



*Co-ordinating and Co-designing
the European Polar Research Area*

CATALOGUE OF NATIONAL POLAR PROGRAMMES AND OTHER LARGE-SCALE PROGRAMMES





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Greenland Mittivakkat c Glacier. Photo: W. Schöner

Introduction

The polar regions are the places on earth where the human endurance and resilience are challenged the most. They are sentinels of climate change and a proven bastion for international cooperation in research and nature protection. European researchers have made significant contributions to understand the consequences of climate change and the structure and functioning of ecosystems at both polar regions, and their global interconnections. Unifying, disseminating, and coordinating all European research actions is one of the tasks of the EU-PolarNet 2 project. EU-PolarNet 2 - "Coordinating and co-designing the European Polar Research Area" is a Coordination and Support Action funded by the European Commission in Horizon 2020, supporting the development and implementation of future European research actions. It comprises 25 partners representing all European and associated countries with well-developed polar research programmes and activities. EU-PolarNet 2 aims to provide a platform to co-develop strategies to advance European polar research and its contribution to policy-making processes. By involving relevant stake- and rightsholders, it supports the development of transdisciplinary and transnational polar research actions of high societal relevance. To ensure that such an important platform is sustained after the four years of project duration, the project works with funding agencies, national polar research institutes, operators of national polar programmes, polar experts and the European polar research community to discuss and implement the identified research actions. The final goal of EU-PolarNet 2 is to create a permanent European Polar Coordination Office, which will continue the work of EU-PolarNet 2 in a sustained way.

Information transfer and communication among national polar programmes are crucial since efficient and effective national polar research systems are a precondition for a strong European polar research environment. Key to advancing coordination of the national polar research programmes are easily discoverable and up-to-date information on their research activities. This "catalogue of national Polar programmes and other large-scale programmes" is the first and crucial step of EU-PolarNet 2 to improve the coordination and cooperation of national polar research programmes in Europe. The catalogue provides an overview about the responsibilities, research foci and governance structures in European countries performing polar research. The heterogeneity of European National Polar programmes makes this catalogue an essential tool to facilitate the communication and to support synergistic joint actions among the national programmes. By publishing this catalogue, EU-PolarNet 2 aims to



Nicole Biebow, EU-PolarNet 2 Coordinator, Alfred Wegener Institute, Germany. Photo: Kerstin Rolfes / AWI



Antonio Quesada, Work Package 1 leader, Ministry of Science and Innovation, Spain. Photo: Nicole Biebow

contribute to improving the efficiency and effectiveness of the different national polar research programmes, and to provide a better overview and understanding of each other's activities and structures, find new ideas, and avoid overlaps and minimise fragmentation.

This catalogue is closely related and complementary to another EU-PolarNet 2 deliverable, the "directory of polar research funding programmes in Europe". Both deliverables are the result of a survey sent to the entire EU-PolarNet 2 consortium, based on a wide range of questions. The information received reflects the different approaches of each country to polar policy and research. The result is a structured, but diverse document giving every country the opportunity to gain insight in each other procedures. These two documents created by the EU-PolarNet 2 consortium are also complementary to other two documents - the [EU-PolarNet Infrastructures Catalogue](#) and the European Polar Board's [Polardex](#) platform.



Austria



Greenland Tasiilaq c. Photo: W. Schoener

Polar research activities and institutions

Austrian polar research activities are coordinated by the Austrian Polar Research Institute (APRI), a cooperation platform and representative body of Austrian institutions involved in polar research. This means that [APRI](#) as an institution does not carry out research work itself. All research is carried out by APRI members such as universities, the Austrian meteorological service, the Central Institute for Meteorology and Geodynamics (ZAMG) and private companies. Austria does not have its own polar research funding or polar programme. Funding for polar research is mainly the responsibility of Austrian research funding organisations such as the Austrian Science Fund (FWF) and the Austrian Research Promotion Agency (FFG). The FWF is also Austria's national partner for the European Polar Board (EPB), while the Austrian representative for the Scientific Committee on Antarctic Research (SCAR) is appointed by the Austrian Academy of Sciences (OeAW), in coordination with the APRI. APRI is the member of the International Arctic Science Committee and appoints Austria's IASC working group members.

Austria's polar research activities are highly diversified and include both the natural and social sciences, but also inter- and transdisciplinary research. A special focus of Austrian research is also the application of remote sensing methods in polar regions. Thematically, the focus is on physics-based climate research and the effects of climate change on the cryosphere and on polar ecology (terrestrial and marine). The social sciences focus on climate change mitigation, tackling infrastructures, resource extraction, youth, regional/urban development and Indigenous peoples.

Logistics, services and research infrastructures

Currently, Austria has no infrastructures (field stations, vessels or aircraft) neither in Antarctica nor in the Arctic region. However, Austria is a partner in EU funded programmes such as [INTER-ACT](#), where field sites in the Austrian Alps (i.e. [Sonnblick Observatory](#)) are incorporated in the transnational access programme.

Detailed information on the infrastructures can be found in [Polarindex](#).



Greenland Zackenberg. Photo: C. G. Weyss

National polar authorities and strategies

Austria is neither a member nor an observer of the Arctic Council. However, at the policy level Austria is involved in Arctic affairs as a member of the EU. At the national level, the interest in polar regions is almost exclusively based in research.

Austria is a signatory state of the Spitsbergen Treaty (signed in 1930) and the Antarctic Treaty (non-consultative party) (signed in 1987) and is represented by the [Austrian Federal Ministry for European and International Affairs](#).

There is no clear responsibility for polar research activities among governmental authorities in Austria. With respect to research, Austrian research funding is split into two key fields, basic research and applied research represented by different ministries and different funding organisations. This is also the case for polar research. At a coordinating and strategic level above the ministries, the [Austrian Council for Research and Technology Development](#) advises the Austrian federal government on a general strategy for research development and research funding in Austria. However, none of these funding agencies has a polar programme for Austria. Austrian polar affairs, including research, are therefore located in the ministries listed in the box (without having a clear polar agenda).

List of governmental authorities

- [Federal Ministry of Education, Science and Research](#) for funding for basic research;
- [Federal Ministry of Climate Action, Environment, Mobility, Innovation and Technology](#);
- [Federal Ministry for Digital and Economic Affairs](#) for business-oriented research;
- [Federal Ministry for European and International Affairs](#) for international agreements at political level.

International partnerships

Austria has well established partnership with the Alfred Wegener Institute (AWI) in Germany and the Scott Polar Research Institute (SPRI) at the University of Cambridge, UK.

The cooperation with AWI has made it possible for Austrian scientists to conduct research in Antarctica over many years. There is also close cooperation with researchers in Denmark (e.g., GEUS, University of Copenhagen), Switzerland, Russia (e.g., Russian Academy of Sciences), Canada (e.g., Université Laval, Yukon University) and United Kingdom (e.g., Scott Polar Research Institute (SPRI) at the University of Cambridge). Currently, APRI and the University of Graz are working very closely with the University of Copenhagen on the expansion of the Sermilik Research Station in East Greenland, with the aim of jointly operating this station in the future. This infrastructure project is currently being implemented and is scheduled for completion in 2023.



Belgium



Traverse. Photo: BELSPO

Polar research activities and institutions

Belgium no longer has a dedicated polar research programme. Polar research falls into the overall competitive R&I agenda within [BELSPO](#) as well as within the other two Belgian research funding organisations FWO and FNRS. Because of historical reasons and current Belgian operational activities, Belgian research activities are more prominent in the Antarctic, but [BELSPO](#), FWO and FNRS all fund polar research in the Antarctic as well as the Arctic. Even though there is no strategic coordination between the three funding organisations, the type of funding is highly complementary - fundamental versus strategic, short-term versus long-term research.

Belgian polar research is carried out by a network of research institutions, universities, governmental and non-governmental institutions distributed across whole Belgium (see list of research organisations/institutions in Appendix).

The overarching priority research themes and topics are defined considering the Belgian expertise (bottom-up), international research priorities defined by overarching science organisations such as SCAR and IASC (top-down) and logistic availabilities and collaboration possibilities. They are generally broad, covering biodiversity, ecology, climate research, glaciology, geology, geophysics, (bio)geochemistry, astrophysics, life sciences and medicine.

Belgium's own operational activities are currently limited to Dronning Maud Land in East-Antarctica, the location of the Belgian Princess Elisabeth Station. Operational activities will be expanded to Arctic waters (latitude 80° north) as of 2023 via the new Belgian RV BELGICA (Ice Reinforcement Class ICE-1C). Funding is also provided to Belgian researchers participating to campaigns organised by other countries in the Arctic and Antarctic.

Logistics, services and research infrastructures

Belgium operates the following infrastructure in the polar regions.

Research stations in the Antarctic:

[THE PRINCESS ELISABETH STATION](#): Dronning Maud Land - East-Antarctica, 71°57'S 23°20'E, capacity: 25/40 people, including staff, summer only.

Polar research vessels:

The new RV Belgica: The research vessel will be operating in the Arctic as of 2023. Home port: Zeebrugge. Research area: North Sea, Atlantic Ocean, Mediterranean Sea and Arctic area in summer

(latitude 80° north). Capacity: for scientists and crew: 28 + 12. Period of activity: year-round, about 300 days a year at sea. Access: open access to Belgian scientists – wherever possible in international collaboration – via ship calls managed by the Royal Belgian Institute for Natural Sciences (RBINS). Request forms are available online. The ship is open to foreign researchers. Priority is however given to projects in collaboration with Belgian scientists, thereby promoting research collaboration and preventing research competition.

Detailed information on the infrastructures can be found in [PolarDEX](#).

National polar authorities and strategies

[Foreign Affairs, Foreign Trade and Development Cooperation Federal Public](#) (FPS Foreign Affairs) – The Ministry of Foreign Affairs implements the Antarctic Treaty in Belgium. It is the official representative of Belgium within the ATCM and responsible for the preparation of the Belgian participation to the ATCM. It takes care of the bilateral and multilateral diplomatic relationships pertaining to the Antarctic Treaty and the Arctic Science Ministerial.

[Health, Food Chain Safety and Environment Federal Public Service](#) (FPS Environment). The Ministry of Environment implements the Madrid Protocol on Environmental Protection in Belgium. The FPS Environment is Belgium's official representative within the CEP (Committee for Environmental protection) and the CCAMLR (Commission for the Conservation of Antarctic Marine Living Resources). It also issues the environmental permits required for any tourist or scientific visit by Belgian citizens in Antarctica.

[BELSPO](#) depends on the Ministry of Science Policy. BELSPO's Research Programme and Infrastructures Department provides funding for research activities in support of federal competencies and international commitments made by the Belgian federal authorities. In this context, the Department prepares and manages a portfolio of funding actions including various research programmes, research infrastructures and science-policy interfaces, and participates in national and international cooperation initiatives, inter alia related to the Arctic and the Antarctic. As the Belgian federal research administration, BELSPO is represented in the CEP, the CCAMLR, the ASM, the EPB, COMNAP. BELSPO is invited as observer to SCAR.

[BPS](#) – The Belgian Polar Secretariat is a state service part of BELSPO created in 2009 and responsible for the financial, administrative, and material management of the Belgian Princess Elisabeth Station and the coordination and implementation of the campaigns to the station (BELARE – Belgian Antarctic Research Expedition). The BPS is represented in COMNAP and DROMLAN.

The [Research Foundation – Flanders \(FWO\)](#) stimulates and financially supports inter alia fundamental Arctic and Antarctic research. FWO is a member of Science Europe and supports the activities of the European Research Council (ERC) through various initiatives. FWO is a member of the EPB.

The [Fund for Scientific Research \(F.R.S.-FNRS\)](#) FNRS finances Arctic as well as Antarctic basic research. F.R.S.-FNRS is a member of the EPB.

While Belgian polar activities are historically mainly focused on the Antarctic, and Belgium currently does not play a direct active role in Arctic policy, there is an increasing Belgian interest in the Arctic.

The governmental authorities responsible for national level strategy and decision making with respect to polar activities work independently from each other. The Belgian federal policy strategy setting and the coordination of the activities between different ministries is organised by the FPS Foreign Affairs via regular meetings and information exchange. BELSPO links with the research institutes and is responsible for the development of Federal research strategies considering international research priorities and collaboration possibilities.

International partnerships

Before the construction of the Princess Elisabeth station and still now, Belgian polar research is carried out thanks to the participation in campaigns organised by other countries: aboard the RV Polarstern, the RV Marion Dufresne, the Astrolabe and the RV Aurora Australis. Other collaborations are with Argentina, Brazil, Chile, China, Italy, Japan, Luxemburg, New Zealand, Norway, Peru, South-Africa, Spain, the United Kingdom, the United States. Although this international collaboration was initiated purely out of a logistic necessity, this has over the years grown into a close and sustainable research cooperation. BELSPO has signed a MoU with Argentina, Chile, China, France, Japan, Peru and South-Africa to enhance scientific cooperation in Polar Science and Technology.

International collaboration is encouraged and part of the scientific evaluation scheme. Some BELSPO science-initiatives foresee a co-financing of the cooperation with non-Belgian universities or public research institutes within the Belgian research project. Campaign costs of international partners working in Belgian projects are funded by BELSPO.

Operations and logistics for the Princess Elisabeth Station are carried out via DROMLAN. The network operates from Cape Town International Airport to 3 airfields in Antarctica nearby the stations of Belgium, Norway and Russia. Feeder services to other research stations are operated by the private Antarctic Logistics Centre International (ALCI) or other operators.



Bulgaria



Scientific team at South Bay, Livingston Island, 2018. Photo: Oleg Vassilev

Polar research activities and institutions

The [Bulgarian Antarctic Institute](#) (BAI) is the National Operator of the Republic of Bulgaria for Antarctica. BAI is a non-profit organisation which has a Board of Directors.

Bulgaria has a dedicated National Programme for Polar Research, adopted by a decision of the Council of Ministers in 2016. The Programme is coordinated by the Ministry of Education and Science and the National Centre for Polar Studies of Sofia University St. Kliment Ohridski.

[The National Centre for Polar Studies](#) (NCPS), Sofia University St. Kliment Ohridski works in connection with the National Programme for Polar Research. There is an annual national call for polar research projects which is organised by the NCPS and selected and evaluated by a commission. The calls are funded by the Ministry of Education and Science. International applicants are welcome to participate in Bulgarian projects as members of the scientific team.

Bulgarian scientists mainly work in Antarctica (Antarctic Peninsula, South Shetland Islands). Their main research themes are earth sciences, biology and ecology, medicine, geophysics and GIS, oceanography and social studies.

The Bulgarian Academy of Science (BAS) with its many institutes and departments has carried out many successful scientific pro-

jects in Antarctica. The themes of research are hydrobiology, oceanography, geology, geophysics, soil sciences, microbiology etc. The area of activity in Antarctica is the Peninsula region.

The University of Architecture, Civil Engineering and Geodesy (UACEG) has carried out projects at the Antarctic Peninsula focussing on geodesy, cartography, GIS and monitoring of sea level.

The Tokuda Hospital performs medical research mainly related to the effect of the extreme conditions on human skin, sun exposure and melanoma. They are active in the Antarctic Peninsula region.

Logistics, services and research infrastructures

BAI and NCPS are responsible both for the Bulgarian polar infrastructure and logistics. Bulgaria operates one research station in Antarctica (South Shetlands, Livingston Island) and one Research vessel (in operation from season 2022/2023). The base mainly hosts researchers with projects accepted by the National Programme for Polar Research.

The base offers access to foreign researchers. The application procedure includes contacting BAI or NCPS with details about the project. All projects are evaluated according to their scien-



Bulgarian Antarctic base St Kliment Ohridski. Photo: Dragomir Mateev

tific excellence and logistical feasibility including all necessary permissions. All foreign participants are responsible for their own transportation to and from a hub city in South America, their insurance and stay while outside Antarctica.

Bulgaria operates the following infrastructure in the polar regions.

Research stations in the Arctic:

BULGARIAN ANTARCTIC STATION ST. KLIMENT OHRIDSKI: Research base at Livingston Island, South Shetland Islands, 62° 38' 44.30"S, 060° 21' 91.40"W, capacity: 16 scientists, 6 staff, seasonal.

Polar research vessels:

RSV ST ST KIRIL I METODII: In 2021 NCPS, in cooperation with the Ministry of Education and Science and the Naval School Nikola Vaptsarov in Varna, purchased a Norwegian vessel which is currently in a renovation yard in preparation for its first sail in the next Austral season (2022 -2023). The vessel is under the command of the Naval School and solely used for scientific and training purposes in The Southern Ocean and the Black Sea.

Detailed information on the infrastructures can be found in [Polardex](#).

National polar authorities and strategies

The Ministry of Foreign Affairs is responsible for all Bulgarian activities related to the Antarctic Treaty matters and works in close relationship with the Bulgarian Antarctic Institute which is the official National Operator of Antarctic activities for the Republic of Bulgaria.

The Ministry of Education and Science is the main Coordinator of the National Programme for Polar Research and works closely with the National Centre for Polar Studies of Sofia University St. Kliment Ohridski and the Bulgarian Antarctic Institute for the realisation and implementation of the programme.

List of governmental authorities

- [Ministry of Foreign Affairs](#) (responsible for Antarctic Treaty matters);
- [Ministry of Education and Science](#) (coordinator of the National Programme for Polar Research); National Roadmap (for Scientific infrastructure and provider of funding for Polar research);
- [Ministry of Environment and Water](#) (responsible for environmental and climate issues).

National strategies

- [National Programme for Polar Research 2017-2021](#)

International partnerships

Bulgaria is one of 29 consultative parties making decisions concerning Antarctica in the ATCM since 1998. It is a member of COMNAP and SCAR.

Bulgaria has long-term established collaborations with other National Antarctic Programmes both in science (bilateral projects and hosting international scientists) and logistics (due to lack of own transportation). New collaborations are encouraged through meetings and mutual scientific or logistic interests. They are dealt with by BAI and NCPS. Collaborations are established by signing bilateral contracts for partnership (Memorandum of Understanding) either on ministerial level or between National Polar Programme operators.

Most important country and institutional partnerships are with Spain (The Spanish Polar Committee, science and logistics), Portugal (PROPOLAR, science and logistics), Chile (INACH, science and logistics), Brazil (PROANTAR, logistics) and Argentina (Instituto Antártico Argentino, science and logistics).



Czech Republic

Czech Research Station Julius Payer in Longyearbyen (Svalbard). Photo: Archive of the Centre for Polar Ecology, University of South Bohemia.

Polar research activities and institutions

The Czech polar research programme is carried out by a network of research institutions, universities, governmental and non-governmental institutions distributed across the whole country. Two universities, the University of South Bohemia in České Budějovice, and the Masaryk University in Brno manage the two polar infrastructures respectively: the Arctic Research Infrastructure "Josef Svoboda Station" in Svalbard, and the Antarctic Research Infrastructure "J. G. Mendel Station" in James Ross Island. Czechia does not have a national manager or implementation agency of the Arctic and Antarctic Programme. The Czech polar research is funded by national funding agencies, the logistics for both stations are supported by particular universities. Both stations are open for international collaboration via Czech research teams the Centre for Polar Ecology, Faculty of Science, University of South Bohemia in [České Budějovice](#), the [Department of Geography, Masaryk University in Brno](#), the [Department of Experimental Biology, Masaryk University in Brno](#), [Josef Svoboda Station](#) in Svalbard is also open for all research projects and is included in the [INTERACT](#) programme (application via [INTERACT](#)).

The main topic of Czech polar research, including both natural and social sciences, is to better understand the ongoing changes in the polar regions and evaluate their local, regional and global consequences.

Czech polar researchers are active in the Arctic, mostly associated with the Josef Svoboda Station and in the Antarctic with J. G. Mendel Station. In addition, several research projects are carried out in collaboration with international research programmes (Alaska, Canadian Arctic, Greenland, several localities across sub-Arctic - Island, Faroe Islands, northern Scandinavia, Karelia, maritime and continental Antarctic).

Research projects are selected by an overall competitive R&I agenda (application via Czech Grant Agency - The [Czech Science Foundation](#), [The Ministry of Education, Youth and Sports - Research and Development](#), via international grant agencies (i.e. [EU Horizon](#)) or via [INTERACT](#) and other international possibilities.



Vegetation drone mapping, Bjørdalen Valley, Adventfjord (Svalbard).
Photo: Archive of the Centre for Polar Ecology, University of South Bohemia.

Logistics, services and research infrastructures

The Czech Republic operates the following infrastructure in the polar regions.

Research stations in the Arctic:

JOSEF SVOBODA STATION: Arctic Research station in f Svalbard, 78° 13' 23" N, 15° 39' 32" E, Capacity: 4 scientists, 4 staff, seasonal.

Research stations in the Antarctic:

JOHANN GREGOR MENDEL STATION: Antarctic Research station located on the Ulu Peninsula, the most northern tip of the James Ross Island, east side of Antarctic Peninsula, 63° 48' 02" S, 57° 52' 57" W, Capacity: 16 scientists, 6 staff, seasonal.

Detailed information on the infrastructures can be found in [PolarDEX](#).

National polar authorities and strategies

At present, there is no state coordination of Czech polar research. However, the institutions and ministries are currently discussing how polar research will be governed in the future.

