# Polar Research in Russia

Background paper

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### **Preface**

Research development in the Arctic and Antarctic play an important role in Russian policymaking. Although, due to its size and bureaucratic complexity, there are unique challenges in regulating and funding polar research in Russia, with its scientific networks and facilities widely covering various domains related to the Arctic and Antarctic. Remoteness of the polar regions, necessity for continuous improvement of the polar research stations and other research facilities, as well as climate change and other challenges trigger the interest in a greater scientific cooperation both within Russia and internationally.

This document was prepared for the European Polar Board's Action Group on International Cooperation as a background paper with the aim to map Russian polar research actors and infrastructure and to help EPB and its Members, as well as general public, navigate the country's Arctic and Antarctic scientific landscape. It provides an overview of Russian policies and legal framework in the area of the Arctic and Antarctic research, its stakeholders and infrastructure, international cooperation in the polar regions, as well as funding.

The important part of this background report is its glossary. It is dedicated to recording major actors in Russian policymaking in the polar regions, academic institutions, and their fleet. The glossary is not exhaustive, but it provides a good outline of the actors involved and may be consulted separately from the main document. Notably, it includes the links and basic information on all the mentioned actors.

All the information used in this paper was found in the publicly available sources. Some chapters include information on representatives of governmental bodies or research institutions. This information reflects the situation as of October 2021 and requires regular updates.

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### Introduction

This background paper provides an overview of Russian policies and legal framework in the area of the Arctic and Antarctic research, its stakeholders and infrastructure, international cooperation in the polar regions, as well as funding.

The document consists of four main parts. From the creation of the State commission on Arctic and Antarctic Affairs in 1991 as a first major attempt to regulate state policies in the Arctic and Antarctic in the modern history of Russia, to the overview of the current framework documents and programmes regulating research and development in the polar regions, the first section gives an outline of the policy documents and legal basis for the polar research in Russia. It also provides a summary of the Russian participation in the international cooperation institutions involved in the Arctic and Antarctic.

Second part maps the most important stakeholders involved in Russian polar research. Firstly, it outlines the federal and regional authorities, as well as specialised agencies and ministries, responsible for governance, coordination, and implementation of the polar research activities. Further, it browses through the key academic institutions from Russian Academy of Science to the regional universities providing research in the areas related to the Arctic and Antarctic, followed by a brief review of the non-state stakeholders such as private companies and NGOs working with polar researchers. Importantly, the section provides an overview of the polar research infrastructure like research stations and field bases, expeditionary structures, and research fleet.

Finally, the document recaps major instruments funding polar research activities. They include federal budget: federal target programmes and major state funds, as well as smaller-scale grants and regional funds. The Glossary, mapping the abovementioned stakeholders together with links and additional information can be found in the Appendix.

#### **EPB Members engagement with Russian polar research stakeholders**

With the aim to assess the scope of existing relationships and the need in further development of the links with Russian polar research stakeholders, the EPB members were asked to share information on the agreements their institutions have signed and projects they conduct with Russian partners, and to give examples of some of the high-impact activities.

State Scientific Center of the Russian Federation the Arctic and Antarctic Research Institute - AARI remains one of the closest partners to the EPB members engaging with Russia. Together with the National Centre for Scientific Research (CNRS), France, AARI supports the International Research Laboratory ICE ARCHIVE on Climate and Environment. TUBITAK-MRC Polar Research Institute, Turkey, is planning to sign a MoU with Arctic and Antarctic Research Institute (AARI) for future logistic and scientific collaboration in the polar regions.

Russian Academy of Science (RAN or RAS) and its regional brunches cooperate actively with European partners. CNRS' partners have established a broadly developed cooperation with RAS and have signed framework agreements with Academy's various institutions and universities. Project TOMCAR-PERMAFROST (2012-2016), as well as Yakutsk Exchange agreement between CNRS and RAS «Local knowledge and contemporary reinterpretations in Siberia: Russian and French anthropologists share their points of view» (2014-2015) were noted as most high impact CNRS's collaborations with Russia.

Northern universities remain close partners to several EPB members. Saint-Petersburg State University researchers have been actively engaging with many European research institutes. Arctic Research Centre at Umeå University (ARCUM), Bulgarian Antarctic Institute (BAI), and CNRS cooperate with the University in various polar research related areas. Particularly, BAI supported the collaboration of the Forest Research Institute of the Bulgarian Academy of Science and Saint-Petersburg State University within the framework of the National Program for Polar Research.

