-2030): The United Nations Decade of Ocean Science for Sustainable Development (2021-2030) is a global initiative. It aims to mobilize cooperation on an international level. The scientific research activities propel the sustainable management goal for the world's oceans and coastal areas. The UN has decided that this decade could provide a critical chance to understand oceans deeply. Through that, humanity can address emerging challenges.

The Decade of Ocean Science for Sustainable Development follows the United Nations Conference on Sustainable Development (Rio+20) and the Sustainable Development Goals (SDGs). The common emphasis is on interconnectedness of human well-being through environmental health. By focusing specifically on ocean science, the decade aims to galvanize action across sectors.

Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR): The United Nations plays a role in Antarctica research by engaging with the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR), an international agreement established in 1982. CCAMLR is dedicated to protecting and managing marine resources in the Southern Ocean. It oversees fishing activities, conducts scientific studies on Antarctic marine ecosystems, and devises conservation measures to safeguard vulnerable species and habitats. The UN offers support, both technical and financial, to assist CCAMLR's scientific endeavors and promotes collaboration among treaty members, scientific institutions, and other stakeholders to advance its conservation goals.

Relevant UN Documents

UN Decade of Ocean Science for Sustainable Development (2021-2030): A resolution fostering global cooperation in ocean science, including Atlantic research, to address ocean challenges. It aims to enhance scientific knowledge and capacity.

Link: <https://www.un.org/en/chronicle/article/ocean-science-sustainable-development>

Resolution A/RES/72/249: Sustainable Fisheries in the Southwest Atlantic Ocean**: Addresses sustainable fisheries in the Southwest Atlantic, emphasizing cooperation and responsible fishing practices. Link: <https://undocs.org/A/RES/72/249>

Resolution A/RES/63/111: Protection of Vulnerable Marine Ecosystems in the High Seas of the Southwest Atlantic: Urges protection of vulnerable marine ecosystems, stressing conservation measures. Link: <https://undocs.org/A/RES/63/111>

Resolution A/RES/64/72: Protection of the Marine Environment in the Southeast Atlantic**: Highlights marine environment protection in the Southeast Atlantic, advocating for cooperation and pollution

mitigation. <https://undocs.org/A/RES/64/72>

Resolution A/RES/74/19: Conservation and Sustainable Management of the Sargasso Sea**:
Stresses Sargasso Sea conservation, calling for international cooperation to preserve biodiversity.

Link: <https://undocs.org/A/RES/74/19>

Treaties and Events

Numerous treaties and initiatives aimed at promoting global cooperation and environmental protection have been focused on Antarctica, a continent devoted to peace and scientific research. Over time the environment of Antarctic research and conservation efforts has been shaped by these agreements and initiatives. The Antarctic Treaty which was signed in 1959 and came into effect in 1961 is one of the most important agreements pertaining to Antarctica. The treaty outlawed military operations on Antarctica and designated the region as a scientific preserve. Furthermore it fostered global collaboration in fields such as environmental conservation and science research. Since then several protocols and agreements addressing different facets of Antarctic governance including environmental protection, the preservation of marine life resources and liability for environmental emergencies have been added to the Antarctic Treaty System (ATS).

To protect Antarctic marine ecosystems and control fishing in the Southern Ocean the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR) was ratified in 1980. Fish stocks and other marine resources are managed sustainably thanks to the marine protected area and quota system established by CCAMLR. In terms of international collaboration for the preservation of Antarctic biodiversity it is a historic accomplishment. The 1957–1958 International Geophysical Year (IGY) is another significant occasion in the history of Antarctic research. Researchers from all over the world collaborated to conduct ground-breaking research in a variety of fields including glaciology, meteorology and geophysics. The IGY advanced our knowledge of environmental processes and global climate systems while laying the groundwork for future Antarctic research. To improve environmental conservation efforts in Antarctica the Antarctic Treaty Protocol on Environmental Protection was ratified in 1991. In addition to outlawing mining the protocol sets stringent environmental requirements for both tourism and scientific study. It also reaffirms the commitment to protecting Antarctica's unique ecosystems for future generations by designating it as a natural reserve dedicated to peace and science.

Our knowledge of Antarctica's climate and environment has improved over time as a result of several scientific research projects and expeditions. Founded in 1958 the Scientific Committee on Antarctic Research (SCAR) facilitates international cooperation among scientists and oversees research projects. Oceanography, glaciology, biology and atmospheric sciences are just a few of the many scientific fields that are covered by the work of SCAR. Scientists studying the effects of melting ice and rising temperatures on the continents ecosystems and global sea levels have made climate change one of the main areas of study in the Antarctic in recent years. Research expeditions and

monitoring initiatives like the Antarctic Circumpolar Current (ACC) program and the Antarctic Climate and Ecosystems Cooperative Research Centre (ACE CRC) are examining the causes and effects of climate change in Antarctica.

In conclusion, agreements and activities pertaining to research in Antarctica have been vital in advancing global collaboration, preservation of the environment and advancement of science in the area. All of these agreements and initiatives—from the Antarctic Treaty and CCAMLR to the Protocol on Environmental Protection and programs like the IGY and SCAR—have set the foundation for long-term scientific research and conservation in Antarctica guaranteeing that this unspoiled continent will continue to be a source of peace and scientific discovery for future generations.

Evaluation of Previous Attempts to Resolve the Issue

During the IGY, scientists from around the world collaborated on a wide range of research projects in Antarctica, marking the beginning of sustained multinational research activities in the region. One of the most significant achievements of the IGY was the establishment of numerous research stations across Antarctica, where scientists conducted studies in various scientific disciplines, including geophysics, glaciology, meteorology, oceanography, and biology. Additionally, there were lots of research activities that consisted of 2-3 nations in the early days of research. These are explained in more detail in the overview section.

Possible Solutions

Through the establishment of a specialized task force creation of a dedicated task force or committee within the UN to oversee Antarctic research. A task force can help to facilitate research activities. Additionally, The UN could advocate for greater financial resources for Antarctic research through its channels like the General Assembly and specialized agencies such as UNESCO. This could involve mobilizing funding from member states and exploring partnerships with the private sector.

Especially for sustainable research, the UN must advocate for stronger measures to protect the Antarctic environment, including addressing climate change and marine pollution. This involves supporting international agreements like the Antarctic Treaty System.

Ensuring research in Antarctica doesn't harm the environment is crucial. The UN, along with member states and research institutions, should work together to set guidelines for responsible research. This means taking steps to reduce pollution, avoid disturbing wildlife, and treat research subjects ethically. By prioritizing sustainability in research, we can protect Antarctica's environment and conduct science responsibly.

Notes from the Chair

Understanding the basic guidelines and the work on Antarctic Treaty is essential not only for this agenda item but for this year's APQ in overall. Experts can check out the [Atlantic Treaty Database](#) to view the meeting notes and updates on the Atlantic Treaty. The expert's must bear in mind the political geography of Antarctica to construct clauses that challenge the status quo to better it. The most important point is that while the UN benefits a lot from the findings of the nations, they don't provide sufficient support to these international collaborations. So clauses should focus on putting the research initiatives under one roof that will follow the purpose and guidelines of the UN's Decade of Ocean Science for Sustainable Development.

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