List of governmental authorities

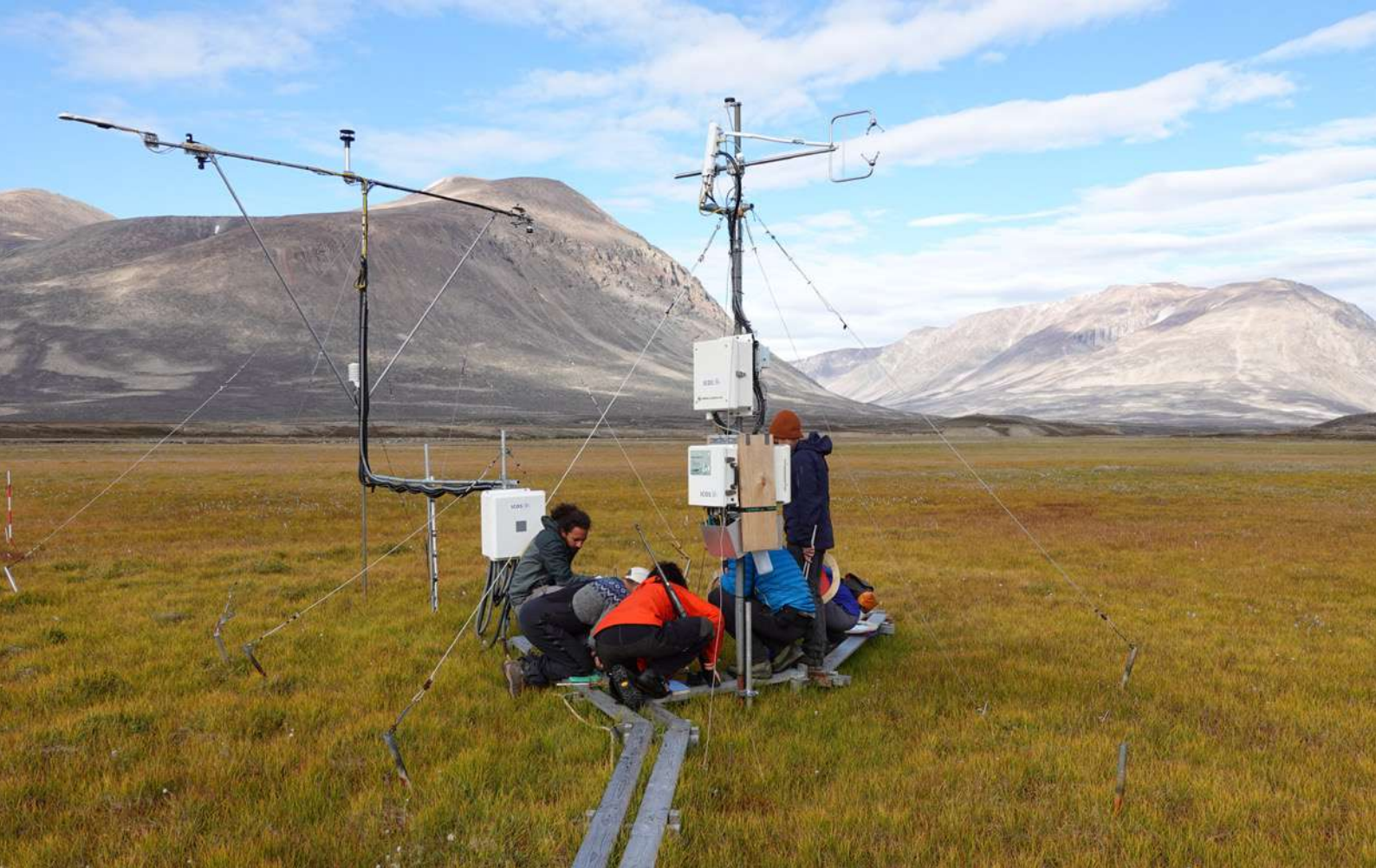
- [Ministry of Education, Youth and Sport](#)
- [Ministry of Foreign Affairs](#)
- [Ministry of the Environment](#)

At ministerial level, there is only the Committee for the Antarctic, Ministry of the Environment. Since 2008, polar research institutions have been associated in the National Centre for Polar Research. In the hierarchy of Czech research institutions, the National Centre serves as advisory board.

International partnerships

Since 2007, Czech researchers collaborated with 106 international institutions (72 % - universities and 28 % - research institutions).

The Czech Republic has collaborative agreements with IASC (2012), UArctic, FARO, the National Institute for Polar Research (NIPR - Japan), the Argentinian Antarctic programme, the Chilean Antarctic programme, SCAR, COMNAP (2013), and many others.



Denmark & Greenland



Zackenberg 2. Photo: Marie Frost Arndal

Polar research activities and institutions

Most of the polar research in Denmark and Greenland is carried out at the universities, among which Aarhus University and University of Copenhagen are the biggest contributors to polar research in Denmark and Greenland. In addition, the Geological Survey of Denmark (GEUS), the Greenland Institute of Natural Resources, and the Technical University of Denmark (DTU) make a significant contribution within e.g. the geological, natural, and technical disciplines.

Today there are no specific, targeted Danish research programmes for Arctic or polar research. This means that research in and about the Arctic must be retained within the existing research programmes and is subject to free competition, which is a guiding principle in the Danish system of research councils. Denmark has three major funding bodies to which proposals for Arctic science may be submitted for competitive funding: [The Independent Research Fund](#); the [Innovation Fund Denmark](#); and the [Danish National Research Foundation](#). In addition to the public grants and funding bodies, the funding landscape in Denmark is characterised by a significant philanthropic tradition when it comes to private funding of Arctic research and infrastructure. In Greenland, the [Greenland Research Council](#) works to promote and strengthen research rooted in and benefits Greenland. The

council finances research and handles the research advice for e.g. the Minister of Research, the Naalakkersuisut ([Greenland Government](#)) and international stakeholders. The [Greenland Research Council](#) engages with international partners to promote collaboration between Greenland and international research communities.

The dominating field of polar research in Denmark is within the natural sciences, i.e., earth and related environmental sciences, biological sciences and environmental engineering.

The largest proportion of the polar research activities in Denmark takes place in Greenland. Exceptions are institutes with a predominantly marine/sea-based research profile such as the Greenland Institute of Natural Resources (sea areas surrounding Greenland), the Faroe Marine Research Institute (The Faroe Islands and the Norwegian Sea), and the Danish Meteorological Institute (Arctic Ocean and Greenland Sea and sea areas surrounding Greenland).

Logistics, services and research infrastructures

The University of Copenhagen owns and manages two research stations: Arctic Station and Sermilik Research Station. Naalakkersuisut, the Government of Greenland, owns Villum Research Station and Zackenberg Research Station, which are managed by Aarhus University. The Greenland Institute of Natural Resources owns and runs Nuuk Basic Research facility. In addition to research stations, a large number of measuring and observation installations are located throughout the Arctic region, i.e. within the framework of Greenland Ecosystem Monitoring (GEM). Some of the research infrastructure in Greenland has been established through donations from private foundations. Generally, the Ministry of Higher Education and Science (UFM) does not provide funding for operating existing research infrastructures. Universities and research institutions are expected to ensure funding to operate their research infrastructures after these have been established. As an exception, UFM pays for the costs of operating the Zackenberg Research Station in North-East Greenland pursuant to an agreement entered in 2005 between Greenland and Denmark to transfer the research station from the Danish state to the former Greenland Home Rule.

Denmark and Greenland operate the following infrastructure in the polar regions.

Research stations in the Arctic:

ZACKENBERG RESEARCH STATION: located in the Northeast Greenland National Park, 74°28' N, 20°34' W, capacity: 24 beds in main facility and 10 in marine branch at nearby Daneborg, seasonal.

KOBBEFIORD FIELD STATION: Greenland Research Station near Nuuk, Greenland, 64°08'8"N, 51°23'6"E, capacity: 8 scientists, year-round.

FIELD STATION NIAQORNAT: Research station in Niaqornat near Uummannaq, Greenland, 70°47'20"N, 53°39'51"E, capacity: 4 scientists, year-round.

ARCTIC DTU RESEARCH STATION (DK): Sisimiut at the west coast of Greenland (66° 56' 22.1"N, 53° 40' 24.6"W), capacity: 20 scientists, year-round.

Arctic Station: Research & teaching field station facing the Disko Bay/Davis Strait, central West Greenland, 69°15'N, 53°34'W, capacity: 26 scientists. Operated by the University of Copenhagen.

VILLUM RESEARCH STATION: Station Nord (VRS) is located on Princess Ingeborgs Peninsula in North Greenland at the military Station Nord, 81°36' N, 16°40' W, capacity: 14 scientists, year-round.

SERMILIK SCIENTIFIC RESEARCH STATION located in South East Greenland, 65° 40' N and 38° 10' W on the shore of the Sermilik Fjord, capacity: 10 scientists, year - round. Operated by the University of Copenhagen.

Polar research vessels:

Polar research Vessel (DK) Denmark's new ocean- and Arctic-going multidisciplinary research vessel Dana V, available after 2025.

Other infrastructures:

[Isaaffik](#) is a user-driven web-portal that provides overview and supports collaboration on science and infrastructure in the Arctic regions.

Detailed information on the infrastructures can be found in [Polarindex](#).

National polar authorities and strategies

Denmark does not have a strategy on Arctic research and education. The Government of Greenland is currently working on a Research Strategy to describe Naalakkersuisut's long-term visions and goals for Greenland and the international research in the country. The establishment of a new research hub in Nuuk represents one of the initiatives contained in the action plan.

The three parts of the Kingdom of Denmark (Denmark, Greenland, and the Faroe Islands), have a common strategy for the Arctic running from 2011 - 2020 where the three governments have set out the most common political objectives for the Arctic. The three governments are currently working on a new strategy for the Arctic for the period 2021-2030. This strategy, on par with the former document - will have a significant focus on research and education and the role it plays in keeping the Arctic regions as peaceful and prosperous as possible.

Read the Kingdom's strategy for the Arctic 2011- 2020 [here](#).

The Danish governmental bodies listed below have different responsibilities regarding the Arctic. As a main principle, the Danish Constitution stipulates that the foreign and security policy for all parts of the Kingdom of Denmark is the responsibility of the Danish government. The responsibility for research and education policies belongs to the individual parts of the realm. In Denmark, the Danish Agency for Higher Education and Science (DAHES) and UFM have the responsibility for national polar research strategies. Both fund many grants that support Arctic research in the Kingdom of Denmark. The Danish Ministry of Climate, Energy and Utilities administers the DANCEA programme, which supports evidence-based knowledge building related to Arctic nature, biodiversity, environment, and climate issues.

In 2021, DAHES conveyed a [mapping survey of polar research](#) in the Kingdom of Denmark. It contains a range of indicators and statistics on the volume and profile of the polar research carried out by institutions in Denmark, Greenland and the Faroe Islands.

List of governmental authorities

Government of Denmark:

- **The Danish Agency for Higher Education and Science (DAHES)**, [Ministry of Science and Higher Education \(UFM\)](#)
- [Danish Ministry for Foreign Affairs \(UM\)](#)
- [Danish Environmental Protection Agency within the Ministry of Environment](#)
- [Danish Ministry of Climate, Energy and Utilities \(KFEM\)](#)
- **Danish Meteorological Institute (DMI)** is a governmental research organisation under the, [Danish Ministry for Climate, Energy and Utilities](#)
- **Geological Survey of Denmark and Greenland (GEUS)** is a governmental research organisation under the [Danish Ministry for Climate, Energy and Utilities](#)

Greenland Naalakkersuisut:

- [Ministry for Education, Culture, Sports and Church \(IKIN\)](#)
- [Ministry of Mineral Resources \(ASN\)](#)
- [Ministry for Fisheries and Hunting \(APN\)](#)
- [Ministry for Agriculture, Self-Sufficiency, Energy and Environment \(PAN\)](#)
- **Ministry of Industry and Trade (ISIIN)**
- **Ministry of Foreign Affairs**
- [Ministry of Health \(PN\)](#)
- **Greenland Institute of Natural Resources (GINR)** is a governmental research and advisory institute under the [Ministry for Agriculture, Self-sufficiency, Energy and Environment](#)
- **Asiaq Greenland Survey (Asiaq)** is a survey and research organisation under the [Ministry for Finance and Domestic Affairs](#)
- **Greenland National Museum and Archives (NKA)** is a museum and research organisation under the [Ministry of Education, Culture, Sports and Church](#)



Zackenberg 2. Photo: Marie Frost Arndal

International partnerships

Denmark does not have a specific strategy for international research collaboration. Danish polar researchers are actively cooperating with international partners in many scientific disciplines. Researchers from Aarhus University and the Danish Meteorological Institute are involved in MOSAiC and Denmark is hosting the FARO secretariat at the University of Copenhagen. Denmark is a member of the University of the Arctic which is financially supported through a grant from UFM, and of IASC.

The most recent and ambitious platform for Arctic international collaboration in Denmark and Greenland is the newly established [International Research Hub in Greenland](#) called the Arctic Hub. Arctic Hub is an element of Greenland and Denmark's efforts to create and facilitate increased international cooperation in the Arctic, as it is laid out in the Arctic Council's Agreement on Enhancing International Arctic Scientific Cooperation, and in the Government of Greenland Research Strategy.

Research is the core area of Arctic Hub, and the foundation of its work. Arctic Hub intends to support Arctic research by facilitating collaboration and dialogue between researchers and research groups. In particular, it will contribute to facilitating access and opportunities to conduct research in and around Greenland by always providing an overview and insight into the rules and requirements applicable to the research.



Estonia



Estonian researchers profiling the water salinity and temperature at Strofjord on East coast of Svalbard in the frame of Damocles project. Photo: Timo Palo

Polar research activities and institutions

Currently Estonia does not have any official National polar programme. The Estonian polar research community works mainly based on personal initiatives through participation in different international projects such as MOSAiC and EU projects such as DAMOCLES or other EU Framework Programme projects. Estonian polar researchers work mainly on ice-core sciences in the Arctic and Antarctica. In the Antarctic, limnology, meteorology and archaeology are also topics of research. Since the Estonian government has applied to become an observer to the AC in November 2020, the polar research community anticipates greater attention for polar research on a governmental level. AC Observer status requires evidence of existing polar expertise in the country to contribute to different working groups.

In the Arctic, the Estonian polar community usually has been working on Svalbard but also in the Siberian Arctic. In Antarctica, research has recently been performed on different Antarctic Bases such as at Aboa Station on King George Island, in Esperanza Station and on Seymour Island.

Logistics, services and research infrastructures

Estonia does not operate any infrastructures in the polar regions.

National polar authorities and strategies

Governmental authorities in Estonia are:

The Ministry of Foreign Affairs is responsible for Antarctic Treaty matters and the Arctic Council observer application process. Currently, the Ministry is developing the Estonian Arctic policy white paper aiming at completing the document towards the end of 2022.

The [Ministry of Education and Research](#) implements the national research policy, organises the financing and evaluation of the activities of R&D institutions and coordinates international research cooperation at the national level. The Ministry is also responsible for the planning, coordination, execution and monitoring of research policy related to the activities of universities and research institutes.

The [Ministry of Environment](#) is responsible for environmental and climate issues including matters related to the Protocol on Environmental Protection to the Antarctic Treaty (the Madrid Protocol).

National strategies of Estonia:

[The Estonian polar research programme 2014-2020](#) has been developed by a group of Estonian polar research experts under guidance of the Ministry of Education and Research in 2012. Since 2001 Estonia has the non-consultative status in the ATS. The Ministry of Foreign Affairs is responsible for all Estonian Antarctic Treaty matters and works in close relationship with the Estonian polar research community. In 2019 the Estonian government committed the Ministry of Foreign Affairs officially to apply for AC observer status.

The Estonian Ministry of Environment is currently developing the law of joining the Protocol on Environmental Protection to the Antarctic Treaty (the Madrid Protocol).

The Estonian Research Council organised the international evaluation of the programme which was accepted by the Ministry of Education and Research, but the programme never became active. However, the Estonian polar research community has built a good international reputation thanks to research performed in the Arctic and in Antarctica mainly through participation in different international projects including the EU Framework Programme projects.

International partnerships

In the Arctic, Estonia has been working closely with Russian institutes for a long time. Nowadays, Estonian polar researchers have developed close links to the Norwegian Polar Institute, with the AWI and the Finnish Meteorological Institute.

Research in Antarctica is performed in close cooperation with the Australian National Antarctic Research Expeditions, the Indian Scientific Expedition to Antarctica and the Chilean and Argentinian Antarctic Institutes. Limnological research was carried out during these expeditions in different Antarctic oases.

In cooperation with the Italian National Antarctic Research Programme a survey of the Wood Bay area in the Ross Sea was made in 2003 to investigate a perspective site for an Estonia summer station in Antarctica.



Enn Kaup profiling temperature and oxygen in Lake Algae in Bunger Hills (Antarctica), Photo: Enn Kaup



Faroe Islands



Moorings Jakup Sverri. Photo: Karin M. H. Larsen

Polar research activities and institutions

The Faroe Islands do not have targeted research programmes for Arctic or polar research. The Faroese Research Fund is a bottom-up scheme that may fund Arctic related projects in open competition, when relevant to, or in collaboration with, research institutions in the Faroes.

Faroese Arctic-relevant research is performed at the University of the Faroe Islands, and at both governmental and non-governmental institutions – in collaboration with the industry. The Faroe Islands are geographically ideally located for monitoring exchanges of key parameters between the North Atlantic Ocean and the Arctic, i.e., oceanic heat, salt, nutrients, carbon and passively drifting plankton. Huge biomasses of pelagic fish, whales and seabirds perform seasonal migrations between the Atlantic and Arctic and Subarctic regions. Most of this physical, biogeochemical and biological monitoring activity takes place at the Faroe Marine Research Institute (FAMRI). Work at the Environment Agency (EA) covers monitoring and research of environmental contaminants in air, water, soil, sediment, and biota compartments. Both FAMRI and EA participate in the Arctic Monitoring and Assessment Programme (AMAP). High parts of the Faroese mountains are included in the Arctic biome, and the Faroese Geological Survey carries out geoscientific research

in this domain, such as the influence of climatic variability and changes in the flora. The Department of Public and Occupational Health performs long-term monitoring of health issues of relevance for the people of the Faroe Islands and circumpolar countries. Focus is on health risks to children and adults caused by methylmercury, Polychlorinated Biphenyls (PCBs) and other contaminants in marine foods, including whales. Several Arctic-relevant social science studies take place at the university, aimed at self-governing areas, gender equality and cooperation networks. In addition to governmental funds, the mentioned institutions partly run by “soft money” from e.g., the Faroese Research Council, Fisheries Research Fund of the Faroe Islands, Nordic Council of Ministers, Danish Research fund, and through EU programmes.

Logistics, services and research infrastructures

Although the Faroes do not support own infrastructure in the high Arctic, it facilitates a variety of options for research at the “gateway” to and from the Arctic.

R/V Jákup Sverri – Port of registry: Tórshavn, Faroe Islands, capacity: 12 berths for scientists.

Passenger ferry M/S Norrøna – Port of registry: Tórshavn, Faroe Islands, supports science by making comprehensive oceanic sampling across the entire gap from Denmark to Iceland.

Detailed information on the infrastructures can be found in [PolarDEX](#).

National polar authorities and strategies

The Faroe Islands do not yet have a strategy with respect to polar research activities and operations, but are currently working on a national strategy. Its international and national initiatives agree with Arctic and European policies.

The three parts of the Kingdom of Denmark (Denmark, Greenland, and the Faroe Islands), have a common strategy for the Arctic running from 2011 – 2020 which is currently updated for the period 2021-2030.

The Faroe Islands have exclusive competences in research issues and contribute on equal terms in the joint Arctic strategy. Marine research in the Faroe Islands is partly supported by funds from the Danish Government, but the strategy in the area is Faroeese responsibility.

In January 2021, a new Act on Research, Development, and Innovation came into force, that integrates these three subjects which hitherto were separately administered. A new Council will be established and will become responsible for the coordination of all government grants, the support of applicants and the development of a new strategic plan for 2021. Another duty of the Council lies in strategic consultancy to the government and industry in questions of research, development, and innovation as well as international collaboration. No smart specialisation strategy has yet been developed at national or regional level, but initial discussions on the subject are presently taking place. Marine and Arctic research in the Faroe Islands is partly covered by Danish strategic programmes such as the Strategy for Research and Education concerning the Arctic from 2016, which is closely linked to the Kingdom of Denmark Strategy for the Arctic (2011-2020).

List of governmental authorities

- [Faroeese Ministry of Foreign Affairs and Culture \(UMMR\)](#)
- [Faroeese Ministry of Environment, Industry and Trade \(UVMR\)](#)
- [Faroeese Ministry of Health \(HMR\)](#)
- [Faroeese Ministry of Fisheries \(FISK\)](#)
- [Research Council Faroe Islands \(GRANSKING\)](#)
- [Faroe Marine Research Institute \(HAV\)](#)
- [Faroeese Geological Survey \(JARFFEINGI\)](#)
- [Faroeese National Museum \(SAVN\)](#)
- [Faroeese Environment Agency \(US\)](#)
- [Department of Occupational Medicine and Public Health \(HEALTH\)](#)
- [University of the Faroe Islands \(SETUR\)](#)
- [Research Park iNova \(iNOVA\)](#)

International partnerships

The Faroe Islands participate in the European Research and Innovation Programmes since 2010. Association to Horizon Europe will enhance the researcher’s and innovator’s opportunities to be part of large European networks.

The Faroe Islands are also part of the Nordic R&I cooperation via [NordForsk](#) and [Nordic Innovation](#). The Faroe Islands collaborate on Arctic scientific research and are part of the “Agreement on Enhancing [International Arctic Scientific Cooperation](#)”.

An important platform for the coordination of polar research in Denmark, Faroe Islands and Greenland is the FAF, where the University and the government of the Faroe Islands have one representative each. FAF operates as an informal platform, where Arctic research issues can be discussed and co-ordinated across disciplines and institutions. [The Forum](#) serves as a coordinating body for the key players and stakeholders within the polar research environments. It provides political perspectives and recommendations, but it does not have formal decision-making or advisory power.



Finland



Sodankylä Geophysical Observatory, Tähtelä raider. Photo: University of Oulu, SGO.

Polar research activities and institutions

Finland is an Arctic country and has national facilities in Finland for Arctic research. Polar research is conducted in several universities, universities of applied sciences and national research institutes with well-established national and international co-operation. Polar research funding in Finland falls into the overall competitive R&I agenda and there is no national polar programme nor a secretariat. Polar research and infrastructures are funded by several ministries operating national research institutions, and by the Ministry of Education and Culture which funds universities and universities of applied sciences. A large amount of polar research funding is received through competitive calls from the Academy of Finland and EU programmes.

Arctic research in Finland focuses on various fields related to climate change and globalisation, human health and wellbeing, sustainable resources extraction, Indigenous and Sámi cultures and resilience, Arctic governance and human rights, connectivity and digitalisation, Arctic atmospheric and space physics. Antarctic research strengthens cold climate expertise in Finland and in recent years' research has focused on geodesy and glaciology, soil, bedrock and marine geology and geophysics, bi-polar meteorological and space physics, marine and structural technology and oceanography and marine biology.

Finnish polar researchers are active in the Arctic and Antarctic. The Finnish polar community usually works in the following areas: Antarctic: Western Dronning Maud Land, other regions in the Antarctic, i.e. Argentinian Marambio Research station.

Arctic: Northern Finland (Oulu and Lapland), Russia (Siberian Arctic, particularly Yamal, Yakutsk), Nordic countries and Arctic Ocean.

Logistics, services and research infrastructures

The polar infrastructure of Finland includes several research stations in the Arctic and one in Antarctica, one research vessel operating mostly in the Baltic Sea but capable to operate in other seas. Finland also operates several icebreakers including two multipurpose icebreakers MSV Fennica and MSV Nordica, which can also be used for research. The Finnish Meteorological Institute (FMI) operates the Arctic Space Center (FMI-ARC) in Sodankylä, which hosts the National Satellite Data Centre (NSDC) and the Pallas Atmosphere-Ecosystem Supersite including the Pallas-Sodankylä Global Atmosphere Watch (GAW) station contributing to numerous European and global research Programmes.

Antarctic research is carried out at the Aboa Finnish station in Antarctica administrated by the Finnish Antarctic Research Programme (FINNARP) office. FINNARP operates in connection with the FMI under the Ministry of Transport and Communications. The Universities of Oulu, Helsinki and Turku operate several year-round research stations in Finnish Lapland. These include the Kevo Subarctic Research Institute operated by the University of Turku with on-going ecological monitoring since 1972. The Kilpisjärvi Biological Station and the Värriö Subarctic Research Station (SMEAR I atmospheric monitoring site) are operated by the University of Helsinki with ongoing ecological monitoring since 1946, in Kilpisjärvi and the Oulanka Research Station operated by the University of Oulu since 1966. The University of Oulu operates the Sodankylä Geophysical Observatory (SGO), which collaborates closely with FMI-ARC also by sharing the facilities and having one of the longest ongoing record of data collection since 1914. The Research stations have a long history of educating the students also beyond their own institutions, working in collaboration with other universities and research institutions and offering research sites to all researchers, both nationally and internationally.