Both ARCUM and Thule Institute collaborate with the Northern (Arctic) Federal University (NArFU). Particularly, UOulu and NArFU are involved in such projects as "Understanding ageing, gender, and ethnicity: Experiences from European Arctic (AGE-Arctic)", and "Indigenous and non-indigenous residents of the Nordic-Russian region: Best practices for equity in healthy ageing (NORRUS-AGE)".

Regional cooperation funds and initiatives (such as Barents Euro-Arctic Cooperation programmes, Kolarctic cross-border cooperation funding and Nordic-Russia program) remain crucial for scientific cooperation between the northern research institutes. Among many projects conducted with Russia, one of the most high-impact activities for UOulu was Arctic Preparedness Platform for oil spill and other environmental accidents (APP4SEA).

Notably, Thule institute engages with various UArctic Russian members involved in the Arctic research and education, including smaller ones, that do not have nationally recognised facilities. Collaboration efforts include joint research and education activities and mobility, as well as cooperation with Russian authorities' representatives on development of new partnerships with Russian universities.

NERC Arctic Office collaborates with *APECS Russia*, UK Polar Network and the UK Science and Innovation Network to promote UK-Russia scientific cooperation. Particularly, they organise workshops and seminars, support common projects and provide financial and organisational support to the UK-Russia Arctic Bursaries Programme aimed to support new active engagements with Russia-based researchers in the Russian Arctic and High North.

# Russian polar research: legal basis and policies

# Arctic and Antarctic framework documents and legal basis for the polar research in Russia

The first major attempt to regulate the state policies in the Arctic and Antarctic in the modern history of Russia was the creation of the State commission on Arctic and Antarctic Affairs of RSFSR <sup>1</sup> (the successor of the Soviet commission), which became State commission of the Russian Federation on Arctic and Antarctic Affairs<sup>2</sup> three months later, in March 1992.

Later same year it was replaced by the *Inter-ministerial commission for the Arctic and Antarctic*<sup>3</sup>. This commission was charged with implementation and coordination of the scientific, socioeconomic, and environmental protection activities in the Arctic (including Svalbard) and Antarctic, international cooperation on the polar issues, and promotion of the technical and scientific cooperation with the sub-Arctic states.

In 1992 the Government has also created the State committee for socioeconomic development of the North and its *Scientific coordination centre for the problems of the North, Arctic, and livelihood of the indigenous peoples*. The Centre was supposed to function as research institution and a coordinating organism for other research facilities implicated in the Arctic research. In 1999 the Centre was transferred to the jurisdiction of the *State committee on northern affairs of the Russian Federation*<sup>4</sup>.

The *Council on the Problems of the Far North and the Arctic* under the Government of the Russian Federation was created in 2002 as a permanent advisory council on public policy issues in the region. Together with the Inter-ministerial commission for the Arctic and Antarctic it was liquidated in 2004.

Since the beginning of the 1990s the Government issued a number of documents aiming to regulate the state support for the socioeconomic development of the Arctic in attempt to create a legal framework for the Arctic, but there were no documents dedicated specifically to the support for the scientific development in the polar regions. However, one of the documents, the **1992 Concept of the** 

<sup>&</sup>lt;sup>1</sup> Government of the Russian Federation Decision "On the State Commission of the RSFSR for Arctic and Antarctic" from December 26, 1991 N 75, Moscow/ Правительство Российской Федерациию Постановление "О Государственной комиссии РСФСР по делам Арктики и Антарктики" от 26 декабря 1991 г. N 75, г. Москва

<sup>&</sup>lt;sup>2</sup> Decision "On Approval of the Regulation on the State Commission of the Russian Federation for Arctic and Antarctic Affairs and the personnel of the State Commission of the Russian Federation for Arctic and Antarctic Affairs" dated March 28, 1992 N 197, Moscow/ Постановление "Об утверждении положения о Государственной комиссии Российской Федерации по делам Арктики и Антарктики и персонального состава Государственной комиссии Российской Федерации по делам Арктики и Антарктики" от 28 марта 1992 г. N 197, г. Москва

<sup>&</sup>lt;sup>3</sup> Decision of the Council of Ministers of the Government of the Russian Federation "On Approval of the Regulations on the Interdepartmental Commission for Arctic and Antarctic Affairs and the Personal Composition of the Commission" dated February 22, 1993 N 158b Moscow/ Постановление СМ - Правительства РФ "Об утверждении Положения о Межведомственной комиссии до делам Арктики и Антарктики и персонального состава Комиссии" от 22 февраля 1993 г. N 1586 г. Москва

<sup>&</sup>lt;sup>4</sup> Decision of the Government of the Russian Federation Issues of the State Committee of the Russian Federation for the North of August 3, 1999 N 889/ Постановление Правительства РФ Вопросы Государственного комитета Российской Федерации по делам Севера от 3 августа 1999 года N 889

socioeconomic development of the Northern regions<sup>5</sup> recognised the low efficiency of the state scientific programmes in the North and stipulated the need to set up a special "Northern" fund and organisational facilities for implementation of the targeted programmes for scientific and technical development of the region in order to integrate the universities, academic and sectoral scientific efforts.