All Arctic research stations and other sites are easily accessible and open for all researchers. The main contact points are the infrastructure secretariats and their logistics offices, possible permits etc. are managed by/with the station. In case of the Antarctic, FINNARP handles all logistics for Aboa.

Finland operates the following infrastructure in the polar regions.

Research stations in the Arctic (most relevant):

KEYO SUBARCTIC RESEARCH INSTITUTE: Utsjoki Kevo, Finland, 69°45'N, 27°01'E, capacity: 60 scientists in summer, 40 scientists in winter, year-round.

KILPISJÄRVYI BIOLOGICAL STATION: Kilpisjärvi, Enontekiö, Finland, 69°03'N; 20°50'E, capacity: 70 scientists, year-round.

VÄRRIÖ SUBARCTIC RESEARCH STATION: Salla, Värriö National Park, Finland, 67°44.89 °N, 029°36.64 °E, capacity: 10 scientists, year-round.

OULANKA RESEARCH STATION: Kuusamo, Oulanka National Park, Finland, 66°22'N, 29°19'E, capacity: 80 scientists, year-round.

SGO: SODANKYLÄ GEOPHYSICAL OBSERVATORY: Sodankylä, Finland 67° 22' N, 26° 38' E, capacity: NA, year-round, including **EISCAT**

FMI-ARC: Arctic Space Center: Sodankylä, Finland, 67.367 °N, 26.629 °E, capacity: 17 scientists, year-round.

Research station in the Antarctic:

ABOA: Finnish Antarctic research station, Basen Nunatak at Vestfjella mountains, Dronning Maud Land, 73°03'S, 13°25'W, capacity: 15-21 scientists, Antarctic summer base, year-round weather station.

Polar research vessels:

R/V Aranda: Port of registry: Helsinki, Finland, capacity: 27 berths for scientists.

MSV Fennica Multipurpose Icebreaker: Port of registry: Helsinki, Finland, capacity: 45-47 berths for scientists.

MSV Nordica Multipurpose Icebreaker: Port of registry: Helsinki, Finland, capacity: 45-47 berths for scientists.

Other infrastructure:

Pallas Atmosphere-Ecosystem Supersite: Pallas-Yllästunturi National Park, Kittilä Finland, 68° 02' N, 24° 11' E. Arctic long-term observatory. Year-round.

Detailed information on the infrastructures can be found in [Polarindex](#).

National polar authorities and strategies

On 17 June 2021 the Government of Finland made a resolution on a revised [Finland's Strategy for Arctic Policy](#). The Arctic Policy strategy defines Finland's key objectives in the Arctic region and outlines the main priorities for achieving them. The Arctic Advisory Board, appointed by the Prime Minister's Office is a key body in Arctic cooperation. The board brings together the main Finnish actors in Arctic affairs and it supports and strengthens Finland's Arctic policy and promotes the achievement of its objectives. The Finnish National Committee of Arctic and Antarctic Research works to advance Finnish polar research and it is also the national committee for SCAR and IASC. Almost all institutions conducting Arctic or Antarctic research in Finland are represented in the national committee. FINNARP operates in connection with the Finnish Meteorological Institute under the Ministry of Transport and Communications. FINNARP's main responsibilities are to perform the Finnish Antarctic research activities in accordance with Finland's Antarctic Strategy, to maintain Aboa Antarctic research station, to arrange field research and to supervise that both national and international law and obligations are fulfilled.

The following national authorities play a leading role in polar-related questions in Finland:

The responsible authority in the Arctic Council Senior Arctic Officials and Consultative Meetings of the Antarctic Treaty is the Ministry of Foreign Affairs (UM). The Ministry of Social Affairs and Health (STM) represents Finland in the Arctic Council Working Groups: The Sustainable Development Working Group (SDWG) and its subgroup Arctic Human Health Expert Group (AH-HEG), the Ministry of Environment (YM) represents Finland in the Arctic Contaminants Action Programme (ACAP), the Arctic Monitoring and Assessment Programme (AMAP), the Conservation of Flora and Fauna (CAFF), and the Protection of Arctic Marine Environment (PAME). The YM represents Finland in the Barents Euro-Arctic Council, which promotes stability and sustainable development in the Barents region. The members of the Council are the Nordic countries, Russia and the European Commission. Finland holds the Council Chairmanship in 2021–2023 and chairs the Working Group on Environment (WGE) in 2020–2023. The WGE is one of the most active working groups in Barents cooperation and has close contacts with the working groups of the Arctic Council. The Ministry of Education and Culture (MinEdu) was responsible of negotiations on “The Agreement on Enhancing International Arctic Scientific Cooperation” (Finland is a signatory) and it is the responsible authority following the process. MinEdu is also responsible for Finland’s participation to the Arctic Science Ministerial meetings, and it was a co-organiser of ASM2 in Berlin in 2018.

List of governmental authorities

- [Ministry of Foreign Affairs of Finland \(UM\)](#)
- [Prime Minister’s Office \(VNK\)](#)
- [Ministry of Education and Culture \(MinEdu\)](#)
- [Ministry of Environment \(YM\)](#)
- [Ministry of Transport and Communication \(LVM\)](#)
- [Ministry of Social Affairs and Health \(STM\)](#)
- [Finnish Border Guard \(RAJA\)](#)
- [The Arctic Advisory Board](#)
- [The Finnish National Committee of Arctic and Antarctic Research](#)

National strategies

- Finland’s strategy for Arctic Policy (2013, 2016, 2021), [download](#)
- Finland’s Antarctic research strategy (2008, 2014), [download](#)



Pallas Atmosphere-Ecosystem Supersite, Pallas Global Atmosphere Watch station, Finnish Meteorological Institute. Photo: Kaisa-Riikka Mustonen

International partnerships

Finland is one of eight permanent members of the Arctic Council and one of 29 consultative parties making decisions concerning Antarctica in the ATCM. Finnish polar research is internationally networked, which is also shown in its participation in all relevant polar networks and its many fold collaborations in research and research-based education. Finland has delegates to SCAR, IASC and its working groups, to IASSA and the committees of WMO, the Arctic Council Working Groups and in organisations focusing on the Barents Arctic region. Finnish researchers take actively part and lead research and monitoring projects accredited by these organisations, such as in the Arctic Council’s working groups.

Finnish polar researchers are cooperating with most of the countries performing polar research and are also hosting visiting researchers at Finnish national polar research infrastructures. International collaboration is included, required, and expected in research funding instruments and activities conducted at each Finnish University. International partners are welcome to do research at Finnish polar research infrastructures and can access them via [INTERACT](#) - The International Network of Research and Monitoring in the Arctic- or by contacting the secretariat of the infrastructure. International partners cannot apply for funding from national Finnish funding schemes, but they can be partners in the projects and thus be funded for a research visit. Infrastructures welcome also purely international research groups working with their own research funding.



France



Iles Kerguelen, Lac Athena, 2019: deploying instrumentation near lake Athena as part of PALAS project. Lake sediment archives are used to reconstruct the history and ecological impact of rabbit invasion since their introduction on the island in 1874. Photo: Art Verhage / Institut Polaire Français

Polar research activities and institutions

A majority of French polar scientists are affiliated to the National Centre for Scientific Research (CNRS), mainly through four of its institutes. Universities and other national institutions like Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER), Commissariat à l'Energie Atomique et aux Energies Alternatives (CEA), Muséum national d'histoire naturelle (MNHN) or Météo-France, also perform polar science. Polar research in France covers a large variety of domains including climate sciences, environmental (including pollution, permafrost etc.) research, investigating ecosystems and biodiversity, social and human sciences, development of technologies (ice coring, ice profilers, sea ice buoys, under-ice drifting floats etc.) and observations (including maintenance of long-term observatories in all disciplines).

The French polar community works on both poles, as well as in the sub-polar North Atlantic and sub-Antarctic Ocean territories. In the Arctic, French research activities take place in both the eastern and western Arctic Ocean, Fram Strait, Baffin Bay, Svalbard, Siberia, northern Canada and Greenland.

In Antarctica, French scientists work in Adélie Land, both on land and offshore, over the East Antarctic plateau, with Dome C and Concordia station as a major hub, in the Weddell Sea, in

the southern Indian Ocean (around French sub-Antarctic territories) and other regions of the Southern Ocean. French scientists are also involved in studies addressing large scale processes in the Southern Ocean and Antarctic Ice Sheet and their link to the global climate.

Logistics, services and research infrastructures

Polar infrastructures in France are operated and maintained by the French Polar Institute Paul Emile Victor (IPEV), as the national agency providing resources and expertise for the implementation of polar science and coordination of scientific expeditions in the polar regions, often in partnership with other countries. IPEV handles the logistics necessary for operating France's research stations. In East Antarctica the Dumont d'Urville Station (Adélie Land) offers overwintering capacities for a staff of 25-35 persons, including technical and scientific personnel. In the three main French islands of the TAAF sub-Antarctic territories, IPEV operates several research laboratories and more than 40 refuges.

IPEV runs the Jean-Corbel station in the Arctic, which is located 5 km southeast of Ny-Ålesund, northwest Spitsbergen (Svalbard). It offers clean conditions isolated from anthropogenic pollution.

Two other stations are operated by IPEV in partnership with other countries: The Concordia Station at Dome C, Antarctica, one of the French TGIIR (Very Large Research Infrastructure) under MESRI certification, operated jointly with Italy, and the AWIPEV station in Ny-Ålesund, operated jointly with Germany.

IPEV also organises the polar activity of the patrol-supply ice-breaker, L'Astrolabe. The vessel has two types of missions: (i) to support IPEV in Antarctic logistics (120 days in summer) between Tasmania and Dumont d'Urville station (and resupply of Macquarie Island for the benefit of the Australian Antarctic Division), (ii) defence missions (rest of the year) in the southern Indian Ocean. Transits between Tasmania and Dumont d'Urville are also used to perform routine ocean surface measurements along the ship track.

Non-polar-specific institutions also support polar science through their infrastructures. The research vessel RV Marion-Dufresne, as part of the French Oceanographic Fleet (FOF), is operated by IFREMER in sub-Antarctic waters. This vessel is operated together with the Terres Australes et Antarctiques Françaises (TAAF) and IPEV for logistic operations supporting the French Sub-Antarctic territories: Crozet, Kerguelen, Amsterdam/Saint-Paul. The 'Service des Avions Français Instrumentés pour la Recherche en Environnement' (SAFIRE), operated by CNRS jointly with CNES (Centre National d'Études Spatiales) and Météo-France, provides aircrafts to the benefit of experimental campaigns, some of them in the Arctic.

France operates the following infrastructure in the polar regions.

Research stations in the Arctic:

AWIPEV: French - German Arctic research base on Svalbard, Kongsfjorden, Ny-Ålesund, 78°55'24"N, 11°55'15"E, capacity: 40 scientists, year-round.

JEAN CORBEL STATION: 5 km southeast of Ny-Ålesund, Svalbard, 78°54'12" N, 12°07'09" E, capacity: 8 persons, seasonal.

Research stations in the Antarctic:

DUMONT D'URVILLE RESEARCH STATION: Adélie Land, East Antarctica, coastal station, 66°40'S, 140°01'E, capacity: 25-35 persons in winter, up to 120 persons in summer, year-round.

CONCORDIA: is a French-Italian research station, only permanent European station in the interior of Antarctica, 75°06'S - 123°21'E, capacity: 13 to 15 persons in winter, 50 to 70 persons in summer, year-round.

GROUND TRAVERSES are established between the Antarctic coast and Concordia station for resupply of the station together with the Italian ENEA operator (3 traverses each summer). The French-Italian coastal station Robert Guillard, located 5 km from Dumont d'Urville, serves as a hub to prepare the logistic convoys and scientific traverses deployed on the East Antarctic Plateau.



Iles Kerguelen, Lac Athena, 2019: deploying instrumentation near lake Athena as part of PALAS project. Lake sediment archives are used to reconstruct the history and ecological impact of rabbit invasion since their introduction on the island in 1874. Photo: Art Verhage - Institut Polaire Français

More than 40 REFUGEES, and several RESEARCH LABORATORIES in the three main French islands in the TAAF sub-Antarctic territories, <https://institut-polaire.fr/subantarctic-islands/logistics-and-implementation-of-science/>

Polar research vessels:

L'Astrolabe: patrol-supply icebreaker (IB5 Polar Code) operated by the French Navy, port of registry: Réunion, capacity: 60 berths.

Marion-Dufresne: port of registry: Le Havre, capacity: 114 passengers (46 crew members).

Other infrastructure:

Research aircrafts: Falcon 20, Piper-Aztec et ATR42 shared by CNRS, Météo-France and CNES within the [SAFIRE](#) infrastructure.

Polar Pod: drifting platform to be launched in 2023 to operate circumpolar drifts in the Southern Ocean around Antarctica, capacity: 7 persons (3 seamen and 4 scientists).

Detailed information on the infrastructures can be found in [Polarindex](#).

National polar authorities and strategies

The [General Direction for Research and Innovation](#) (DGRI) of the [Ministry of Higher Education, Research and Innovation](#) (MESRI) oversees managing the development of the National Research Strategy in tight collaboration with the relevant ministries and stakeholders. The DGRI is assisted by five National Research Alliances, one being dedicated to Environment and Food (AllEnvi), within which a Polar Task Force is currently being created. The [Ministry of Europe and International Affairs](#) (MEAE) represents France at the Arctic Council and it promotes and supports the participation of French researchers and experts in international Arctic fora, including the Working Groups of the Arctic Council. Together with the thematic ambassador for Polar Regions and Maritime Affairs, MEAE supports the engagement of French scientists in bilateral and international cooperation programmes. The Ministry of Overseas (MOM) is the umbrella ministry for the Terres Australes et Antarctiques Françaises (TAAF), the administration representing the French state and being responsible for administering the five French Sub-Antarctic archipelagos and Antarctic territories, including the Adelie Land, East Antarctica, under the Antarctic Treaty. Among other missions, TAAF is the designated authority for implementing the provisions of the Madrid Protocol and, as such, authorises and monitors scientific and tourist activities under its remit. MESRI, MEAE, the Ministry of Ecological Transition (MTES) and MOM are all members of the board of directors of the French polar institute IPEV, the national operator in charge of implementing French research in polar and sub-polar regions.

There is no national polar strategy document covering the two poles. The present polar strategy relies on a variety of documents, including science plans and strategic documents which are related to specific sites, infrastructures or initiatives. A polar strategy covering the two poles is currently being developed.

List of governmental authorities

- [Ministry of Higher Education, Research and Innovation](#) (MESRI)
- [Ministry of Europe and International Affairs](#) (MEAE)
- [Ministry of Ecological Transition](#) (MTES)
- [Ministry of Overseas](#) (MOM)

National strategies:

- Science Plan of the French Arctic Initiative 2015-2020 under the responsibility of CNRS
- [National Roadmap for the Arctic, June 2016](#), under the MEAE responsibility
- Concordia Station Roadmap

International partnerships

France is a member of the ATS and an observer at the Arctic Council. Many French polar scientists act as delegates and experts in the working groups and expert groups of SCAR (incl. serving as a Vice President for Science in 2018-2021) and IASC. CNRS and IPEV are members of the EPB, representing France. France is a member of SAON.

French polar research is primarily implemented in a European and international context. Cooperation exists with the main countries which are involved in polar research, either through shared operation of infrastructures, partnership in European and international consortia, bilateral agreements or research networks including universities.

IPEV maintains close ties with counterpart institutions in partner nations, with the aim of promoting international scientific cooperation and research in the polar regions. In Svalbard, AWI and IPEV jointly provide the manpower support for AWIPEV, Svalbard, and the financial support for selected projects. The operations there are conducted in close collaboration with Norway. The Concordia Station relies on an agreement signed at the level of Research Ministers of Italy and France and is run through a steering committee involving 3 Italian institutions and 3 French institutions. A bilateral scientific roadmap has been released in 2021. IPEV has a cooperative agreement with the Australian Antarctic Division (AAD) for exchange of services in Antarctic operations and a cooperative agreement has been signed with the Tasmanian government for support through the local industry.

France has developed a special relationship with Canadian research actors through the International Research Laboratory Takuvik which is a joint research unit with University Laval in Quebec gathering French and Canadian scientists with a strong focus on Arctic issues. CNRS and the Centre d'Études Nordiques (CEN, Quebec), in collaboration with local partners, jointly created in 2012 the International Human-Environment Observatory (OHMI) Nunavik providing long-term support to co-constructed projects on socio-ecological issues relating to regional development. The France-Canada cooperation also includes exchange of ship time between the French Oceanographic Fleet and Amundsen Science, the CCGS Amundsen operator.



Germany



Operation of research drones during the Antarctic winter experiment "AWECS" in the Weddell Sea in July 2013. Photo: Mario Hoppmann / Alfred-Wegener-Institute

Polar research activities and institutions

German polar research is carried out by a network of research institutions, universities, governmental and non-governmental institutions distributed across whole Germany. The largest polar research institute in Germany is the Alfred-Wegener-Institut, Helmholtz Zentrum fuer Polar und Meeresforschung (AWI). AWI is the national manager and implementation agency of the National German Arctic and Antarctic Programme. It provides access to most of the German research and information infrastructure for all German polar researchers and manages and coordinates all German polar research activities. The German polar research is funded by the [Federal Ministry of Science and Education](#) (BMBF) and by the [Federal Ministry for Economic Affairs and Energy](#) (BMWi), project funding is mainly derived from different federal ministries and the [German Research Foundation](#) (DFG) as well as through EU programmes.

The main topic of German polar research is to better understand the ongoing changes in the polar regions and their underlying processes to evaluate their local, regional and global consequences. An essential aspect is the improvement of the polar components of climate and earth system models to arrive at more precise projections up to the end of the 21st century and beyond.

German polar researchers are active in the Arctic and Antarctic. The German polar community usually works in the following areas:

Antarctica: Dronning Maud Land, Ekström Ice Shelf, Weddell Sea and Atlantic sector of the Southern Ocean, Antarctic Peninsula, Terra Nova Bay and Dome C in east Antarctica.

Arctic: Svalbard, Lena Delta and Siberian Arctic, Arctic Ocean and Fram Strait, East Greenland, and Herschel Island, Canada.

Logistics, services and research infrastructures

The polar infrastructure of Germany includes several research vessels, aircrafts, and stations in the Arctic and Antarctic. Germany operates the research icebreaker and supply vessel PRV Polarstern and the ice-strengthened research vessel RV Maria S. Merian, two polar research airplanes, and permanent and seasonal research stations in Antarctica and the Arctic. The research stations on the Northern Hemisphere are operated in close international cooperation. In Ny-Ålesund on Spitsbergen (Svalbard), AWI maintains the permanently staffed station AWIPEV jointly together with the French Polar Institute Paul Emile Victor (IPEV). The Siberian research station Samoylov in the Lena Delta is jointly operated with Russia. Germany's researchers operate



Permafrost research on Samoylov. Photo: Paolo Verzone

various observatories that gather data over longer timeframes. One example is the FRAM observatory in the Fram Strait, which targets a modern vision of integrated underwater infrastructure. FRAM enables truly year-round observations from surface to depth in the remote and harsh Arctic Ocean.

German polar infrastructure is maintained mostly by AWI, which has the mandate to provide all scientists with logistical support to work in the polar regions. The AWI makes German polar infrastructure available for the national and international research communities and provides support to all participants planning a polar expedition. AWI coordinates preparation and performance of expeditions, develops and realises technical projects for polar expeditions and cares medically for health and safety of the expedition participants, of whom more than 800 are intensively prepared and functionally equipped every year. Guidelines and forms to access Neumayer Station III, Kohnen Station, AWIPEV, Samoylov, Polar 5 & 6 and PRV Polarstern (including FRAM) can be found [here](#).

Proposals for ship-time on PRV Polarstern may only be submitted to [Portal deutsche Forschungsschiffe](#).

Polar aircrafts are open for internal & external applicants, project applications need to be sent to the scientific co-ordinator.

Guidelines and forms to access Neumayer Station III, Kohnen Station, AWIPEV, Samoylov, Polar 5 & 6 and RV Polarstern (including FRAM) are available [here](#).

The German Research Fleet Coordination Centre at the University of Hamburg is responsible for the scientific, technical, logistic and financial planning, execution and support of the operations of RV Maria S. Merian. It works in partnership with the contract shipowners Briese Schifffahrts GmbH & Co. KG. It is open to all applicants ([application](#)).

Germany operates the following infrastructure in the polar regions.

Research stations in the Arctic:

AWIPEV: French – German Arctic Research Base at Svalbard, Kongsfjorden, Ny-Ålesund, 78°55'24"N, 11°55'15"E, capacity: 40 scientists, year-round.

EAST GRIP: Greenland, capacity: 9-30 scientists, summer season.

INUVIK SATELLITE RECEIVING STATION: Inuvik, Canada.

ISLAND SAMOYLOV: Samoylov Island in the central Lena Delta, 72°22'N, 126°29'E, capacity: 25 scientists, year-round.

Research stations in the Antarctic:

GARS O'HIGGINS: Antarctic Peninsula in the direct vicinity of the Chilean Antarctic Base General Bernardo O'Higgins, 63° 19' 0" S, 57° 54' 0" W, capacity: 8 scientists, 10 staff, year-round.

GONDWANA: Cape Möbius at Gerlache Inlet of Terra Nova Bay in the Ross Sea, 74°38' S und 164°13' E, capacity: 20-30 scientists, Antarctic summer base.

KOHNEN STATION: Dronning Maud Land/Antarctica, 75°00'S, 00°04'O, capacity: 29 scientists, Antarctic summer base.

NEUMAYER – STATION III: Dronning Maud Land (DML), 70°38'42"S 8°15'51"W, capacity: 40 scientists, year-round.

Polar research vessels:

[PRV Polarstern](#): Port of registry: Bremerhaven, Germany, capacity: 55 berths for scientists.

[RV Maria S. Merian](#): Port of registry: Rostock, Germany, capacity: 23 berths for scientists.

[S/Y Eugen Seibold](#): Capacity: 6 berths for scientists.

Other infrastructure:

Research aircrafts: [Polar 5 and Polar 6](#). Capacity: 2 pilots, 1 mechanic, 9-18 researchers.

[FRAM Frontiers in Arctic Marine Monitoring](#): Arctic long-term observatory. Year-round.

Detailed information on the infrastructures can be found in [Polarindex](#).

National polar authorities and strategies

On 21 August 2019 the Federal Government published new [Guidelines for the German Arctic Policy](#). By adopting these Arctic policy guidelines, the Federal Government wishes to underscore the central importance of a comprehensive German policy on the Arctic and emphasises the joint responsibility of all actors for this sensitive region with a view to shaping it sustainably for the future.

Polar research in Germany is defined by the "[Research Agenda Polar Regions in Transition](#)" which defines the funding of polar research by the BMBF. DFG has published a polar research programme in 2017 called "[Polarforschungsagenda 2030](#)" which highlights the most important research questions in both polar regions. Both national research strategies have been developed by a group of scientific experts under the guidance of the respective ministry/organisation.

The following national authorities play a leading role in polar-related questions in Germany:

The Federal Foreign Office (AA) represents Germany in the Arctic Council and in ATS. The regulatory authority for all German operations in the Antarctic is the Federal Environment Agency (UBA). The AA is coordinating the German activities with the ATS and is supported by the UBA, different ministries and research organisations. In addition, the UBA examines and approves all German activities in the Antarctic. As the leading German polar research institute, AWI has an Office for Environmental Policy and is the contact to national environmental authorities (UBA and the Federal Agency for Nature Conservation (BfN)), including the coordination and submission of applications for scientific research in the Antarctic Treaty area.

The BMBF governs polar research in Germany, funds several institutes, and represents Germany in the Arctic Science Ministerial. The BMWi supports and governs polar research via the institutional funding of the Federal Institute for Geosciences and Natural Resources (BGR).

The authorities responsible for the Arctic and Antarctic work independently from each other and are affiliated to different units in their ministries. The coordination of the German Arctic activities between different ministries is supported via regular meetings and exchange by the [German Arctic Office](#).

List of governmental authorities

- [Federal Foreign Office](#) (AA)
- [Federal Ministry of Science and Education](#) (BMBF)
- [Federal Ministry for Economic Affairs and Energy](#) (BMWi)
- [Federal Environment Agency](#) (UBA)

National strategies:

- [Research Agenda Polar Regions in Transition](#) (2021)
- [Germany's Arctic Policy Guidelines](#) (2018)
- [Polarforschungsagenda 2030](#) (2017)

International partnerships

Germany is a member of the ATCM an observer to the AC. German polar research is internationally networked, which is also reflected in the numerous German delegates to SCAR, to IASC as well as to committees of WMO with a polar focus. German polar scientists are cooperating with most if not all countries performing polar research. In addition, Germany operates infrastructures and facilities with international partners. In Ny-Ålesund on Spitsbergen (Svalbard), AWI maintains the permanently staffed station AWIPEV jointly together with the IPEV. AWI cooperates with the Arctic and Antarctic Research Institute (AARI) and the Melnikov Permafrost Institute (Yakutsk) to operate the research station Samoylov in the Russian Arctic. AARI, AWI and GEOMAR jointly operate the [OSL](#) in St. Petersburg which is funded by the German BMBF and the Ministry of Science and Higher Education of the Russian Federation. The OSL is an analytical laboratory and provides a basis for Russian-German research projects. It offers logistical support for scientific projects, expeditions and working meetings. The universities of Hamburg and St Petersburg jointly provide a German-Russian Master Programme for Polar- and Marine Science called [POMOR](#).



Iceland



Fieldwork Langjökull 2011. Photo: Allen Pope

Polar research activities and institutions

A number of research institutes, universities, companies and networks conduct and coordinate Arctic research in Iceland. Iceland places great emphasis on international collaboration in science, innovation and education, and increased mobility of researchers. Iceland's focus on polar research activities is on the Arctic region, as Iceland is geographically a part of the Arctic area. Iceland does not have research infrastructure in Antarctica. Iceland supports a strengthened research cooperation with other nations in the Arctic region, protection of flora and fauna, observation capabilities and pollution prevention, as well as the social conditions and well-being of Arctic Indigenous peoples and other Arctic inhabitants. All the 7 Icelandic universities engage in Arctic research in some manner (occasional research projects and entire programmes).

Icelandic scientists are actively engaged in various disciplines of Arctic research including climate change, glacier research, hydrology, marine science, plant and animal ecology, international politics and law, security, history and culture, anthropology, resource governance, economic and social development, gender equality, health care issues and more. Arctic affairs have for the last decade been moving up on the political agenda in Iceland.

Although there is considerable activity in Arctic research in Iceland, the Arctic research environment is fragmented. Only one research institute is wholly devoted to the Arctic in Iceland, the Stefansson Arctic Institute (SAI), which focusses primarily on interdisciplinary social and socioecological aspects of Arctic systems.

The [Stefansson Arctic Institute](#) (SAI) was established in 1998 and is located at Borgir in Akureyri. The institute is an independent governmental research institute within the Icelandic Ministry for the Environment and Natural Resources. The SAI takes an inter-disciplinary approach to understanding human environment relations in the Circumpolar Arctic. Particular emphasis is placed on research and scientific assessments on economic systems and human development, marine-resource governance, political ecology of agricultural systems, and the impacts of and adaptation to past and present climate change. SAI is a founding member of the University of the Arctic and active in its thematic groups. Staff members also belong to IASC Working Groups. SAI has led and participated in several international research and scientific assessment projects, including Arctic Human Development Reports I and II.

The main logistical operators for Arctic research in Iceland in their respective fields are the Icelandic Meteorological Office (IMO), the Marine and Freshwater Research Institute (MFRI) and the Icelandic Coast Guard (ICG). Iceland is a party of the Agreement on Enhancing International Arctic Scientific Cooperation, with contact points at the Icelandic Ministry for Education, Science and Culture, as well as Rannís. For authorisation of Marine Scientific Research, the initial point of contact remains the Icelandic Ministry for Foreign Affairs.

Logistics, services and research infrastructures

At least six field stations located in Iceland perform Arctic research. Iceland operates three ice-strengthened multi-purpose ocean vessels suitable for a wide range of marine biological and oceanographic research as well as marine geophysical surveying. These vessels are capable of supporting a range of activities in the northern oceans. Iceland operates two airplanes that are partly used for marine and glacier monitoring.

Iceland operates the following infrastructure in the polar regions.

Research stations in the Arctic:

THE CHINA-ICELAND ARCTIC RESEARCH OBSERVATORY: Arctic Observatory at Kárhóll, Iceland: 65° 42.431'N, 17° 22.017'W, capacity 10 persons.

GRIMSFJALL FIELD STATION: located in the centre of the 7700 km² Vatnajökull glacier, 64°25'N 17°20'W.

LITLA - SKARÐ: a bio-monitoring observatory located in the lowlands of western Iceland: 64°43'36" N, 21°37'48" W, capacity: 3 scientists, 1 staff, year-round

RIF FIELD STATION: a self-governing institution established in 2014 to promote, increase and enhance ecological research and monitoring in Melrakkaslétta peninsula in Northeast Iceland, capacity 6 - 8 persons

SKÁLANES NATURE AND HERITAGE CENTRE: East coast of Iceland at the bay of Seyðisfjörður: 65°N 13°W, capacity: 20 people with two laboratories (wet and a dry.)

THE SUÐURNES SCIENCE AND LEARNING CENTRE: Sandgerði harbor on the western coast of the Reykjanes Peninsula: 64°02' N, 22°42' W.

Polar research vessels:

RV Árni Friðriksson: Port of registry: Reykjavik, Iceland, capacity: 17 berths for scientists.

Bjarni Sæmundsson: Port of registry: Reykjavik, Iceland, capacity: 13 scientists.

ICGV Þór is a multi-purpose vessel of the Icelandic Coast Guard well equipped for a wide range of duties including hydrographic surveying and serves as a platform for a variety of research activities.

Other infrastructure:

TF-FMS. A Beechcraft 200 aircraft operated by the Icelandic Aviation Services, equipped with surface profiling C-band radar.

TF-SIF. A Dash 8 aircraft of the Icelandic Coast Guard equipped with a wide range of surveillance sensors and a SAR radar, used for pack ice mapping, marine monitoring and glacier surface monitoring

Iceland operates a high-Performance Computing for Meteorological Research. It is a long-term joint venture in meteorological cooperation between the Icelandic and Danish Meteorological Institutes. This collaboration will be expanded in 2023 when the Netherlands and Ireland join the cooperation under the name of United Weather Centre - West.

Detailed information on the infrastructures can be found in [Polardex](#).

National polar authorities and strategies

The Ministry of Education, Science and Culture, the Ministry for Foreign Affairs and the Ministry for the Environment, Energy and Climate have roles in relation to Arctic research and coordination. Iceland's first official Arctic policy was anchored in a parliamentary resolution adopted unanimously by the Parliament of Iceland (Alþingi) in the spring of 2011. An updated [Arctic policy of Iceland](#) was approved as a parliamentary resolution at Alþingi on the 19th of May 2021.

The Ministry for Foreign Affairs has initiated several publicly available reports on Arctic Affairs dealing with environmental protection, transportation, people, culture, science and monitoring and international cooperation.



*Riometer field, China Iceland Arctic Science Observatory Karhöll 2021.
Photo: Halldór Jóhannsson*

The Ministry for the Environment, Energy and Climate supervises various affairs pertaining to Arctic research related aspects, including climate change, weather forecasting, and environmental monitoring and surveillance. The Minister for the Environment, Energy and Climate appoints a Cooperation Committee on Arctic Affairs for a four-year period with representatives from eleven public institutes, agencies, and universities. The role of the committee is to strengthen cooperation between the parties concerned through monitoring and research in the Arctic.

The Ministry of Education, Science and Culture: co-hosted the 3rd Arctic Science Ministerial with MEXT in Tokyo, Japan in May 2021 and is national contact point for the Arctic Science Agreement (with Rannís).

[The Icelandic Centre for Research \(Rannís\)](#) supports research, innovation, education and culture in Iceland. Rannís administers the national competitive funds in the fields of research, innovation, education and culture, as well as strategic national research programmes. Rannís administers funds for Arctic Research and Studies, among many other programmes, which is jointly funded by the Ministries for Foreign Affairs of Iceland and Norway.

[The Icelandic Arctic Cooperation Network \(IACN\)](#) was founded in 2013 and is a result of cooperation between the Ministry for Foreign Affairs, the Ministry of Education, Science and Culture, the Ministry for the Environment, Energy and Climate, Eything,

and other bodies. It facilitates cooperation amongst the Icelandic public and private organisations, institutions, businesses and bodies involved in the region, among other things in research, education, innovation and monitoring, or other activity relevant to the Arctic region.

There is no strategic Arctic research policy in Iceland and an Arctic research programme, such as can be found in neighbouring countries, has not yet been developed but has been proposed in the updated Arctic Policy of Iceland (adopted by Althingi in May 2021).

International partnerships

Iceland participates in the [IASC](#) Council and its Working Groups (it is also the host of the secretariat of IASC and [ASSW2020](#)) and in the UArctic network (all universities in Iceland are involved in UArctic). Iceland, as member of the Arctic Council, has participated in the agreement on Enhancing International Arctic Scientific Cooperation. Iceland co-hosted ASM3 with Japan in Tokyo in 2021. The Arctic Circle Assemblies, the largest international gathering on the Arctic, have been organised in Iceland since 2013. Iceland became a (non-consultative) party to the Antarctic Treaty on 13th October 2015.



Italy



Dirigibile Italia Station activity at NYA (reaching the measurement site)

Polar research activities and institutions

Italian research activities in the polar regions are mainly supported by two dedicated programmes, the National Research Programme in Antarctica (PNRA, since 1985) and the [Arctic Research Programme](#) (PRA, since 2018), both funded by the Research Ministry (MUR). Additional resources are available via competitive funding programmes, in particular Projects of Relevant National Interest (PRIN). Italy's National Research Council (CNR) supports Italy's Arctic research since the early 1990s, the Arctic research station since 1997, and provides dedicated resources to the Italian Polar Institute (CNR-ISP).

Italian polar research is mainly dedicated to research on climate change. Scientific priorities in Antarctica cover a very large spectrum such as dynamics of the atmosphere and climate processes, dynamics of the polar ice cap, solid earth dynamics, polar ocean dynamics, Sun-Earth relationships and space-weather, the universe above Antarctica, evolution, adaptation and biodiversity, humankind in extreme environments, environmental contamination, paleoclimate, environmental issues and risks, as well as technology, innovation and experimentation.

In the Arctic, the main research topics focus on (i) the "polar amplification", (ii) the vertical structure of the atmosphere and the water column of the polar seas and coastal areas, as well

as changes in the hydrological cycle, (iii) changes in marine and terrestrial ecosystems, (iv) paleoclimatic reconstructions from marine environment and ice core data.

Italian polar researchers are active in the Arctic and Antarctic, and usually work in the following areas:

- Antarctica: Terra Nova Bay, Victoria Land area extending from McMurdo Sound (dry Valley) until Cape Adare and Atlantic Coast, Dome C and East Antarctic Plateau, Ross Sea and Antarctic Peninsula.
- Arctic: Svalbard, Greenland, Canada, Fram Strait and Northern Atlantic and coasts of Siberia.

Logistics, services and research infrastructures

The Italian polar community counts on infrastructures and research stations both in Antarctica and in the Arctic. These stations and integrated observation platforms provide the possibility to carry out long-term monitoring, which complements and adds value to research projects. The Mario Zucchelli station located along the coast of the Ross Sea, Antarctica is open from mid-October to mid-February every year, supporting all the research activities planned by PNRA. This is the largest Italian infrastructure in the polar regions. Concordia Station is located



The new aquarium facility at Mario Zucchelli Station. Photo: PNRA

on the East Antarctic Plateau 3233 m above sea level and over 1000 km from the coast. It is a permanent station jointly managed by PNRA and IPEV (France) as part of their respective polar programmes.

In the Arctic, the main infrastructure supporting Italian researchers is Dirigibile Italia (DI) station located in the village of Ny-Ålesund in the Svalbard archipelago. Through participation in the INTERACT and SIOS access programmes, space and facilities are available to researchers from programmes without access to the Arctic. It is also included in FARO. Part of the DI station are also the two large observing platforms like the Climate Change Tower (CCT) and Gruvebadet aerosol lab.

Together with land stations Italian researchers can make use of the RV Laura Bassi to conduct research activities both in the Antarctic and the Arctic.

Italian polar infrastructures in Antarctica are maintained by PNRA and the Agency for Energy Efficiency (ENEA), which oversee logistic operations, while CNR has the responsibility to plan and coordinate the scientific activities. Usually among 200-250 scientists and logistic staff are engaged in Antarctic campaigns every year. PNRA makes Italian infrastructure in Antarctica available for the national and international research communities and provides support to all participants. A very close relationship is maintained with the "neighbours" in Antarctica: US, New Zealand and South-Korea.

In the Arctic, the DI station is maintained by CNR (through ISP), and access is offered for the national and international community. Soon, support could be provided also by PRA. RV Laura Bassi is owned by the National Institute of Oceanography and Applied Geophysics (OGS) and receives funds to conduct research activities from PNRA and the Italian PRA. It serves the polar scientific community thanks to an agreement between OGS, CNR and ENEA.

Italy operates the following infrastructure in the polar regions.

Research stations in the Arctic:

[DIRIGIBILE ITALIA](#): at Svalbard, Kongsfjorden, Ny-Ålesund, 78°55'24"N, 11°55'15"E, capacity: 7 people, year-round.

Research stations in the Antarctic:

[MARIO ZUCCHELLI](#): at Terra Nova Bay (Ross Sea), 74° 41' S, 164° 6' E, capacity: up to 100 (optimal 85), Antarctic summer only.

[CONCORDIA](#): Italian - French station (East Antarctic Plateau), 75°06' S, 123°21' E, capacity: 13 to 15 persons in winter, 50 to 70 persons in summer, year-round.

Polar research vessels:

[PRV Laura Bassi](#): Port of registry: Bergen, Norway. Capacity: 50 berths for scientists.

Detailed information on the infrastructures can be found in [Polarindex](#).

National polar authorities and strategies

The strategy for and the priority of polar research in the Arctic and Antarctica are defined on a 3-year basis by the National Scientific Commission for Antarctica (CSNA) and by the Arctic Scientific Committee (CSA).

Arctic and Antarctic research in Italy is separated at governmental level up to now. Different offices at the Foreign Ministry (MAECI) have the responsibility to represent Italy in political fora such as ATCM and AC. In the meanwhile, the MUR and the universities have the duty to support these activities.

The governmental authorities at both ministries are involved with the Antarctic since 1981, when Italy (MAECI) signed the Antarctic Treaty; MUR is contributing since 1986 when an Italian Antarctic Programme was established (PNRA).

Italy's engagement in the Arctic is much more recent. Since the beginning of new millennia, MAECI is supporting Italy as an observer to the Arctic Council; MUR became involved in 2018 when an Arctic Programme (PRA) was also established. See here for the list of the [main Italian actors in Arctic research](#).

The information about Antarctic research can be found at the [MAECI](#).



The Gruvebadet aerosol lab. Photo: Mauro Mazzola

Governmental authorities and research institutions/communities are connected through the PNRA and PRA research programmes. The two programmes also develop research agendas/strategies that are approved by MUR. Italy continues to implement the Madrid protocol into its national law, which should happen soon. As soon as this takes place, the Environmental Ministry (MATTM) will also serve as the governmental authority for research activities in Antarctica.

List of governmental authorities

- [Ministry of University and Research \(MUR\)](#) (only Italian)
- [Ministry of Foreign Affairs and International Cooperation \(MAECI\)](#)

National strategies

- [Italian strategy for the Arctic - National guidelines \(2019\)](#)
- [PNRA](#) - Programmazione Strategica per il triennio 2020-2022 (in Italian only)

International partnerships

Italy is a consultative party of the Antarctic Treaty System (ATS), ATCM and an observer to the AC. Italian polar research is internationally well connected, which is also reflected in the numerous Italian delegates to SCAR, to IASC as well as to WMO committees with a polar focus. Italian polar scientists are cooperating with several countries performing polar research.

Italian polar research is open to all international cooperation partners. In Antarctica, international collaboration is promoted by providing access and hospitality to the Italian stations and by supporting projects that aim to be carried out in non-Italian stations.

In the Arctic, collaboration is fostered through participation in international networks and participation in Transnational Access Arctic programmes. CNR participates in the transnational access programmes of SIOS, INTERACT and ARICE.

Other instruments to sustain international cooperation are bilateral collaborative programmes implemented by MAECI ([Executive Programme for Scientific and Technological Cooperation](#)) and by CNR.

New collaborations are implemented by a bottom-up approach taking place between scientists. In order to network internationally, Italian institutions conclude Memoranda of Understanding (MoUs) with strategically important partners or enter logistical and strategic cooperation, such as joint research stations.



The Netherlands



Photo: Ronald J. W. Visser

Polar research activities and institutions

The Dutch polar science community includes scientists from approximately fifteen universities and public research institutes. These polar researchers cover a wide range of research topics. The Dutch Research Council (NWO) has a special Polar Programme (NPP) that is funded by five different Ministries (the Ministry of Education, Culture and Science; Ministry of Infrastructure & Water Management; Ministry of Economic Affairs and Climate Policy; Ministry of Agriculture, Nature and Food Quality; Ministry of Foreign Affairs).

Project funding is mainly derived from NWO, EU Programmes and direct funding of universities and research institutes.

The Netherlands Polar Programme (NPP) strategy PolePosition-NL 3.0 (2021-2025) defines four different research themes – Climate change (covering the current state and anticipated changes in Earth, ocean, atmosphere, cryosphere and their dynamics), Ecosystem dynamics (covering the state and changes in biology, ecology, stressors and permafrost), Social sciences and humanities (covering legal, social, economic, political, historical and cultural knowledge) and Sustainable development (covering integrated impact analyses, innovations and cold region technology). Dutch researchers are active both in the Arctic and in the Antarctic.

The Dutch polar community works usually in the following areas:

- Antarctica: Marguerite Bay, Antarctic Peninsula, Larsen C Ice shelf, Weddell Sea and Atlantic sector of the Southern Ocean.
- Arctic: Svalbard, Greenland, Canada, Northern European Russia, Arctic Ocean and East Siberia.

Logistics, services and research infrastructures

The focus of the Netherlands is on international cooperation in logistics, services and research infrastructure. Hence the Netherlands has limited infrastructure for itself. IMAU operates weather stations that are located on glaciers in Svalbard (2), Greenland (3) and Antarctica (3).

The Netherlands operate the following infrastructure in the polar regions.

Research stations in the Arctic:

THE NETHERLANDS ARCTIC STATION: situated in Kongsfjorden on the island of Spitsbergen, 78° 55' 00" N, 11° 56' 00" E, capacity: 6 scientists, 1 staff, seasonal.

Other infrastructure:

The [DIRCK GERRITZ Lab](#): these four mobile container laboratories are currently docked at the British Rothera research station in Antarctica.

One of the mobile laboratories was aboard icebreaker PRV Polarstern during the MOSAiC expedition.

Detailed information on the infrastructures can be found in [Polardex](#).

National polar authorities and strategies

Since the 1980s the Netherlands has pursued a single policy covering both polar regions, for historic reasons but also to highlight the similar challenges in the two regions. The Netherlands considers both the Antarctic and the Arctic – in so far as it does not fall within the jurisdiction of the Arctic states – as global public goods (also known as global commons). Dutch scientists conduct internationally renowned polar research, which enables our country to make a constructive contribution to sustainable management and governance in the polar regions.

The Dutch government publishes a polar strategy document every five years. The latest document was adopted in 2020 and is called 'Prepared for Change'. In this strategy, three cornerstones of the Dutch polar strategy are highlighted: Sustainability, International cooperation and scientific cooperation. The Dutch Research Council accommodates a dedicated polar programme that is largely funded by the Ministries. This NPP also develops a polar strategy every 5 years. The new polar strategy of the NPP called PolePosition-NL 3.0 was published in 2021. The NPP is advised by the Programme Committee in which both the IPO ministries and the Dutch Research Council are represented. The bureau of the Netherlands Polar Programme serves as the national contact point for the Dutch membership of SCAR, IASC, COMNAP, FARO, Arctic Science Funders Forum and the EPB. It also is the coordinator of the international partnerships of NWO (see below).

List of governmental authorities

- The **Dutch government** is the key investor in polar research. It is represented by five ministerial departments that coordinate their activities in the Interdepartmental Polar Committee (IPO);
- **The Ministry of Foreign Affairs (BZ)** is responsible for the Netherlands observer role in the Arctic Council and chairs the IPO;
- The Ministry of Infrastructure and Water Management (IenW) is responsible for the ATCM and CEP. Its executive agency Rijkswaterstaat handles the Antarctic permit issuing;

- **The Ministry of Agriculture, Nature and Food Quality (LNV)** is responsible for polar fishing management (i.e., ICES, NEAFC, CCAMLR);
- **The Ministry of Economic Affairs and Climate Policy (EZK)** represents the Netherlands in global climate and energy meetings;
- **The Ministry of Education, Culture and Science (OCW)** represents the Netherlands in the Arctic Science Ministerial.
- **The Dutch Research Council (NWO)** is an independent administrative body of the Ministry of Education, Culture and Science and operates the Netherlands Polar Programme on behalf of all five ministerial departments.

National strategies

- [National strategy 'Prepared for Change' 2021-2025](#)
- [Polar research strategy 'PolePosition-NL 3.0' 2021-2025](#)

International partnerships

The Netherlands is a member of the ATS and an observer to the AC. Dutch researchers take actively part in the work of four working groups of the AC: AMAP, CAFF, SDWG and PAME. This work is carried out by the Arctic Centre of the University of Groningen (AMAP, CAFF and SDWG) and Wageningen University and Research (Marine Litter Group of PAME).