#### **Arctic documents**

In 2001 the government approved the draft of the first major programmatic document "Foundations of the State Policy of the Russian Federation in the Arctic for the period till 2020 and for a further perspective" which was aimed to determine main objectives, primary goals, strategic priorities, and mechanisms of realisation of the state policy in the Arctic and included the legal, international, socioeconomic, scientific, and military dimension. It was signed by the President Medvedev only in 2008.

Specifically, the Foundations indicate that it is necessary "to provide realisation of the government's programme of development of the scientific research fleet of the Russian Federation... including introduction of technical means and instrument base adapted for carrying out polar scientific investigations" in order to develop and maintain the scientific activities in the domains of climate change, deep-water activity and hydronautics, and humanities.

The Strategy for the Development of the Arctic Zone of the Russian Federation and Ensuring National Security for the period up to 2020<sup>7</sup>, approved in 2013 defines the main risks and challenges, mechanisms and means of achieving strategic goals for sustainable development of the Arctic. It underlines that "in the field of science and technology, there is a shortage of technological means and capabilities for the study, development and use of the Arctic spaces and resources" and defines the development of science and technology as one of the priority areas. Specifically, to solve this problem, the strategy proposes to consolidate the resources of the state, business and academic actors; implement polar scientific research activities adapted to the climatic conditions of the Arctic; further develop the research fleet and expeditionary activities.

In terms of supporting *international scientific cooperation* the strategy envisages to intensify international cooperation on Arctic issues, ensure Russian presence in Svalbard, carry out a regular exchange of information on the state of the environmental observation data in the Arctic, and organise

<sup>5</sup> Order of the Government of the Russian Federation "On the Concept of the Socio-Economic Development of Northern Regions" dated January 18, 1992, No. 107-r/ Распоряжение Правительства РФ «О Концепции социально-экономического развития районов Севера» от 18 января 1992 года, № 107-р;

<sup>&</sup>lt;sup>6</sup> Foundations of the state policy of the Russian Federation in the Arctic until 2020 and beyond, September 18, 2008 Pr-1969/ Основы государственной политики Российской Федерации в Арктике до 2020 и на дальнейшую перспективу 18 сентября 2008 года Пр-1969

<sup>&</sup>lt;sup>7</sup> Strategy for the development of the Arctic zone of the Russian Federation and ensuring national security for the period until 2020 / Стратегия развития Арктической зоны РФ и обеспечения национальной безопасности на период до 2020 года

international research expeditions in the region. The strategy also aimed at development of a unified national system for monitoring the state and pollution of the environment in the Arctic (to be synchronised with similar international systems by 2015); and underlined that the main indicators of the socio-economic development of the Arctic would include the number of expeditions of marine scientific research.

The state programme "Socioeconomic development of the Arctic zone of the Russian Federation" approved in 2013 and edited in 2017<sup>8</sup> provides the list of sub-programmes and participants and determines main tasks, indicators, and targets for the development of the region to achieve by 2025.

In terms of scientific development, it includes provisions on modernisation of 4 research vessels; highlights the necessity to create more research centres within the Murmansk State Arctic University and implement joint projects with the Kola Scientific Centre of the Russian Academy of Sciences; develop budget for creation of a network of interdisciplinary scientific and educational field stations in Murmansk region; notes the importance of the Northern (Arctic) Federal University (NArFU) as research base for the development of the Arkhangelsk region.

The latest "Foundations of the State Policy if the Russian Federation in the Arctic for the period till 2035" was signed in March 2020 lays down the objectives of the development of science and technology in the Arctic which include: building up fundamental and applied research activities and carrying out comprehensive expeditionary research in the Arctic, development of the research fleet, improvement of the monitoring and communication systems for carrying out measurements received from satellites, sea and ice platforms, research vessels, observatories.

The document also notes that one of the key performance indicators of the implementation of the State policy of the Russian Federation in the Arctic will be the share of internal funding for research and development.