To stay up to date and make it possible to influence international polar developments and agendas, the NPP nominates and supports the Dutch representation in international polar committees. The current portfolio for membership and participation via NPP consists of coordinating bodies for research – i.e., SCAR, IASC and the EPB. The EPB Secretariat has been hosted by NWO in The Hague since 2015. The NPP is also indirectly involved in the Dutch contribution to AC Working Groups. In addition, two coordination bodies for science support, i.e., COMNAP and FARO seek to coordinate international research facilities. The Netherlands has also joined the Arctic Science Funders Forum.

While Dutch researchers, institutes and universities cooperate with many international partners, NWO has formal collaboration agreements with the British Antarctic Survey (BAS) in the UK and the Alfred Wegener Institute (AWI) in Germany. The NPP maintains Memoranda of Understanding (MoUs) with both parties to support and stimulate collaboration and facilitate access to their polar infrastructure. The MoU with BAS provides access to the Dirck Gerritsz Laboratory in Rothera and other local facilities, transport to/from Chile and the Falkland Islands, local transport and standard legal and environmental permits. The MoU with AWI provides access to various German polar facilities, including ship-based and station-based facilities in both polar regions.



Norway



GPS Measurements Antarctica, Basecamp Icerise B. Photo: Elvar Þór Kjartansson / Norwegian Polar Institute

Polar research activities and institutions

Norwegian polar research is carried out by almost 2000 individual scientists carrying out almost 1000 FTEs of polar research. The research is performed by employees in more than 40 university departments, around 30 research institutes and more than 20 companies.

Polar research is carried out under a multitude of internal polar (mostly Arctic) institute research and management programmes, national competitive funding programmes under the [Research Council of Norway \(RCN\)](#), programmes directly funded from Ministries (research centres, infrastructure) and agencies (environmental monitoring programmes) and the EU Framework Programme. About 25% of the Norwegian polar research activity is based on open competitive funding under RCN.

Norwegian polar research is anchored in governmental White Papers and strategies for the Arctic, including Svalbard and the High North, and the Antarctic. According to the RCN Policy for Norwegian Polar Research, the objective of polar research is to enable Norway to fulfil its special responsibility for acquiring the knowledge needed to implement policy, management and economic activity in the polar regions. At the same time polar research is intended to generate fundamental knowledge about the Arctic and the Antarctic. The main areas of Norwegian polar

research are linked to better understanding the changing climate and an environment under pressure, international interaction and relations, and natural resources and industrial activity. Crosscutting priorities focus on international research cooperation, recruitment, dissemination and research infrastructure. The many research institutions and centres have different roles in the research system, with institutional research priorities, programmes and strategies that emphasise these areas in a multitude of research topics.

The major part of Norwegian polar research is carried out in the Arctic (>90%). A rather small fraction of Norwegian polar research is Antarctic (7%), although there is currently a high focus on strengthening and increasing research efforts in and about Antarctica and the Southern Ocean.

Logistics, services and research infrastructures

With its large polar research community Norway possesses extensive and advanced research infrastructure and facilities for polar and marine research in the Arctic and in Antarctica. The majority of the research facilities are in the Arctic and especially in Svalbard, where the Ny-Ålesund Research Station plays a leading role in international climate and environmental research.

The year-round Troll Station with the small Tor satellite facility is an important research infrastructure for Norwegian Antarctic research. Most of the facilities are open to foreign researchers. The [Norwegian Polar Institute \(NPI\)](#) is a directorate and research institute which operates several of the infrastructure facilities, while the [Institute of Marine Research \(IMR\)](#) operates a large fleet of research vessels also in polar waters. Norway possesses 2 ice-breaking vessels, the coast guard vessel KV Svalbard and the Research vessel FF Kronprins Haakon. Research infrastructures that support internationally cutting-edge research, as well as large-scale research infrastructures of national importance, are established and funded under the [Norwegian Roadmap for Research Infrastructure 2020 \(RCN\)](#). A number of these contribute with polar nodes to regional or global observing systems.

Norway operates the following infrastructure in the polar regions.

Research stations in the Arctic (not extensive):

[NY-ÅLESUND RESEARCH STATION](#): Located in Svalbard on the northern side of Brøgger Peninsula at the southern shore of Kongsfjorden, 78° 55' 00" N, 11° 56' 00" E, one of the world's northernmost year-round research stations, facilitating and hosting research facilities, projects, logistics and long-term observations for a number of Norwegian and international research institutions. The station is open access to researchers from all nations. Applications via the [Research in Svalbard \(RiS\)](#) web-site. Capacity: 30 scientists, 6 staff, year - round, during summer field season >200 can be accommodated. The main Norwegian shared facilities are the [Zeppelin Observatory](#), located on a mountain 400 meters above sea level at the Ny-Ålesund Research Station, and [Sverdrup](#), operated by the Norwegian Polar Institute for long and short-term measurement programmes, hosting activities from many international institutions, providing logistical support for research teams working in the area around Ny-Ålesund, year-round. The [Kings Bay Marine Laboratory](#), operated by Kings Bay company, located on the beach with easy access to boats, open to all users, year-round.

[SVALBARD INTEGRATED ARCTIC EARTH OBSERVING SYSTEM \(SIOS\)](#): SIOS is a regional observing system for long-term measurements in and around Svalbard. The SIOS Knowledge Centre located in Longyearbyen.

[KJELL HENRIKSEN OBSERVATORY \(KHO\)](#): Located outside Longyearbyen, Svalbard, 78° 8' 52.8" N, 16° 2' 34.8" E, no sleeping facilities, year - round.

[ANDØYA SPACE AND ALOMAR](#): The centre is located on the island Andøya just north of the Lofoten islands, Northwest coast of Norway, year - round.

[SVALBARD SCIENCE FORUM \(SSF\)](#): Information and coordination service for the research communities in Svalbard, Office in Longyearbyen, year - round service.

EISCAT Svalbard Radar (ESR): Located near Longyearbyen, 78°09'11"N 16°01'44"E.

Research stations in the Antarctic:

[TROLL RESEARCH STATION](#): Dronning Maud Land, 72° 00' 43" S, 02° 31' 59" E, capacity: 45, year-round.

[NORVEGIA RESEARCH STATION](#): Sub Antarctic Island Bouvetøya, Southern Ocean, small, seasonal (austral summer) research station, NPI.

[TOR RESEARCH STATION](#): Svarthamaren mountain in Dronning Maud Land, small, seasonal (austral summer) research station, NPI

Polar research vessels:

[RV F/F Kronprins Haakon \(Arctic and Antarctic\)](#): Port of registry: Tromsø, Norway, capacity: 55 berths for scientists.

[Coast Guard Vessel KV Svalbard \(Arctic\)](#): Home port: Sortland, capacity: 50 berths, applications sent to RCN: Research cruises with the Coast Guard - collaboration for marine research

Other research vessels: IMR has a large fleet of research vessels and some of these operate on a regular basis in Arctic regions, i.e., research vessels G.O. Sars, Kristine Bonnevie, Johan Hjort. UiT operates the vessel FF Helmer Hanssen that has regular cruises in Arctic waters.

Other infrastructure (not extensive):

[ICOS-Norway](#): Norwegian contribution to the Integrated Carbon Observation System.

[NorArgo](#): A Norwegian Argo Infrastructure - a part of the European and global Argo Infrastructure.

[EPOS-N](#): European Plate Observing System - Norway.

[NorEMSO](#): Norwegian node for the European Multidisciplinary Seafloor and water column Observatory

[Arctic ABC](#): Arctic Ocean observing infrastructure for autonomous operation and monitoring of ecosystems and climate.

[INES](#): Infrastructure for Norwegian Earth System modelling.

[LoVe](#): Lofoten-Vesterålen cabled observatory.

[NorSOOP](#): Norwegian Ships of Opportunity Programme for marine and atmospheric research.

[NORMAP](#): Norwegian Satellite Earth Observation Database for Marine and Polar Research.

REV Ocean: REV Ocean is a private not-for-profit company created with one overarching purpose and ambition to make the ocean healthy again. The vessel is partly for research, expedition and charter/cruises. The company was established in 2017 and their vessel is not yet operational.

Detailed information on the infrastructures can be found in [Polarindex](#).

National polar authorities and strategies

Several Ministries, agencies, directorates and research institutions (owned by various Ministries) are involved in the governance of polar affairs in general and polar research in particular. The [Norwegian Governmental Integrated Arctic Strategy](#) ("Between geopolitics and social development", MFA, 2017) incorporates both foreign policy and domestic policy. The White Papers [People, possibilities and Norwegian interests in the Arctic - Meld. St. 9 \(2020-2021\)](#) (pdf in Norwegian), Governmental White Papers about the Arctic (2020-21), [Svalbard \(2015-16\)](#), the [Antarctic \(2014-15\)](#) and the [Bouvet island \(2014-15\)](#) presents the Government's policy for these areas, and new editions appear regularly. The Governmental White Paper on [The place of the oceans in Norway's foreign and development policy \(2016-17\)](#) focuses on supporting Norwegian maritime interests and how to achieve UN sustainable development goals, and is also relevant for polar areas. The [Strategy for Research and Higher Education in Svalbard \(2019\)](#) gives the research in Svalbard a fundamental role in contributing to the international collected polar knowledge and its role in solving core societal and global challenges. The [Strategy for innovation and business development in Svalbard \(2019\)](#) is also important.

RCN has prepared goals and policies for Arctic and Antarctic research, building on the Governmental Strategies and White Papers, as given above. The [Research strategy for the Arctic and Northern Areas \(2019\)](#) prioritises increased knowledge about geopolitics, climate and environment, business development, the sea as a resource, bioeconomy, renewable energy and petroleum, opportunities at sea and in space, and social development. The [Policy for Norwegian polar research \(2014-2023\)](#) focusses on climate and environment, natural resources and business activity, international interaction, recruitment of young scientists, research infrastructure and dissemination. The [Ny-Ålesund Research Strategy \(2019\)](#) is put in place to substantiate the Government's ambitions of increased cooperation, better coordination, increased quality and sharing of data at the site. [Norway's research effort in Antarctica \(2013-2022\)](#) gives priorities for Norwegian research activity in Antarctica, with special emphasis on utilisation of Norwegian infrastructure, knowledge on the climate system and management of Norwegian activity and cultural heritage. The report [Business development and polar research - commitment for a common future \(2011\)](#) identifies concrete research needs in a twenty-year perspective and proposes concrete measures linked to the petroleum industry, maritime activity, fishery and bioprospecting.

Norwegian membership in the European Space Agency is administered by the [Norwegian Space Agency \(NOSA\)](#), and NOSA is also the secretariat for the Norwegian participation in the EU's space programme. Several polar orbiting satellites and future satellites under development, i.e., in the EU Copernicus programme, are very important data infrastructures for the polar research community. Facilitating access to reliable and relevant data sources for climate and environmental policies is therefore a priority task for the Government's investments in space activities, [The Government's strategy for Norwegian space activities](#).



Plastic Cruise Svalbard 2021, Ice stations near Nordaustlandet, where scientists collect samples from the under-ice fauna.

Photo: Trine Lise Sviggum Helgerud / Norwegian Polar Institute

The sectorial responsibility for research is distributed among each of the Ministries. The following national authorities play a leading role in polar-related questions in Norway:

The [Ministry of Education and Research](#) has a coordinating responsibility for the national research policy and is responsible for close to 50% of the national funding for research in Norway. RCN is the key advisory body to the authorities on research policy issues and carries out tasks commissioned by 15 Ministries. The [Norwegian Ministry of Climate and Environment](#): The Norwegian Polar Institute is a directorate under the Ministry mandated to provide scientific knowledge and advice to the Norwegian authorities about the Arctic and the Antarctic. The Norwegian Environmental Agency is also a directorate under the Ministry and responsible environmental authority in Svalbard. The [Ministry of Trade, Industry and Fisheries](#): The Institute of Marine Research serves in an advisory capacity to the Ministry. The [Norwegian Space Agency](#) implements Norway's space policy on behalf of the Ministry.

The [Ministry of Justice and Public Security](#) is responsible for the administration carried out by the Governor of Svalbard and coordinates the polar affairs for the central Government. The Inter-Ministerial Committee on the Polar Regions provides coordination and recommendations for the central Government in all polar affairs, with secretariat at the Ministry.

The [Ministry of Defence](#): The [Norwegian Coast Guard](#) exercises national jurisdiction, fishery patrol and SAR activities in Norwegian coastal and Arctic waters, including the seasonal ice-covered Norwegian waters around Svalbard.

Important international agreements and acts providing requirements and regulations for Norwegian and international polar research activities are the [Agreement on Enhancing International Arctic Scientific Cooperation](#), the [Svalbard Environmental Protection Act](#), and [Regulations relating to the protection of the environment and safety in Antarctica](#).

List of governmental authorities

Selected Ministries represented in the Inter-Ministerial Committee on the Polar Regions:

- [Ministry of Justice and Public Security \(JD\)](#)
- [Ministry of Education and Research \(KD\)](#)
- [Norwegian Ministry of Climate and Environment \(KLD\)](#)
- [Ministry of Trade, Industry and Fisheries \(NFD\)](#)
- [Ministry of Foreign Affairs \(MFA\)](#)

National authorities, agencies and directorates:

- [The Governor of Svalbard \(Sysselmannen\)](#)
- [The Research Council of Norway \(RCN\)](#)
- [The Norwegian Polar Institute \(NPI\)](#)
- [Norwegian Environment Agency \(MDIR\)](#)
- [The Directorate for Cultural heritage \(RA\)](#)
- [The Norwegian Coast Guard \(NCG\)](#)
- [Norwegian Space Agency \(NSA\)](#)

National strategies:

Governmental white papers involving polar research in Norway:

- Arctic and the High North: [People, possibilities and Norwegian interests in the Arctic – Meld. St. 9 \(2020-2021\)](#) (pdf in Norwegian)
- Svalbard: [Svalbard – Meld. St. 32 \(2015-2016\)](#) (white paper)
- Antarctica: [Norwegian Interests and Policy in the Antarctic – Meld. St. 32 \(2014-2015\)](#) (white paper)
- Antarctica – Bouvet Island: [Norwegian Interests and Policy on the Bouvet Island – Meld. St. 33 \(2014-2015\)](#) (white paper) (pdf in Norwegian)
- Norwegian ocean and coastal areas: [The place of the oceans in Norway's foreign and development policy – Meld. St. 22 \(2016-2017\)](#) (white paper)

Governmental strategies involving polar research in Norway:

- Svalbard: [Strategy for research and higher education in Svalbard. Norwegian Ministries](#) (2018)
- Arctic and the High North: [Norway's Arctic Strategy – between geopolitics and social development. Norwegian Ministries](#) (2017)
- Svalbard: [Strategy for innovation and business development in Svalbard. Norwegian Ministries](#) (2019) (pdf in Norwegian)

Strategy plans by the Research Council of Norway:

- Arctic and High North research: [Research Strategy for the Arctic and Northern Areas \(pdf in Norwegian\)](#) (2019)
- Polar research policy: [Norwegian polar research. Research Policy 2014-2023 \(pdf\)](#)
- Svalbard – Ny-Ålesund research: Ny-Ålesund Research Station. Research Strategy (2019)
- Antarctic research: [Norway's research effort in Antarctica 2013-2022](#) (pdf in Norwegian)

- Research for polar business development: [Business development and polar research – commitment for a common future](#) (2011) (pdf in Norwegian)

Agreements and Acts:

- [Agreement on Enhancing International Arctic Scientific Cooperation](#)
- [Svalbard Environmental Protection Act](#)
- [Regulations relating to the protection of the environment and safety in Antarctica](#)

International partnerships

Polar research is characterised by extensive international collaboration and emphasised in several bilateral Governmental agreements as well as MoUs on agency and institutional level involving European countries as well as countries outside the EU. Measured by scientific publication Norway is the world's fifth largest polar research nation (after USA, Canada, UK and Germany), ranked as number 3 in the Arctic and 21 in the Antarctic, in terms of publication volume. 70% of all publications are done in cooperation with international co-authors. According to bibliometric analyses performed by the [Evaluation of Norwegian Polar Research \(2017\)](#), the [Norwegian Polar Research & Svalbard Research – Publication Analysis \(2017\)](#) and the [Mapping survey of Norwegian polar research, High North research and research in Svalbard \(2018\)](#), the 8 most important collaborators co-publishing with Norwegian scientists in terms of proportion of articles (2012-2014) come (in descending order) from USA, UK, Germany, Denmark, Canada, France, Sweden and Russia. The [Governmental Panorama Strategy \(2021-2027\)](#), focusing on bilateral cooperation with key partner countries outside the EU, emphasise polar research cooperation specifically with USA, Canada, China, Japan, Russia and South Africa. Bilateral cooperation agreements and projects with Nordic countries and Russia under the [Barents Region Cooperation](#), as well as the historic Norwegian-Russian cooperation on fisheries management, should also be mentioned.

The [Ny-Ålesund Research Station](#) represents a major case for international research partnerships, where Norway facilitates and hosts research facilities, projects and long-term observations from a high number of nationalities, coordinated [under a common strategy](#) and [joint flagship programmes](#). All scientific institutions running long-term programmes from Ny-Ålesund and having a (semi-) permanent presence, are eligible for membership of [NyS-MAC](#), at the moment 18 institutions from 11 countries.

Norway is strongly embedded in the international networks of polar research. International cooperation is stimulated through membership in IASC, SCAR, active participation in EU framework programmes, several bilateral MoUs on national, agency and institute level, as well as funding opportunities targeting international cooperation and mobility exchange.



Poland

The S. Siedlecki Polish Polar Station, Hornsund, Svalbard and the H. Arctowski Polish Antarctic Station, King George Island Antarctica. Photos: E.&P. Lepkowscy

Polar research activities and institutions

Polar research in Poland is carried out by a network of scientific institutions, universities, institutes of the Polish Academy of Sciences, and governmental institutes located in many academic centres of the country. Poland has a dispersed system of polar research organisation. Coordination on the strategic level is provided by the Committee on Polar Research, Polish Academy of Sciences (CPR PAS), with the support of the Polish Polar Consortium (PPC) which consists of 15 research institutions. The latter supports the organisation and research and logistic cooperation of its members.

The Polish infrastructure in the Arctic and Antarctica and its maintenance is funded by a long-term infrastructure grant from the Ministry of Education and Science (MEiN) for their operators. The stations serve national and international research groups and individuals. Neither a centrally financed polar research programme nor one central polar institution exists. Polar research projects fall into the overall competitive R&I agenda. They are granted from national and international funds, as well as through EU programmes.

The major polar institutions on a national level are operators of the Polish polar infrastructure and the University of Silesia

in Katowice (UoS), which as a leader and host of the PPC and leader of the Centre for Polar Studies (CPS), is providing open internationally postgraduate courses including an International Environmental Doctoral School (IEDS).

A list of academic institutions active in the Arctic and Antarctic research is provided and described [here](#).

Logistics, services and research infrastructures

The Polish polar infrastructure includes permanent and seasonal research stations in the Arctic and Antarctic and two research vessels. The last one is functioning for the supply of the Arctic stations and for training sailors and young researchers during polar cruises. The research stations and vessels are operated in broad international cooperation.

The polar infrastructure of Poland is maintained mainly by three institutes of the Polish Academy of Sciences as operators, making it available for the national and international research groups and providing advice and support to scientists planning polar research. They prepare and carry out expeditions, develop and realise logistic and technical support for polar expeditions and care about the safety of participants.

Poland operates the following infrastructure in the polar regions.

Research stations in the Arctic:

[STANISŁAW SIEDLECKI POLISH POLAR STATION](#): Svalbard, Arctic, 77°00' N, 15°33' E, capacity: 40 scientists, year-round.

[NICOLAUS COPERNICUS UNIVERSITY POLAR STATION](#): Kaffiøyra (NW Spitsbergen), 78°40'32"N 11°49'38"E, capacity: 15 scientists, seasonal.

[ADAM MICKIEWICZ POLAR STATION](#): Petuniabukta (central Spitsbergen), 78°41'09"N, 16°27'26"E, capacity: 14 scientists, seasonal.

[POLAR STATION OF THE MARIE CURIE-SKŁODOWSKA UNIVERSITY](#): Calypsobyen (SW Spitsbergen), 77°33'31"N 14°31'01"E, capacity: up to 10 scientists, seasonal.

[STANISŁAW BARANOWSKI POLAR STATION OF THE UNIVERSITY OF WROCŁAW](#) (SW Spitsbergen): 77°04'15.3"N 15°10'42.3"E, capacity: 5-8 scientists, seasonal.

Research stations in the Antarctic:

[HENRYK ARCTOWSKI POLISH ANTARCTIC STATION](#): Admiralty Bay on King George Island (the South Shetland Islands), 62°09'S, 58°28'W, capacity: 40 scientists, year-round.

[ANTONI B. DOBROWOLSKI POLAR STATION](#): Bunger Oasis (East Antarctica), 66°16'S 100°45'E, seasonal.

Polar research vessels:

[RV Oceania](#): Port of registry: Gdańsk, Poland, capacity: 14 berths for scientists. Owner: Institute of Oceanology PAS in Sopot.

[RV Horyzont II](#): Port of registry: Gdynia, Poland, capacity: 40 berths for scientists & students. Owner: Gdynia Maritime University.

Detailed information on the infrastructures can be found in [Polardex](#).

National polar authorities and strategies

On January 28th 2022, the Prime Minister decree established the governmental Committee for the National Polar Policy to implement a national polar strategy: The Polar Policy of Poland: Resolution of the Council of the Ministers Republic of Poland No. 129/2020 with the attachment: "Od ekspedycji z przeszłości ku wyzwaniom przyszłości. Polska polityka polarna" [From expeditions from the past towards challenges in the future. The polar policy of Poland - in Polish]. This first governmental strategy on policy related to the polar regions is mainly based on the "Strategy for Polish Polar Research - a concept for the years



Ocenia, Horyzont. Photo: W. Kaszkin

2017-2027" and the ["Polish Polar Research: Green-and-White Paper"](#).

The following national authorities play a key role in polar-related issues in Poland:

The Ministry of Education and Science (MEiN) is the leading governmental institution supervising the organisation and financing of polar research, providing strategic solutions and implementing national and EU programmes. The MEiN, throughout the Polish Academy of Sciences, finances the Polish memberships and activity in international scientific polar organisations.

The Ministry of Foreign Affairs (MSZ) is responsible for international aspects of polar research. Its officials represent Poland in intergovernmental organisations: Antarctic Treaty (Consultative Member since 1977), Arctic Council (Observer State since 1998), Spitsbergen (Svalbard) Treaty (since 1931).

Ministries and other governmental agendas cooperate mainly via the Polar Task Force (PTF) – an inter-ministerial advisory group hosted by the MSZ. The PTF gathers representatives of relevant ministries together with representatives of CPR PAS, the Polish Polar Consortium (PPC) and operators of large polar infrastructures. The PTF has been strengthened recently to serve the new formal governmental body: the Committee for the National Polar Policy. This is an interministerial auxiliary body to the Council of the Ministers of the Republic of Poland led by the MSZ. It gathers representatives of ministries responsible for higher education and science, climate and environment, economy, energy, marine economy, fishery, tourism and also chairs of the Committee on Polar Research of the Polish Academy of Sciences and the Polish Polar Consortium.



Polish seasonal field stations in Svalbard operated by Adam Mickiewicz University in Poznań, Nicolaus Copernicus University in Toruń, Marie Curie-Skłodowska University in Lublin and University of Wrocław. Photos: G. Rachlewicz, I. Sobota, P. Zagórski and E. Łepkowska

List of governmental authorities

- [Ministry of Education and Science \(MEiN\)](#)
- [Ministry of Foreign Affairs \(MSZ\)](#)
- Committee for the National Polar Policy

National strategies:

- [The Polar Policy of Poland: Resolution of the Council of the Ministers Republic of Poland No. 129/2020 of September 11th 2020](#), with the attachment: "Od ekspedycji z przeszłości ku wyzwaniom przyszłości. Polska polityka polarna" [From expeditions from the past towards challenges in the future. The polar policy of Poland.]
- [Strategy for Polish Polar Research](#)- a concept for the years 2017-2027.
- ["Polish Polar Research: Green-and-White Paper"](#) under the aegis of the Polish Polar Consortium (PPC).

International partnerships

The long-term collaboration of Polish leading polar research institutions and operators of polar infrastructure is diverse. In the Arctic, research cooperation is concentrated in Svalbard. The Institute of Geophysics, PAS, Institute of Oceanology, PAS and the

University of Silesia in Katowice as the Centre for Polar Studies (CPS) cooperate with UNIS – University Courses in Svalbard, the Norwegian Polar Institute, the University of Oslo (signed general MoUs) and other Norwegian and European research institutions as well (i.e., AWI, University Polytechnic in Madrid, Russian Academy of Sciences in Moscow, Arctic Center in Rovaniemi). Bilateral and international research cooperation is also undertaken by the Polish Universities running seasonal field stations in Svalbard. Broader, multilateral programmes and ad hoc research & logistic collaboration are also carried out within the SIOS – Svalbard Arctic Earth Observing System, where members IG PAS and UoS are. Detailed agreements are prepared for particular research projects. Polish stations host researchers from over a dozen countries. Polish scientists also conducted cooperative research in Iceland, Greenland and Arctic Canada using local infrastructures and logistics. In Antarctica, the Institute of Biophysics and Biochemistry, PAS – operator of the Arctowski Polish Antarctic Station has long-term general MoUs and ad hoc cooperation agreements with research institutions in Peru, Brazil, Chile, Russia and other countries. Research activity in the region of the South Shetland Islands is widely based on continual collaboration. Many foreign researchers visit the Arctowski Station every year. Similarly, Polish scientists conduct their fieldwork based on other stations' infrastructure and logistics.

New collaboration might be established at the level of particular research institutions (contacts and descriptions are presented [here](#)) and more generally with the [Committee on Polar Research of the Polish Academy of Sciences \(CPR PAS\)](#).



Portugal



Logistic Suport Portugal. Photo: Gonalo Vieira

Polar research activities and institutions

Polar research in Portugal is conducted mainly at research centres from the national scientific system, which are in most cases associated to universities. A new agenda for polar research is under preparation and should be published in the end of 2022.

Logistics, services and research infrastructures

Portugal has no infrastructure in the polar regions. The Portuguese Polar Programme ([PROPOLAR](#)) organises annual freight flights from Punta Arenas to Teniente March Airfield in King George Island (South Shetland Archipelago), providing transport to up to 120 national and international scientists. This flight is open for partner programmes by contacting PROPOLAR. The University of Lisbon maintains the PERMANTAR network of permafrost observatories in the Western Antarctic Peninsula, contributing to the Global Terrestrial Network for Permafrost. The Portuguese activities in the Arctic are supported by private transportation and supported through collaborations between Portuguese and international partner organisations.

National polar authorities and strategies

The Polar Programme of the Fundao para a Cincia e a Tecnologia (FCT, Portuguese Foundation for Science and Technology) (former Polar Office), created on December 2011, provides institutional support and monitoring of national research in the polar regions. The objectives of the Polar Programme of the FCT are to coordinate Portuguese polar research on all levels and to serve as liaison between the FCT, different Ministries and the national polar scientific community.

The Portuguese Polar Programme (PROPOLAR), a project of the FCT, funds polar research and links with the Instituto de Geografia e Ordenamento do Territrio (IGOT) that coordinates polar operations and implements its directives with the Ministry of Foreign Affairs, responsible for the Antarctic Treaty issues; and with the Portuguese Environment Agency, responsible for the application of the environmental directives of the ATS.

List of governmental authorities

- [Fundação para a Ciência e a Tecnologia \(FCT, Portuguese Foundation for Science and Technology\)](#), [Ministério da Ciência, Tecnologia e Ensino Superior](#) (MCTES, Ministry of Science, Technology and Higher Education)
- [Ministério dos Negócios Estrangeiros](#) (MNE, Ministry of Foreign Affairs) (Antarctic Treaty Issues)
- [Agência Portuguesa do Ambiente](#) (APA, Portuguese Environmental Agency)(Environmental Impact Evaluation for Antarctica)

International partnerships

The Portuguese organisation with the mission to fund and promote research at the national level is the FCT, which hosts the Polar Programme and links with IGOT – University of Lisbon, that manages it. The FCT has several bilateral agreements fostering collaboration in polar research and logistics at the international level. Several research institutions have also bilateral agreements aiming at fostering research cooperation in specific topics, both in the Arctic and Antarctica.

Portugal has currently no research stations in the polar regions and hence, international collaboration in logistics is essential to its field activities, especially in the Antarctic. Since the start of the Portuguese Polar Programme, Spain is the main collaboration partner providing support with transport of equipment from Europe, as well as cooperation with transport and accommodation of scientists to the Spanish Antarctic stations. This collaboration is framed by a bilateral scientific agreement signed in 2009. Through the FCT, Portugal maintains also scientific and/or logistical cooperation for several years with many institutes and national programmes from South America (Brazil, Argentina, Chile, Uruguay and Peru), Europe (UK, Italy, Spain, Turkey), Asia (China, South-Korea) and the US. Several of these collaborations are sustained by Memoranda of Understanding. Support is provided for the transport of Portuguese researchers and equipment to and from Antarctica, as well as for the use of Antarctic research stations, remote field camps, vessels or for maintenance of field equipment.



Arctic Activities Portugal. Photo: João Canário



Spain



Gabriel de Castilla station at Deception Island. Photo: Antonio Quesada

Polar research activities and institutions

Polar research in Spain is performed by a range of institutions, universities, research centres and others. In all kinds of disciplines (earth sciences, glaciology, biology, oceanography, climate, etc), the topics typically covered by Spanish researchers are related to climate change. Other important polar research topics are volcanism, conservation, pollutants, communications, geomagnetism and geodesy.

Within the national polar programme, most of the polar research in Spain is funded by the State Research Agency, which reserves a certain amount of money for polar projects every year. No topics are prioritised in the polar programme, and all proposals are evaluated by scientific quality and excellence. The cost of logistics is not considered in the scientific proposals and is directly provided by the Ministry of Science and Innovation for the scientifically granted projects.

In Antarctica, Spain operates mainly in the Antarctic Peninsula region. In the Arctic, Spain does not have a station and thus works in collaboration with other countries, mainly in Svalbard, Greenland and Canada. One of the roles of the [Spanish Polar Committee](#) (SPC) is to encourage and facilitate collaborations. Spain has also published the document "[Guidelines for a Spanish Polar Strategy](#)" in 2016.

Logistics, services and research infrastructures

The Spanish polar infrastructure includes two Antarctic research stations on the South Shetland Islands (Juan Carlos I and Gabriel de Castilla), a non-permanent camp at Byers Peninsula and two research vessels. The Spanish polar programme operates these in collaboration with different operators, while CSIC-UTM (Research Council) is the general logistic operator. UTM owns and operates the Antarctic Juan Carlos I Station. Some Spanish polar assets are operated by the navy and army: The Spanish Army owns and operates the Gabriel de Castilla Base located on Deception Island, while the Spanish Navy operates RV Hesperides. The cost of the infrastructures and their maintenance is covered by the Ministry of Science and Innovation through the operators. All assets are coordinated by SPC and the access is granted by an access committee independent of the operators. The international access to the infrastructure is also coordinated by the SPC. The international projects have to fill in a form, available at the [webpage of the Spanish Polar Committee](#), and submit by May 15th every year. The international projects are typically facilitated between National Polar Authorities. There is a published list of criteria to prioritise the international applications.

Spain operates the following infrastructure in the polar regions.

Research stations in the Antarctic:

JUAN CARLOS I STATION: Livingston Island, South Shetland Islands, 62° 39' 48" S, 60° 23' 17" W, capacity: 38 scientists and 13 staff, seasonal (December-April).

GABRIEL DE CASTILLA STATION: Deception Island, South Shetlands Islands, 62° 58' 40" S, 60° 40' 00" W, capacity: 15 scientists and 13 staff, summer only station (December-April).

Polar research vessels:

RV Hesperides, Ice-Class ship: Port of Registry: Cartagena, Spain, capacity: 37 expeditioners (scientists and technicians, crew apart).

RV Sarmiento de Gamboa: Port of Registry Vigo, Spain, Polar Code certified under Category C, capacity: 28 expeditioners (Scientists and technicians, crew apart).

Detailed information on the infrastructures can be found in [Polardex](#).

National polar authorities and strategies

The [Spanish Polar Committee](#) comprises all Ministries which are involved in polar issues. It is the coordination unit for all polar activities in the country including logistics, research and legal obligations. The national polar authority is the Secretary General for Research (Ministry of Science and Innovation).

The following national authorities play a key role in polar-related issues in Spain:

The Ministry of Science and Innovation funds both the science or the logistics through the Research Council and the State Research Agency (Agencia Estatal de Investigación). Both organisations are members of the SPC. SPC also provides the permits, when needed, and participates in the prioritisation among the funded projects. The Executive Secretary of SPC is the Spanish main representative at CEP, COMNAP and the IASC Council, and the deputy representative at the ATCM and AC.

The Ministry of Foreign Affairs is the Head of Delegation to the AC, and to the ATCM.

Spain has published [Guidelines for a Spanish Polar Strategy](#). These guidelines were written by SPC and endorsed by the State Secretary of Research. This document has not passed through parliamentary discussions yet.



Broken ice by Biscoe Island. Photo: Antonio Quesada

List of governmental authorities

- [Ministry of Science and Innovation \(MCIN\)](#)
- [Ministry of Foreign Affairs \(MAEC\)](#)

International partnerships

Spain is a full member in the ATS (in all committees except CCAS) and an observer to the AC. Spain participates and has participated as a relevant partner (Chair, Vice chair, member of the executive board) in most international bodies (SCAR, COMNAP, ATCM, etc.) and in the different working or expert groups at different institutions.

In terms of logistics Spain has intense interactions in Antarctica with Chile (which provides logistic support at King George Island and at Punta Arenas), Argentina (logistic support at Ushuaia), Portugal and Korea (sharing of airplanes), Bulgaria and Uruguay. Both logistics and science in the Antarctic Peninsula region are an ongoing collaboration. Every year, many foreigners (season 2019-2020, researchers from 14 countries) visit the Spanish assets and many Spaniards work at international infrastructures. No effective permanent collaborative programmes exist for Arctic research and logistics but project dedicated collaborations. Spanish researchers have close links with scientific groups (also using their logistics) from Greenland, Svalbard and Canada.

All international polar collaborations are coordinated and shaped by the Spanish Polar Committee through ad hoc agreements or long-term Memoranda of Understanding.



Sweden



Icebreaker Oden, Arctic Ocean. Photo: Ida Kinner

Polar research activities and institutions

Swedish polar research is performed by researchers associated with several Swedish universities. The Swedish Polar Research Secretariat (SPRS) is a governmental agency mandated to coordinate and promote Swedish polar research. The agency's primary mission is to organise and support research expeditions to the polar regions and manage research infrastructure.

Swedish polar researchers work in both the Arctic and Antarctica, with both ship-based and land-based research. The topics cover a wide range of research themes within natural and social science and humanities, i.e., climate change and its consequences, environmental pollutions, ecosystems, permafrost, Arctic Communities health, well-being and resilience and cold climate engineering, mapping of earth's crust and deep-sea floor.

Logistics, services and research infrastructures

The Swedish polar infrastructure consists of several components which are managed by a number of operators. The Swedish icebreaker IB Oden is used for research expeditions in the high Arctic during the summer and early autumn period. IB Oden is owned by the Swedish Maritime Administration and the research expeditions are organised by the SPRS. RV Skagerak is an ice-classed research vessel owned by Gothenburg University. It was taken into service in summer 2021.

In Antarctica, SPRS has the Swedish research station Wasa and the shelter Svea. Several research stations specialised in polar research are located in Sweden such as Abisko Scientific Research Station (ANS) operated by SPRS, Tarfala research station operated by Stockholm University, and Kiruna station operated by ESA. Since 2001, the Swedish-led satellite Odin has gathered atmospheric data from its orbit over both poles. It is mainly funded by the Swedish National Space Agency but has been since 2007 within the ESA collaboration. Sweden has also initiated and is involved in the planned Arctic Weather Satellite (AWS) within the ESA collaboration. This satellite has great potential to improve weather forecasts and climate monitoring in the Arctic and its vicinity.

Sweden operates the following infrastructure in the polar regions.

Research stations in the Arctic:

TARFALA: located in the northwestern part of Sweden in the province of Västerbotten, 64° 14' 00" N, 19° 45' 00" E, capacity: 15, seasonal.

ABISKO SCIENTIFIC RESEARCH STATION: located about 200 km north of the Arctic Circle, 68° 21' 00" N, 18° 49' 00" E, capacity: 70 scientists, 14 staff, year – round.

KIRUNA STATION: The station's location at a high-latitude position plays a primary role supporting ESA/EU low Earth orbiting satellites, as it provides visibility for 10 to 12 out of 14 daily orbits.

Research stations in the Antarctic:

WASA: Dronning Maud Land, 73° 03' 00" S, 13° 25' 00", capacity: 16 persons (staff and scientists), seasonal.

SVEA satellite station to WASA, capacity: 4 persons, seasonal

Polar research vessels:

IB Oden: Home port: Norrköping, Sweden, capacity: 40 berths for scientists.

RV Skagerak: Home port: Gothenburg, Sweden, capacity: 16 berths for scientists.

Other infrastructure:

Odin satellite

Detailed information on the infrastructures can be found in [Polarindex](#).

National polar authorities and strategies

Sweden updated its [Arctic Strategy](#) in 2020. It highlights how Swedish engagement in the Arctic has for a long time involved the government as well as regional and local authorities, indigenous peoples' organisations, universities, companies, and other stakeholders in the Arctic region of Sweden. The overarching goal of the Swedish research policy is that Sweden should be a prominent research nation, where research and innovation are performed with high quality and contribute to the development of society and the competitiveness of industry. The 2020 adopted [Arctic Strategy](#) underlines that Sweden wants to be a world-leading polar research nation with capacity for expeditions on a year-round basis and it wants Swedish polar research to make a greater impact internationally.

The following national authorities play a leading role in polar-related questions in Sweden:

The Ministry of Foreign Affairs represents Sweden in the Arctic Council, in the ATS and in the Barents Euro-Arctic Council (BEAC) and is responsible for the development of the Arctic strategy.

The Ministry of Education and Research is responsible for the Swedish research policy, Arctic science agreements and for universities and governmental agencies working with research funding and logistic support in polar regions. It is also a representative in the Arctic Science Ministerial meetings. SPRS is mandated to coordinate and promote Swedish polar research. It operates the Antarctic stations Wasa and Svea, the Swedish research station ANS and organises expeditions with the ice-breaker Oden. The Secretariat also dispenses permits to visit Antarctica according to the Swedish Antarctic Act. The Swedish Research Council is one of the main research funders in Sweden and is nominating and supporting Swedish representatives within IASC and SCAR.

The Ministry of the Environment is the Swedish representative in the BEAC working group on environment (WGE) and for governmental agencies within the environmental area. The Swedish Environmental Protection Agency is participating in several working groups under the AC such as AMAP, ACAP, CAFF. The Swedish Agency for Marine and Water Management is participating in the working group PAME under the AC and represents Sweden in CCAMLR.

The Ministry of Enterprise and Innovation is the Swedish representative in the BEAC working group on economic cooperation (WGEC) and governs the Swedish Maritime Administration. It is the owner of IB Oden. Within the Barents Euro-Arctic region (BEAR) the County Administrative Board of Norrbotten and Västerbotten is active.



Abisko Scientific Research Station. Photo: Ida Kinner



*The research station Wasa in Dronning Maud Land, Antarctica.
Photo: Åsa Lindgren*

List of governmental authorities

- [Ministry of Foreign Affairs \(MFA\)](#)
- [Ministry of Education and Research](#)
- [Ministry of the Environment](#)
- [The Ministry of Enterprise and Innovation](#)
- [Swedish Polar Research Secretariat \(SPRS\)](#)
- [Swedish Research Council \(VR\)](#)
- [Swedish Environmental Protection Agency \(EPA\)](#)
- [Swedish Agency for Marine and Water Management \(SwAM\)](#)
- [County Administrative Board of Norrbotten](#)
- [County Administrative Board of Västerbotten](#)

National strategies:

- [Arctic Strategy \(2020\)](#)
- [Swedish research and policy](#) (2020, in Swedish only)

International partnerships

Sweden is a member of the ATS and in the AC. Sweden promotes international coordination and cooperation in both science and logistics in the Arctic and in Antarctica. Sweden has extensive international cooperation in polar research and logistics with countries including Canada, Denmark, Finland, Germany, Norway, Russia, the UK, and the US. Logistic cooperation in Antarctica takes place largely in the framework of DROMLAN and DML. Many expeditions with the icebreaker IB Oden are co-funded and performed in collaboration with international partners. Sweden is also engaged in several of the projects working with transnational access and open data resources i.e., ARICE, INTERACT, SITES, ICOS, LTER, SIOS and SOOS. Swedish researchers contribute to the working groups of IASC and SCAR and engage in organisations such as IODP and within several of the European organisations, projects and initiatives. Swedish polar researchers are cooperating with most if not all countries involved in polar research. Many universities, agencies, institutions, and ministries have Memoranda of Understanding or Letters of Interest in place aimed to facilitate exchange of data, researchers, and resources. Several regional initiatives exist for the Arctic, such as the [Bar-ents-Euro-Arctic cooperation](#) and the [Northern Dimension](#), that include research and monitoring activities.



Switzerland



Photo from the Arctic Century Expedition, the research vessel Akademik Tryoshnikov at Inostatseva Bay. Photo: 2021 Swiss Polar Institute, CC BY 4.0

Polar research activities and institutions

Polar research in Switzerland is carried out at all universities and ETH-domain institutions, such as EPFL, ETHZ or WSL/SLF. Although there are no research institutions strictly related to polar research, some centres and faculties for example at ETHZ, University of Zurich, University of Bern, the or EPFL hold long-term research programmes in polar regions with high international visibility/recognition. Additionally, research intuitions like WSL/SLF in Davos are specifically dedicated to snow, permafrost or avalanche research. New centres dedicated to high-altitude-polar areas are currently being set up in Davos by ETHZ as well as in Sion (Alpole) by EPFL. These will develop into world-class research centres at the core of the Swiss Alps.

Polar research in Switzerland is funded through the Swiss National Science Foundation (SNF) as well as through the Swiss Polar Institute (SPI), which supports mainly field access, logistics and temporary infrastructure programmes through a variety of funding mechanisms. EU programmes have so far also been an important source of funding, notably the ERC.

The Swiss Committee for High altitude and polar research - Swiss Academy of Science (SKPH) - is the coordinating body and voice of the Swiss polar and high-altitude community. It meets twice a year, gives policy advice to the Swiss government/ad-

ministration, and contributes to the work of the Swiss Polar Institute through its Advisory Board. It also distributes an annual prize „Prix de Quervain“ for ECRs working in polar or high-altitude research.

The Swiss community works predominantly in the Arctic (Greenland, Siberia, Svalbard, Canada mostly) and remote high-altitude regions such as the Himalayas and Andes. Many groups however also work in Antarctica. Given the absence of permanent Swiss stations or research infrastructure, work is carried out in collaboration with international and local groups.

Logistics, services and research infrastructures

There are currently no operators of Arctic or Antarctic permanent infrastructure in Switzerland. Known by many, the Swiss Camp in Greenland was dismantled for security reasons in summer 2021 and the network of stations operated from there has been taken over by Denmark.

However, Swiss scientists have been working on a continuous basis in polar regions for decades, with a strong increase since the 1980s. This work has been made possible through a strong web of collaborations between the Swiss polar community and research groups as well as polar operators throughout Europe

and the world. Such collaborations take place formally and informally, many of them supported by grants or institutional agreements such as Memoranda of Understanding.

The SPI gives out numerous grants for access to the field for the Swiss community. From 2021, the SPI Flagship programmes will constitute multiannual polar programmes concentrating on a single site or region and will hence provide the Swiss community with temporary infrastructure over up to 5 years. The Swiss Polar Institute also offers different services to the Swiss polar community ranging from data management advice to field pharmacies, telemedicine support services and health and safety courses.

Relevant research infrastructure in Switzerland includes the [High-Altitude Research Stations Jungfraujoch and Gornergrat](#) used by scientists worldwide, also in relation with many polar research topics.

Detailed information on the infrastructures can be found in [Polardex](#).

National polar authorities and strategies

In 2019, under the coordination of SPI, the Swiss polar community prepared a strategic document outlining the strengths and ambitions of the Swiss polar science community: “[Polar Science in Switzerland: Proposed priorities for the period 2021-2024 and beyond](#)”.

At the federal governmental level, two different authorities collaborate closely when it comes to Swiss polar policy and representation.

The [Federal Department of Foreign Affairs \(FDFA\)](#) (Sectoral Foreign Policies Division) is the Swiss official representation for policy towards the Arctic and Antarctic. FDFA has been preparing a Swiss polar policy document which should be published in 2022.

The [State Secretariat for Education, Research and Innovation \(SERI\)](#) has the lead when it comes to supporting research organisations, setting research policy priorities and bilateral/multilateral relations for research. The State Secretary represented Switzerland at ASM3 as Head of Delegation. The responsibility for the polar research field lies with the Division for international collaboration, which is also responsible for bilateral research collaborations and agreements. SERI is also the source of federal funding for the SPI for the period 2021-2024.

Both FDFA and SERI sit on the Board of the SPI. FDFA also participates in meetings of the Swiss Committee on high altitude and polar research (SKPH) and coordinates annual meetings of all polar stakeholders.

List of governmental authorities

- [Federal Department of Foreign Affairs \(FDFA\)](#)
- [State Secretariat for Education, Research and Innovation \(SERI\)](#)
- [Swiss National Science Foundation \(SNSF\)](#)
- [Swiss Polar Institute \(SPI\)](#)

International partnerships

The Swiss polar community does not possess permanent national facilities in polar regions. For this reason, international partnerships are central to all scientific projects and programmes – large and small. Swiss research institutions have built up a large network of such partnerships over the years. They range from long-term institutional collaborations to ad-hoc data sharing or access infrastructure.

Most international collaborations are managed directly by researchers between themselves and their international colleagues. In order to get an overview of potential partners in Switzerland, international colleagues can use the [SPI website](#) (all funded projects are listed there) as well as the [Swiss National Science Foundation \(SNSF\)](#)'s [P3 database](#) which lists all research projects funded by SNSF in Switzerland.

The SPI is currently preparing a revised version of its international strategy and will devise new instruments and potentially funding instruments dedicated to international collaboration in polar research. This work will be ongoing in 2021 and the first term of 2022. SPI already has different Memoranda of Understanding and agreements in place or under finalisation with polar operators. Additionally, many of its funding instruments are geared towards international fieldwork and collaboration. Expeditions organised by the SPI are also always international by nature and access by scientists based outside Switzerland is granted on a competitive basis (call for proposals).



Turkey



2019-2020 Antarctic Season, Horseshoe Island. Photo: Hayrettin Bektas

Polar research activities and institutions

The Polar Research Institute (PRI) was established in 2019 under the Scientific and Technological Research Council of Turkey (TÜBİTAK) as the national polar operator. PRI aims to provide support for Research and Development (R&D) that can be conducted in polar regions, to operate Turkey's polar research infrastructure and to plan and coordinate logistics. It also aims to facilitate communication among relevant organisations, to conduct bilateral international collaborations, to develop and implement the national polar strategy in cooperation with stakeholders, to raise awareness of polar regions at national scale, to materialise national and international scientific diplomacy on polar regions and to represent Turkey in the international polar research arena.

Turkish polar research is funded by the Presidency of the Republic of Turkey. PRI opens annual project calls for the participation of researchers in national polar expeditions. Project calls are open to all institutions and organisations in Turkey and project submissions are accepted within the framework of the priority research themes specified in the National Polar Science

Programme. Polar Science Workshops are held every year to evaluate the results of scientific projects, studies and expeditions conducted by Turkish scientists in polar fields and to discuss the developments in priority areas.

The national polar expeditions are usually focused on the West Antarctic Peninsula region in Antarctica and Barents Sea in the Arctic. Along with the multidisciplinary climate research and earth observation system projects, the studies are mostly concentrated on the investigation of marine and terrestrial polar ecosystems.

Logistics, services and research infrastructures

The polar infrastructure of Turkey is limited to a scientific research camp in Antarctica. In addition, an Automatic Weather Station and three GNSS stations record data year-round. National polar expeditions are annually organised, and logistical support is supplied to scientists by TÜBİTAK MAM PRI as well as project budgets. International scientists are hosted in the expeditions with bilateral agreements.

Turkey operates the following infrastructure in the polar regions.

Research stations in the Antarctic:

TURKISH ANTARCTIC SCIENTIFIC RESEARCH CAMP: Horseshoe Island, Marguerite Bay, West Antarctic Peninsula, 67°49'47"S 67°14'16"W. Capacity: 8 scientists, summer only.

Detailed information on the infrastructures can be found in [Polarindex](#).

National polar authorities and strategies

The following national authorities play a key role in polar-related issues in Turkey:

The Presidency of the Republic of Turkey supports and funds Turkey's polar research activities under the auspices of the and under the coordination of PRI which is connected to TÜBİTAK MAM under the **Ministry of Industry and Technology**.

The Ministry of Foreign Affairs represents Turkey in related international meetings, coordinates diplomatic relations and international agreements with other countries in terms of polar research, and supports international relationships via embassies in coordination with UIDB.

The Ministry of Environment, Urbanisation and Climate Change is responsible of the applications within the Protocol on Environmental Protection to the Antarctic Treaty Area, the harmonisation of the Protocol with the domestic regulations and the administration of permits and environmental impact evaluation reports for scientific projects during the expeditions. It is also the main representative of Turkey in the CEP.

The Ministry of Industry and Technology prepared a National Polar Science Programme for the 2018-2022 period with contributions from over 100 scientists from 40 institutions. The objective of the programme is to implement polar research with a systematic approach. The vision of the programme is "becoming one of the scientifically-successful programmes". As required by this vision, the main objectives are implementing polar research activities with a systematic integrity and project approach, ensuring that national expeditions are conducted to polar regions to provide scientific opportunity, promoting bilateral cooperation on polar sciences and creating awareness of global climate change and polar regions.



2018-2019 Antarctic Season, R/V Betanzos. Photo: Ozge Elif Kizil

List of governmental authorities

- [Presidency of the Republic of Turkey](#)
- [Ministry of Industry and Technology \(STB\)](#)
- [Ministry of Environment, Urbanisation and Climate Change](#)
- [Ministry of Foreign Affairs \(MFA\)](#)
- [The Scientific and Technological Research Council of Turkey Marmara Research Centre Polar Research Institute \(TÜBİTAK MAM PRI\)](#)
- [TÜBİTAK Directorate for International Cooperation \(UIDB\)](#)

International partnerships

Since 2017, more than 20 Turkish scientists were hosted by Antarctic stations of Belgium, Bulgaria, Chile, Czech Republic, Poland and the Republic of Korea. In addition, researchers from Belarus, Bulgaria, Chile, Czech Republic, Germany, Portugal and New Zealand attended the Turkish Antarctic Expeditions (TAE) for conducting their research studies. Besides, TAE's logistic capabilities are always open to all nations.

International polar sciences workshops are organised to establish cooperation on polar activities between countries. In addition to the national workshops, bilateral meetings are held with the Antarctic institutes of other countries to increase the opportunities for conducting qualified scientific studies in Antarctica. In addition, Memoranda of Understanding and Letters of Interest (LOIs) are signed to improve scientific and logistic collaboration in polar regions.



United Kingdom



Ny Ålesund UK Station at night. Photo: Nick Cox / BAS

Polar research activities and institutions

Polar research (Arctic and Antarctic) in the United Kingdom is carried out by a network of governmental and non-governmental institutions, research institutions, universities, and industry partners. There is no single organisation or institute that unites Arctic research within the UK. The expertise is held within the different UK actors that perform the broad spectrum of Arctic research. In order to bring together and better support this research the Natural Environment Research Council (NERC) established the [UK Arctic Office](#), hosted at the [British Antarctic Survey](#) (BAS). The UK Arctic Office is tasked with supporting UK research in the high north; providing advice to policy makers; and developing international scientific cooperation across all aspects of Arctic Research.

As with the Arctic, there are many UK institutes that perform Antarctic research. The UK institute that unites Antarctic research is [BAS](#) which is a component of NERC which itself is part of the United Kingdom Research and Innovation (UKRI). For over 60 years, BAS has undertaken the majority of Britain's scientific research in and around the Antarctic and Arctic regions, building a reputation as a world-renowned polar science and logistical centre. The Antarctic operations and science programmes are executed and managed from Cambridge and rely on a wide-rang-

ing team of professional staff. BAS employs over 450 staff, and operates six stations, five aircraft, and one ship (used for both logistical support and scientific research). BAS provides a UK national capability for the majority of Britain's scientific research in and around the Antarctic. This is supplemented by competitive grants obtained by UK researchers through directed research programmes, or through discovery research. In the document *Beyond the ice: UK policy towards the Arctic* (2018), the British government's sets out its overall approach to the Arctic, and provides an update to the [Arctic policy](#).

There is no overall scientific priority for either Arctic and the Antarctic research. All aspects of research are performed (and given equal weighting) within the UK, but a major focus is likely to be climate change. Proposals are anonymously evaluated by both UK and foreign experts. This evaluation is then followed by a strategic selection panel that usually consists of UK scientists. As to international participation in UK polar research, UK researchers have a strong history of international collaboration and welcome participation in the projects from the international community. They should contact the UK Arctic Office/BAS for further information. Arctic science is generally funded through competitive grants, either obtained through directed research programmes (major subjects to tackle) or through discovery research (innovative and novel projects).

Logistics, services and research infrastructures

The polar infrastructure of the UK includes an ice-strengthened research vessel, several aircraft, and stations in the Arctic and Antarctic. In general logistics, services and research infrastructures are executed and managed from BAS and rely on a wide-ranging team of professional staff. The UK operates the following infrastructure in the polar regions.

The UK operates the following infrastructure in the polar regions.

Research station in the Arctic:

NY - ÅLESUND: Ny-Ålesund, Spitsbergen, Svalbard archipelago, 78°55'0"N, 11°55'59"E, capacity: 36, summer only.

Research stations in the Antarctic:

ROTHERA: Rothera Point, Adelaide Island, 67°35'8"S, long. 68°7'59"W, capacity: summer: 100, winter: 22, year-round.

HALLEY: Halley VI Research Station, Brunt Ice Shelf, Caird Coast, 75°34'5"S, 25°30'30"W, capacity: 70, summer only.

SIGNY: Signy Research Station, Factory Cove, Borge Bay, Signy Island, 60°43'0"S, 45°36'0"W, capacity: 8 scientists, 8 staff, summer only.

BAS staff operate two sub-Antarctic stations on South Georgia:

KING EDWARD POINT RESEARCH STATION: King Edward Point, Cumberland East Bay, South Georgia, 54°16'59"S, 36°30'0"W, capacity: summer - 44, winter - 12, year-round.

BIRD ISLAND RESEARCH STATION: Bird Island, South Georgia, 54°0'0"S, 38°2'59"W, capacity: summer - 10, winter - 4, year-round.

Polar research vessels:

Royal Research Ship (RRS) Sir David Attenborough (SDA) : Ice strengthened. Port of registry: Stanley, Falkland Islands, 28 crew berths, 60 scientist's berths, 2 spare berths.

Other infrastructure:

BAS operate a fleet of five aircraft, specially adapted for flying in extreme Antarctic climate. The BAS aircraft capability consists of four De Havilland Canada Twin Otters and one De Havilland Canada Dash-7 equipped with modifications to allow them to carry out airborne science surveys. Between them they undertake a wide variety of transport and science missions. <https://www.bas.ac.uk/polar-operations/sites-and-facilities/aircraft/>

Detailed information on the infrastructures can be found in [Polardex](#).



The United Kingdom's polar research vessel, RRS Sir David Attenborough, in the Neumayer Channel, Antarctica, January 2022. Photo: Jenna Plank / BAS

National polar authorities and strategies

The United Kingdom's Foreign, Commonwealth and Development Office (FCDO) Polar Regions Department addresses UK interests in both the Arctic and the Antarctic. The FCDO also represents Britain under the Spitzbergen Treaty of 1920 and the Antarctic Treaty of 1959.

International partnerships

The UK has a vibrant and dynamic polar research community. Therefore, at any one time there will be numerous relationships between the UK and foreign researchers with respect to polar science. Furthermore, because of the UK's logistic and scientific capabilities it has long-standing relationships with most, if not all, countries performing polar research. Individual UK polar science projects generally run for 3-5 years. The exception being the long-term funding of national capability projects, such as those performed by BAS.

International collaboration is encouraged through our Research Councils, and expected in our research proposals. New collaborations are generally obtained through bottom-up process i.e. researcher to researcher collaborations. Occasionally, research programmes are initiated and directed by one or more of the Research Councils. In these cases, it may be mandatory to work with a particular nation or nations. This process can also be a catalyst for new collaborations.

International collaboration is also always welcome. Priority is generally given to projects in collaboration with UK scientists, but all requests are seriously considered. Foreign researchers need to complete the Operations Support Planning Questionnaire (OSPQ) form, after which the needs of the project can be assessed.



European Polar Board

EPB Spring 2021 Plenary Meeting, online. Photo: European Polar Board

Activities and institutions

The European Polar Board (EPB) is an independent organisation focused on major strategic priorities in the Arctic and Antarctic. European research in the Arctic and Antarctic is notable for its excellence, diversity and societal relevance, achieved through extensive collaboration between disciplines, institutes and countries. The European polar research community has long played a leading role in the Arctic and the Antarctic, and European polar organisations have an extensive record of close cooperation, necessitated by the remoteness of the regions in which they work, and the financial and environmental costs of associated operations. The EPB, as the strong and independent voice of the European polar research community, has a mission to further improve coordination in Arctic and Antarctic research through better information sharing, optimised infrastructure use, and joint initiatives between its Members.

Current EPB membership includes 28 European research institutes, logistics operators, funding agencies, scientific academies and government ministries from 20 countries. The EPB promotes multilateral collaborations between Members and provides a single contact point for the broader polar, research and policy communities. With its work, the EPB contributes to advancements

in the collective knowledge of polar issues, particularly in the context of European societal relevance.

Priority Areas of Work:

European coordination: The EPB works to enhance and strengthen coordination of the European polar research community. The EPB brings together its Members to discuss and exchange information and best practices in the polar regions. The EPB leads work on the process to develop a European Polar Coordination Office (EPCO) as part of the EU-PolarNet 2 project. With its prominent role in EU-PolarNet 2 and the EU Polar Cluster, the EPB liaises with the European Commission to further develop European polar coordination, complementing its core work in support of its Members.

International cooperation: The need for enhanced International Cooperation has been identified by many research prioritisation activities over the past decade, by initiatives at all levels in the polar research community. The EPB's activities in this area are organised and implemented by EPB's Action Group on International Cooperation. The EPB nurtures European cooperation with Russian partners, with Asian polar programmes (via the Asian Forum for Polar Sciences (AFoPS)), and with Latin Amer-



EPB Autumn 2019 Plenary Meeting, Brest. Photo: European Polar Board

ican polar programmes (via the Reunión de Administradores de Programas Antárticos Latinoamericanos (RAPAL)). The EPB actively works (with EU-PolarNet 2), towards implementation of the All-Atlantic Ocean Research Alliance goals for the polar regions. Within the INTERACT III project, the EPB leads work to understand the impact of the Agreement on Enhancing International Arctic Scientific Cooperation on researchers and station management throughout the Arctic.

Policy advice: Policy advice on polar issues may be required by projects or organisations at all levels. In order to be effective, it needs to be provided through relevant channels, methods and trusted knowledge brokers. The EPB is a well-respected provider of scientific advice on polar issues, exemplified by its work with the EU Polar Cluster and the European Commission, and through various projects in which the EPB leads policy activities (i.e. SOCHIC, INTERACT III, Arctic PASSION). The EPB's Policy Advisory Group (PAG) is available to respond to all policy advice requests received directly by the EPB or via larger initiatives in which it participates. The PAG's mission is to provide policy-relevant evidence-based advice, while ensuring a joint, coordinated voice from EPB Members is heard in relevant European and international organisations and fora.

Minimising environmental impacts: EPB Members' work in the polar regions includes both research and logistics management and planning. Members deliver excellent science, while striving to minimise the impacts of the work they carry out in the field. The EPB's Action Group on Environmental Impacts of Polar Research and Logistics works to identify environmental best practices for research and logistics in the Polar Regions and to develop recommendations and easy-to-use guidelines for researchers and infrastructure managers in the Arctic and Antarctic. Such guidelines will be valuable for polar research and logistics communities worldwide.

Logistics, services and research infrastructures

The diversity of the EPB's Members gives it a unique composite basis of skills, expertise and experience in polar logistics and infrastructure. EPB Members are among the world's most advanced and logistically capable polar operators, employing innovative solutions to international infrastructure access and coordination. EPB Members are active in both the Arctic and Antarctic, with Members owning or operating infrastructure ranging from field facilities (stations, camps, shelters, laboratories) and vessels, to aircraft and autonomous vehicles. The European Po-

lar Infrastructure Database, developed by the EPB with a range of partners and which contains details of these infrastructures, will be updated to combined with SOOS's DueSouth database (which the EPB currently hosts) to form a new application for Arctic and Antarctic infrastructure and logistics discovery and planning: Polardex. Work on the development of Polardex is led by the EPB's Action Group on Infrastructure, in collaboration with SOOS, INTERACT, SIOS, COMNAP, EUFAR and national infrastructure managers and operators.

EPB strategy

The EPB's Strategy 2017-2022 aims to consolidate and further strengthen the EPB's standing as a leader within European and international polar research communities. With this Strategy, the EPB envisions a Europe with a strong and cohesive polar research community, wherein decisions affecting or affected by the polar regions are informed by independent, accurate, and timely advice from the EPB. This Strategy has positioned the EPB in a leading role, driving momentum to address emerging priorities and developments in the European and international polar research communities, with an open and participatory approach. The EPB's next Strategy for the period 2023-2028 is in development, with an open consultative process engaging all EPB Members and key stakeholders, and informed by internal and external reviews of the EPB's activities in the implementation of its 2017-2022 Strategy.

International partnerships

The EPB acts as the central contact point for connecting with the European polar community. It has Memoranda of Understanding with key organisations in the global polar research community that facilitate connections with expertise around the world and the establishment of interdisciplinary relations to promote and enrich polar research. The EPB has formal agreements with the following organisations.

The International Arctic Science Committee (IASC) and the Scientific Committee on Antarctic Research (SCAR) are both non-governmental, international scientific organisations, and members of the International Science Council, encouraging and facilitating cooperation in all aspects of Arctic and Antarctic research respectively.

The European Space Agency (ESA) and EPB's MoU is interdisciplinary, with the EPB acting as the central contact point for all European polar research for ESA. The joint EPB-ESA project CHOICEe, established through the MoU, utilises harsh and isolated conditions at European polar research stations as an analogy for spaceflight and its impacts on human health. CHOICEe's research also feeds back to inform improved living and working conditions for staff at polar stations.

The Southern Ocean Observing System (SOOS) enhances and facilitates international Southern Ocean observations. The EPB hosts SOOS' DueSouth database of upcoming expeditions to the Southern Ocean.

The Association of Polar Early Career Scientists (APECS) is an international and interdisciplinary organisation for early-career researchers (ECRs) with interests in the polar regions. The MoU between the EPB and APECS enhances the ECR perspective on the EPB's work, and gives opportunity for ECRs to gain experience in the workings of international coordination in the Arctic and Antarctic.

The European Climate Research Alliance (ECRA) is an association of 23 leading climate research institutions based in Europe. The EPB mainly works with the collaborative Arctic ECRA.

The EPB's Members are:

- Arctic Centre, University of Lapland, Finland
- Arctic Research Centre at Umeå University (ARCUM), Sweden
- Austrian Science Research Fund (FWF), Austria
- Belgian Science Policy Office (BELSPO), Belgium
- Bulgarian Antarctic Institute (BAI), Bulgaria
- Council for Scientific Research (CSIC), Spain
- Danish Agency for Science and Higher Education (DASHE), Denmark
- Dutch Research Council (NWO), Netherlands
- Estonian Academy of Sciences (EAS), Estonia
- Foundation for Science and Technology (FCT), Portugal
- French Polar Institute Paul-Émile Victor (IPEV), France
- Helmholtz Association (HGF), Germany
- Institute of Marine Research (IMR), Norway
- Luxembourg's Polar Programme (polar.lu), Luxembourg
- Ministry of Science and Innovation (MCIN), Spain
- National Antarctic Research Programme (PNRA), Italy
- National Centre for Scientific Research (CNRS), France
- National Fund for Scientific Research (FNRS), Belgium
- National Research Council (CNR), Italy
- Natural Environment Research Council (NERC), United Kingdom
- Polish Academy of Sciences (PAN), Poland
- Icelandic Centre for Research (RANNIS), Iceland
- Research Council of Norway (RCN), Norway
- Research Foundation Flanders (FWO), Belgium
- Swedish Polar Research Secretariat (SPRS), Sweden
- Swiss National Science Foundation (SNF), Switzerland
- Thule Institute, University of Oulu, Finland
- TUBITAK Marmara Research Center, Polar Research Institute, Turkey

Appendix with common abbreviations

A	AA	The Federal Foreign Office of Germany (Germany)
	AAD	Australian Antarctic Division (Australia)
	AARI	Antarctic Research Institute
	ACAP	Arctic Contaminants Action Programme (Finland)
	AFoPS	Asian Forum for Polar Sciences
	AHHEG	Arctic Human Health Expert Group (Finland)
	Alci	Antarctic Logistics Centre International
	AMAP	Arctic Monitoring and Assessment Programme
	ANS	Abisko Scientific Research Station (Sweden)
	APA	Agência Portuguesa do Ambiente (Environmental Agency) (Portugal)
	APECS	Association of Polar Early Career Scientists
	APRI	Austrian Polar Research Institute (Austria)
	ARCUM	Arctic Research Centre at Umeå University (Sweden)
	ARICE	Arctic Research Icebreaker Consortium
	ASM	Arctic Science Ministerial
	ATCM	Antarctic Treaty Consultative Meeting
	ATS	Antarctic Treaty Systems
	AWI	Alfred-Wegener-Institut, Helmholtz Zentrum für Polar und Meeresforschung (Germany)
	AWIPEV	Base - French - German Arctic Research Base at Ny-Ålesund (France/Germany)
	AWS	Arctic Weather Satellite
B	BAI	Bulgarian Antarctic Institute (Bulgaria)
	BAS	Bulgarian Academy of Science (Bulgaria)
	BAS	British Antarctic Survey (United Kingdom)
	BEAC	Barents Euro-Arctic Council
	BEAR	Barents Euro-Arctic region
	BELSPO	Belgian Federal Science Policy (Belgium)
	BfN	Federal Agency for Nature Conservation (Germany)
	BGR	Federal Institute for Geosciences and Natural Resources (Germany)
	BMBF	Federal Ministry for Education and Research (Germany)
	BMWi	Federal Ministry for Economy and Energy (Germany)
	BPS	Belgian Polar Secretariat (Belgium)
	BZ	The Ministry of Foreign Affairs (The Netherlands)

C	CAFF	Conservation of Flora and Fauna
	CBMP	Circumpolar Biodiversity Monitoring Programme
	CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
	CCT	Climate Change Tower (Italy)
	CEA	Commissariat à l'Energie Atomique et aux Energies Alternatives (France)
	CEP	The Committee for Environmental Protection
	CNES	Centre National d'Etudes Spatiales (France)
	CNR	National Research Council of Italy (Italy)
	CNRS	The National Centre for Scientific Research (France)
	CPR PAS	National Committee on Polar Research, Polish Academy of Sciences (Poland)
	CPS	Centre for Polar Studies (Poland)
	CSA	Arctic Scientific Committee (Italy)
	CSIC	Council for Scientific Research (Spain)
	CSIC-UTM	Research Council (Spain)
	CSNA	National Scientific Commission for Antarctica (Italy)
D	DAAD	German Academic Exchange Service (Germany)
	DAHES	Danish Agency for Higher Education and Science (Denmark and Greenland)
	DAMOCLES	Developing Arctic Modeling and Observing Capabilities for Long-term Environmental Studies
	DFG	German Science Foundation (Germany)
	DI	Dirigibile Italia (Italy)
	DGRI	General Direction for Research and Innovation (France)
	DMI	Danish Meteorological Institute (Denmark and Greenland)
	DROMLAN	Dronning Maud Land Air Network. DROMLAN is a coordinated initiative between eleven countries with stations in the region to create a coordinated logistics service to enhance safety and reduce costs: Belgium, Finland, Germany, India, Japan, the Netherlands, Norway, Russia, South Africa, Sweden and United Kingdom.
	DTU	Technical University of Denmark (Denmark and Greenland)
E	EA	Environment Agency
	EAS	Estonian Academy of Sciences (Estonia)
	ECRA	European Climate Research Alliance
	ENEA	Agency for Energy Efficiency (Italy)
	EPA	Swedish Environmental Protection Agency (Sweden)
	EPB	European Polar Board
	EPCO	European Polar Coordination Office
	ESA	European Space Agency
	EUFAR	European Facility for Airborne Research
	EZK	The Ministry of Economic Affairs and Climate Policy (The Netherlands)

F	FAF	Forum for Arctic Research
	FAMRI	Faroe Marine Research Institute (Faroe Islands)
	FARO	Forum of Arctic Research Operators
	FCDO	United Kingdom's Foreign, Commonwealth and Development Office (United Kingdom)
	FCT	Fundação para a Ciência e a Tecnologia (Foundation for Science and Technology) (Portugal)
	FDFA	Federal Department of Foreign Affairs (Switzerland)
	FFG	Austrian Research Promotion Agency (Austria)
	FINNARP	Finnish Antarctic Research Programme (Finland)
	FISK	Faroese Ministry of Fisheries (Faroe Islands)
	FMI	Finnish Meteorological Institute (Finland)
	FMI – ARC	Arctic Space Centre
	FNRS	Fund for Scientific Research
	FOF	French Oceanographic Fleet (France)
	FPS Environment	Health, Food Chain Safety and Environment Federal Public Service (Belgium)
	FPS Foreign Affairs	Foreign Affairs, Foreign Trade and Development Cooperation Federal Public (Belgium)
	FRAM	Frontiers in Arctic Marine Monitoring
	F.R.S.	FNRS Fund for Scientific Research (Belgium)
	FTE	Full Time Equivalents
	FWF	Austrian Science Research Fund (Austria)
	FWO	Research Foundation – Flanders (Belgium)
G	GAW	Pallas-Sodankylä Global Atmosphere Watch (Finland)
	GEM	Greenland Ecosystem Monitoring (Greenland)
	GEOMAR	Helmholtz Center for Ocean Research Kiel
	GEUS	Geological Survey of Denmark (Denmark and Greenland)
	GIS	Geographic information system
	GRANSKING	Research Council (Faroe Islands)
H	HAV	Faroe Marine Research Institute (Faroe Islands)
	HEALTH	Department of Occupational Medicine and Public Health (Faroe Islands)
	HGF	Helmholtz Association (Germany)
	HMR	Faroese Ministry of Health (Faroe Islands)
I	IACN	The Icelandic Arctic Cooperation Network (Iceland)
	IAH	International Research Hub in Greenland (Denmark and Greenland)
	IASC	International Arctic Science Committee
	IASSA	International Arctic Social Sciences Association
	ICG	Icelandic Coast Guard (Iceland)
	IEDS	International Environmental Doctoral School (Poland)

	IenW	The Ministry of Infrastructure and Water Management (The Netherlands)
	IFREMER	Institut Français de Recherche pour l'Exploitation de la Mer (France)
	IGOT	Instituto de Geografia e Ordenamento do Território (Portugal)
	IMAU	The Institute for Marine and Atmospheric research Utrecht (The Netherlands)
	IMO	Icelandic Meteorological Office (Iceland)
	IMR	Institute of Marine Research (Norway)
	INACH	Chilean Antarctic Institute (Chile)
	iNOVA	Research Park iNova (Faroe Islands)
	INTERACT	International Network for Terrestrial Research and Monitoring in the Arctic
	IPA	International Permafrost Association
	IPEV	French Polar Institute (France)
	IPO	Interdepartmental Polar Committee (The Netherlands)
J	JARFFEINGI	Faroese Geological Survey (Faroe Islands)
K	KFEM	Danish Ministry of Climate, Energy and Utilities (Denmark and Greenland)
L	LNv	The Ministry of Agriculture, Nature and Food Quality (The Netherlands)
	LVM	Ministry of Transport and Communication (Finland)
M	MAEC	Ministry of Foreign Affairs (Spain)
	MAECI	Ministry of Foreign Affairs and International Cooperation (Italy)
	MAM	Marmara Research Centre (Turkey)
	MATM	Environmental Ministry (Italy)
	MCIN	Ministry of Science and Innovation (Spain)
	MCTES	Ministério da Ciência, Tecnologia e Ensino Superior (Ministry of Science, Technology and Higher Education) (Portugal)
	MEAE	Ministry of Europe and International Affairs (France)
	MEN	Ministry of Education and Science (Poland)
	MESRI	Ministry of Higher Education, Research and Innovation (France)
	MFA	Ministry of Foreign Affairs (Sweden)
	MFA	Ministry of Foreign Affairs (Turkey)
	MFRI	Marine and Freshwater Research Institute (Iceland)
	MinEdu	Ministry of Education and Culture (Finland)
	MNE	Ministério dos Negócios Estrangeiros (Ministry of Foreign Affairs) (Portugal)
	MNHN	Muséum national d'histoire naturelle (France)
	MOM	Ministere des Outremers (Ministry of Overseas) (France)
	MoUs	Memoranda of Understanding
	MOSAIC	Multidisciplinary Drifting Observatory for the Study of Arctic Climate
	MSZ	Ministry of Foreign Affairs (Poland)
	MTES	Ministere de la Transition Ecologique (Ministry of Ecological Transition) (France)

	MUR	Research Ministry (Italy)
N	NCPS	National Centre for Polar Studies (Bulgaria)
	NERC	Natural Environment Research Council (United Kingdom)
	NOSA	Norwegian Space Agency (Norway)
	NPI	Norwegian Polar Institute (Norway)
	NSDC	National Satellite Data Centre
	NWO	Dutch Research Council (The Netherlands)
O	OCW	The Ministry of Education, Culture and Science (The Netherlands)
	OEAW	Austrian Academy of Sciences (Austria)
	OGS	National Institute of Oceanography and Applied Geophysics (Italy)
	OHMI	International Human-Environment Observatory
	OSL	Otto-Schmidt Laboratory (Germany)
P	PAME	Protection of Arctic Marine Environment
	PAN	Polish Academy of Sciences (Poland)
	PERMANTAR	Western Antarctic Peninsula Permafrost Observatories
	PNRA	National Research Programme in Antarctica (Italy)
	POMAR	German-Russian Master Programme for Polar- and Marine Science (Germany/Russia)
	PPC	Polish Polar Consortium (Poland)
	PRA	Arctic Research Programme (Italy)
	PRI	Polar Research Institute (Turkey)
	PSI	Paul-Scherrer Institute (Switzerland)
	PROANTAR	Brazilian Antarctic Programme (Brazil)
	PROPOLAR	Portuguese Polar Programme (Portugal)
	PTF	Polar Task Force
R	RAJA	Finnish Border Guard (Finland)
	RAPAL	Reunión de Administradores de Programme as Antárticos Latinoamericanos (France)
	RANNIS	Icelandic Centre for Research (Iceland)
	RBINS	Royal Belgian Institute of Natural Sciences (Belgium)
	RCN	Research Council (Norway)
	R&D	Research and Development
	RiS	Research in Svalbard (Norway)
S	SAFIRE	Service des Avions Français Instrumentés pour la Recherche en Environnement (France)
	SAI	The Stefansson Arctic Institute (Iceland)
	SAON	Sustaining Arctic Observing Networks
	SAVN	Faroese National Museum (Faroe Islands)
	SCAR	Scientific Committee on Antarctic Research
	SDWG	Sustainable Development Working Group (Finland)

	SETUR	University of the Faroe Islands (Faroe Islands)
	SGO	Sodankylä Geophysical Observatory (Finland)
	SIOS	Svalbard Integrated Arctic Earth Observing System
	SERI	State Secretariat for Education, Research and Innovation (Switzerland)
	SKPH	Swiss academies of Science (Switzerland)
	SMEAR I	Värriö Subarctic Research Station (Finland)
	SNFS	Swiss National Science Foundation (Switzerland)
	SOOS	The Southern Ocean Observing System
	SPC	Spanish Polar Committee (Spain)
	SPI	Swiss Polar Institute (Switzerland)
	SPRI	Scott Polar Research Institute (United Kingdom)
	SPRS	Swedish Polar Research Secretariat (Sweden)
	SSF	Svalbard Science Forum (Norway)
	STB	Ministry of Industry and Technology (Turkey)
	STM	Ministry of Social Affairs and Health (Finland)
	SwAM	Swedish Agency for Marine and Water Management (Sweden)
T	TAAF	Terres Australes et Antarctiques Françaises (France)
	TAE	Turkish Antarctic Expeditions (Turkey)
	TÜBİTAK	Scientific and Technological Research Council of Turkey (Turkey)
	TÜBİTAK MAM PRI	The Scientific and Technological Research Council of Turkey Marmara Research Centre Polar Research Institute (Turkey)
U	UACEG	University of Architecture, Civil Engineering and Geodesy (Bulgaria)
	UBA	Federal Environment Agency (Germany)
	UIDB	TÜBİTAK Directorate for International Cooperation (Turkey)
	UFM	Ministry of Higher Education and Science (Denmark and Greenland)
	UKRI	United Kingdom Research and Innovation (United Kingdom)
	UM	Ministry of Foreign Affairs of Finland (Finland)
	UMMR	Faroese Ministry of Foreign Affairs and Culture (Faroe Islands)
	UoS	University of Silesia in Katowice (Poland)
	US	Faroese Environment Agency (Faroe Islands)
	UVMR	Faroese Ministry of Environment, Industry and Trade (Faroe Islands)
V	VNK	Prime Minister's Office (Finland)
	VR	Swedish Research Council (Sweden)
W	WGE	Working Group on Environment (Finland)
	WMO	World Meteorological Organization
Y	YM	Ministry of Environment (Finland)
Z	ZAMG	Central Institute for Meteorology and Geodynamics (Austria)

Annex

List of polar reaserch institutions

Austria	Austrian Polar Research Institute APRI
Belgium	Royal Belgian Institute of Natural Sciences Royal Meteorological Institute The Royal Belgian Institute for Space Aeronomy Royal Observatory of Belgium Nuclear Research Centre Katholieke Universiteit Leuven Universiteit Gent Universiteit Antwerpen Vrije Universiteit Brussel Université de Mons Université de Liège Université catholique de Louvain Université libre de Bruxelles
Bulgaria	Sofia University St. Kliment Ohridski Bulgarian Academy of Science University of Architecture, Civil Engineering and Geodesy Tokuda Hospital National Sports Academy University of Mining and Geology Naval Academy Varna Medical University National Museum of Natural History
Czech Republic	Centre for Polar Ecology, Faculty of Science, University of South Bohemia in České Budějovice ARCTIC Centre for Human-to-Environment Oriented Studies, Masaryk University in Brno, Faculty of Social Studies, Faculty of Law and Faculty of Science Julius von Payer Institute for Arctic and Subarctic Research The Cryosphere Ecology Group, Faculty of Science, Charles University in Prague Faculty of Environmental Sciences, Czech University of Life Sciences in Prague Antarctic research at Masaryk university in Brno, Department of Geography, Section of Experimental Plant Biology, Department of Experimental Biology, Section of Applied Mathematics, Department of Mathematics and Statistics
Denmark and Greenland	Technical University of Denmark Aarhus University, Denmark Aalborg University, Denmark Danish Meteorological Institute Geological Survey of Denmark and Greenland Copenhagen University Copenhagen Business School Roskilde University University of Southern Denmark Arctic The National Museum of Denmark

Denmark and Greenland

Greenland Institute of Natural Resources
Greenland University /Ilisimatusarfik
Greenland Centre for Health Research
Greenland National Museum and Archives
ASIAQ Greenland Survey
SSI (Statens Serum Institut)

Estonia

Estonian Academy of Sciences
Department of Geology at Tallinn University of Technology
Institute of Chemistry, Tallinn University of Technology
Marine Systems Department, Tallinn University of Technology
Institute of Ecology and Earth Sciences
Institute of Cultural Research and Fine Arts, University of Tartu
Estonian Marine Institute, University of Tartu
Institute of Ecology Tallinn University
Tartu Observatory
National Institute of Chemical Physics and Biophysics

Faroes Islands

Faroe Marine Research Institute
Marine and Climate Research in the North Atlantic Ocean
Department of Public and Occupational Health
University of the Faroe Islands
Faroes Geological Survey
The Environment Agency

Finland

Aalto University
University of Helsinki
University of Eastern Finland
University of Jyväskylä
University of Lapland
LUT University
University of Oulu
Hanken School of Economics
University of the Arts Helsinki
Tampere University
University of Turku
University of Vaasa
Åbo Akademi University
National Defence University
Arcada University of Applied Sciences
Centria University of Applied Sciences
Diaconia University of Applied Sciences
Haaga-Helia University of Applied Sciences
Humak University of Applied Sciences
Häme University of Applied Sciences
JAMK University of Applied Sciences
South-Eastern Finland University of Applied Sciences
Kajaani University of Applied Sciences
Karelia University of Applied Sciences
LAB University of Applied Sciences
Lapland University of Applied Sciences
Laurea University of Applied Sciences
Metropolia University of Applied Sciences
Oulu University of Applied Sciences
Satakunta University of Applied Sciences

Finland

Savonia University of Applied Sciences
Seinäjoki University of Applied Sciences
Tampere University of Applied Sciences
Turku University of Applied Sciences
Vaasa University of Applied Sciences
Novia University of Applied Sciences
Finnish Environment Institute
Finnish Meteorological Institute
Natural Resources Institute Finland
Finnish Institute of Occupational Health
Geological Survey of Finland
Radiation and Nuclear Safety Authority
Finnish Food Authority

France

Centre National de la Recherche Scientifique and its Institutes – Institut des Sciences de l'Univers, Institut Ecologie et Environnement, Institut des Sciences Humaines et Sociales and Institut des Sciences de l'Ingénieur et des Systèmes.
Institut Français de Recherche pour l'Exploitation de la Mer
Centre National d'Etudes Spatiales
Météo-France
Commissariat à l'Energie Atomique et aux Energies Alternatives
Universities:
Sorbonne Université
Université Grenoble-Alpes
Université de Bretagne Occidentale
Université Paris-Saclay
Université de Toulouse
Université de la Rochelle
Université de Strasbourg
Institut Pierre-Simon Laplace pour les Sciences du Climat (IPSL), Paris

Germany

Alfred-Wegener-Institut, Helmholtz-Zentrum für Polar- und Meeresforschung
Deutsches Zentrum für Luft- und Raumfahrt
Universität Bremen
Bayerische Akademie der Wissenschaften
Bundesanstalt für Geowissenschaften und Rohstoffe
Christian-Albrechts-Universität zu Kiel
Eberhard-Karls-Universität Tübingen
Ecologic Institut Berlin
Friedrich-Alexander-Universität Erlangen-Nürnberg
Friedrich-Schiller-Universität Jena
GEOMAR Helmholtz-Zentrum für Ozeanforschung Kiel
Goethe-Universität Frankfurt
Helmholtz-Institut für Funktionelle Marine Biodiversität
Helmholtz-Zentrum Potsdam – Deutsches Geoforschungs Zentrum
Institut für transformative Nachhaltigkeitsforschung Potsdam
Justus-Liebig-Universität Gießen
Leibniz Universität Hannover
Leibniz-Institut für Troposphärenforschung Leipzig
Ludwig-Maximilians-Universität München
Max-Planck-Institut für Biogeochemie, Jena
Max-Planck-Institut für Meteorologie, Hamburg
Potsdam-Institut für Klimafolgenforschung
Rheinische Friedrich-Wilhelms-Universität Bonn

Germany	Universitt Hamburg Universitt Leipzig Universitt Potsdam Universitt Rostock Universitt Trier Universitt zu Kln Westflische Wilhelms-Universitt Mnster Ruprecht-Karls-Universitt Heidelberg Technische Universitt Dresden
Iceland	The Stefansson Arctic Institute The Icelandic Institute of Natural History The Environment Agency of Iceland The Marine and Freshwater Research Institute The Icelandic Meteorological Office Landsvirkjun – National Power Company of Iceland Mats The Icelandic Coast Guard the Icelandic Coast Guard The Icelandic Regional Development Institute The University of Akureyri Bifrst University The Iceland University of the Arts Reykjavk University The University Centre of the Westfjords The Icelandic Tourism Research Centre
Italy	The National Research Council The National Institute of Geophysics and Volcanology National Institute of Oceanography and Applied Geophysics Italian National Agency for New Technologies, Energy and Sustainable Economic Development University of Florence University of Venice Ca’ Foscari University of Insubria
Netherlands	University of Groningen Wageningen University and Research University of Utrecht Netherlands Institute for Sea research University of Tilburg VU Amsterdam Delft University of Technology Netherlands Institute of Ecology KNMI – Royal Netherlands Meteorological Institute Naturalis Deltares Leiden University Erasmus University University of Amsterdam

Norway

University of Tromsø, The Arctic University of Norway
University of Bergen
University of Oslo
Norwegian University of Science and Technology
University Centre in Svalbard
NORD University
Sami University of Applied Sciences
Norwegian Polar Institute
Nansen Environmental and Remote Sensing Centre
Institute of Marine Research
Akvaplan NIVA
Grid-Arendal
Meteorological Institute
Western Norway Research Institute
Norwegian Institute of Air Research
Norwegian Research Centre
The Bjerknes Centre for Climate Research
High North Research Centre for Climate and the Environment
Center for International Climate Research
Centre for integrated remote sensing and forecasting for arctic operations
Centre for Autonomous Marine Operations and Systems
Sustainable Arctic Marine and Coastal Technology
Centre for Arctic Gas Hydrate, Environment and Climate
The Norwegian Centre for the Law of the Sea
High North Center for Business and Governance
Centre for High North Logistics
Birkeland Centre for Space Science
Research Centre for Arctic Petroleum Exploration
Arctic Safety Centre
Centre for Climate Dynamics
International Centre for Reindeer Husbandry
Centre for the Ocean and the Arctic

Poland

Committee on Polar Research, Polish Academy of Sciences
Polish Polar Consortium
Centre for Polar Studies
Polar Club, Polish Geographical Society
Institute of Geophysics, Polish Academy of Sciences
Institute of Biochemistry and Biophysics
Institute of Oceanology, Polish Academy of Sciences
University of Silesia in Katowice
University of Wrocław
Nicolaus Copernicus University in Toruń
Adam Mickiewicz University in Poznań
Jagiellonian University in Kraków
Institute of Paleobiology, Polish Academy of Sciences
University of Łódź
Polish Geological Institute - National Research Institute
Gdańsk University of Technology
Warsaw University of Technology
Gdynia Maritime University
University of Gdańsk
AGH University of Science and Technology
University of Warmia and Mazury in Olsztyn

Portugal

Centro de Ciências do Mar, Universidade do Algarve
Centre of Geographical Studies, Instituto de Geografia e Ordenamento do Território, Universidade de Lisboa
Centre for Environmental and Marine Studies, Universidade de Aveiro,
Interdisciplinary Centre of Marine and Environmental Research, Universidade do Porto,
Centro de Química Estrutural, Instituto Superior Técnico, Universidade de Lisboa,
College on Polar and Extreme Environments, University of Lisbon
Earth Geodetic Analysis Laboratory, Universidade da Beira Interior
Centre for Ecology, Evolution and Environmental Changes, Faculdade de Ciências, Universidade de Lisboa
Centro de Recursos Naturais e Ambiente, Instituto Superior Técnico, Universidade de Lisboa
Institute of Earth Sciences, Universidade de Évora
Instituto Geofísico do Infante Dom Luís
Instituto Politécnico de Beja
Departamento de Engenharia Civil, Arquitectura e Georrecursos, Instituto Superior Técnico, Universidade de Lisboa
Laboratório Nacional de Energia e Geologia
Marine and Environmental Sciences Centre, Department of Life Sciences, University of Coimbra
Marine and Environmental Sciences Centre, Faculdade de Ciências, Universidade de Lisboa
WJCR - William James Center for Research, Instituto Universitário
Faculdade de Ciências e Tecnologia, Universidade NOVA de Lisboa

Spain

Museo Nacional de Ciencias Naturales
Instituto de Ciencias de la Tierra Jaume Almera
Instituto de Diagnóstico Ambiental y Estudios del Agua
Centro de Astrobiología
Centro Nacional de Biotecnología
Instituto de Ciencias del Mar
Instituto Andaluz de Ciencias de la Tierra
Instituto Geológico y Minero de España
Instituto Español de Oceanografía
Centro de Biología Molecular Severo Ochoa
Centro de Estudios Avanzados de Blanes
Observatorio del Ebro
Unidad de Tecnología Marina
Universidad Complutense de Madrid
Universidad de Alcalá
Universidad Rey Juan Carlos
Universidad Politécnica de Madrid
Universidad Autónoma de Madrid
Universidad de Zaragoza
Universidad de Santiago de Compostela
Universidad del País Vasco
Universidad de Valladolid
Universidad de Barcelona
Universidad Autónoma de Barcelona
Universidad de las Islas Baleares
Universidad de Valencia
Universidad de Granada
Universidad de Cádiz
Universidad Ramón Llull
Universidad Salamanca

Sweden	<p> Swedish Institute for Space Physics Luleå Arctic and Antarctic Research Center Umeå University - ARCUM, VARDDUO and CIRC Uppsala University, Water and Landscape Science, Department of Earth Sciences Astropartical physics Just North Stockholm University Naturhistoriska riksmuseet KTH - Royal Technical University - Division of History of Science, Technology, and Environment Swedish Meteorological Institute Swedish National Space Agency University of Gothenburg Chalmers University of Technology Stockholm International Peace Research Institute Swedish University of Agricultural Sciences </p>
Switzerland	<p>Swiss Committee for High altitude and polar research - Swiss academies of science</p>
Turkey	<p> TÜBİTAK MAM Polar Research Institute Istanbul Technical University Polar Research Center Turkish State Meteorological Service (Ministry of Agriculture and Forestry) Turkish Air Force (Ministry of National Defense) Office of Navigation Hydrography and Oceanography (Ministry of National Defense) General Directorate of Mapping (Ministry of National Defense) TÜBİTAK Turkish Academic Network and Information Center HAVELSAN Air Electronics Industry and Trade Inc., TÜBİTAK Academic Research Funding Programme Directorate </p>
United Kingdom	<p> UK universities and research establishments perform world-class scientific research in the Polar Regions across numerous spheres of study, including physical sciences (i.e., atmospheric, oceanic, cryosphere and terrestrial research), social sciences (i.e., human and societal), engineering, space sciences, economics, health, policy, and many other areas of research. As a result, the majority (if not all) UK universities and research establishments, will most likely be involved in some aspect of polar science, and thus a list of institutes with major involvement would not be inclusive. </p>

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BAS - Halley VI Research Station, Photo: Michal Krzysztofowicz



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