The new Strategy for the Development of the Arctic Zone of the Russian Federation up to 2035 was approved in October 2020<sup>10</sup>. The document includes provisions on development of the infrastructure of seaports and shipping routes in the waters of the Northern Sea Route, the Barents, White and

<sup>&</sup>lt;sup>8</sup> Decision "On the new edition of the state programme "Social and economic development of the Arctic zone of the Russian Federation" August 31, 2017 No. 1064/ Постановление "О новой редакции государственной программы «Социально-экономическое развитие Арктической зоны Российской Федерации" 31 августа 2017 года №1064

<sup>&</sup>lt;sup>9</sup> Decree of the President of the Russian Federation of March 5, 2020 N 164 "On the Foundations of State Policy of the Russian Federation in the Arctic for the Period up to 2035/ Указ Президента РФ от 5 марта 2020 г. N 164 "Об Основах государственной политики Российской Федерации в Арктике на период до 2035

<sup>&</sup>lt;sup>10</sup>Approval of the Strategy for the Development of the Arctic Zone of the Russian Federation up to 2035 <a href="http://static.kremlin.ru/media/events/files/ru/J8FhckYOPAQQfxN6Xlt6ti6XzpTVAvQy.pdf">http://static.kremlin.ru/media/events/files/ru/J8FhckYOPAQQfxN6Xlt6ti6XzpTVAvQy.pdf</a>

Pechora Seas; construction of new universal nuclear icebreakers, rescue and tug-rescue vessels and research fleet.

In terms of support of the fundamental research the Strategy provides for conducting comprehensive expeditionary research in the Arctic Ocean (including bathymetric and gravimetric work, acoustic profiling), development of a comprehensive plan for international scientific research in the region; creation of scientific and educational centres in priority areas of fundamental and applied scientific research.

The Strategy was developed by the Ministry for the Development of the Russian Far East together with the Arctic regions and representatives of the scientific community (the meeting of the scientific council section was chaired by Deputy Secretary of the Security Council of Russia Sergei Vakhrukov and Deputy President of the Russian Academy of Sciences Vladimir Ivanov). In 2019 the Ministry together with Project Office for the Development of the Arctic (PORA) created an online platform to collect proposals of the provisions for the Strategy from experts and general public.

#### **Antarctic documents**

The Strategy for the development of the Russian Federation activities in the Antarctic for the period until 2020 and for a further perspective<sup>11</sup> approved in 1998 aims at preserving Antarctic as a zone of peace, stability, and cooperation and building up scientific potential in the region. The document defines major problems and challenges in scientific development of region such as: insufficient development of complex scientific research, leading to a serious backlog of work, primarily in the field of astrophysics, microbiology, biochemistry, and marine research, as well as material and moral deterioration of the expeditionary infrastructure that was mainly created in the 1970s-1980s. The Strategy also determines the priorities for the scientific development in the region such as development of the Antarctic Treaty system, development of integrated scientific research in the region, modernisation, and reorganisation of Russian expeditionary infrastructure.

From 1998 to 2013 Russian complex scientific research in Antarctic was carried out within the framework of the **Sub-programme "Antarctic Study and Research"** of the **Federal Target programme "World Ocean"**, and implemented by experts from research institutions within the implicated federal bodies and the Russian Academy of Sciences. The sub-programme was supervised by the Federal service for hydrometeorology and environmental monitoring and developed by the Arctic and Antarctic Research Institute (AARI).

<sup>&</sup>lt;sup>11</sup> The Strategy for the development of the Russian Federation activities in the Antarctic for the period until 2020 and for a further perspective <a href="http://docs.cntd.ru/document/902243709">http://docs.cntd.ru/document/902243709</a>

<sup>&</sup>lt;sup>12</sup> approved by the Decree of the Government of the Russian Federation of August 10, 1998 N 919

The "World Ocean" programme<sup>13</sup> was renewed for 2016-2031. It includes sub-programmes "Expeditionary Research in the World Ocean", "Comprehensive Antarctic Research", "Applied Research of the World Ocean Nature", "Improvement of Information Support for Marine Activities".

In 2018, Russian Antarctic Expedition operations plan for 2018–2022<sup>14</sup> was signed. It was developed by the Ministry of Natural Resources and Environment (Ecology) in accordance with the action plan to implement the Russian Action Strategy in the Antarctic until 2020. The new plan is a successor to a similar plan for 2013–2017 and aims at expanding Russia's presence in the region.

Decisions on the Antarctic Expedition staff and fleet are made within the terms of the sub-programme "Organisation and Provision of Works and Scientific Research in the Arctic and Antarctic" of the state programme Environmental Protection, 2012-2020<sup>15</sup>.

The draft of the new **Strategy for the development of the Russian Federation activities in the Antarctic for the period until 2030** was developed by the Ministry of Natural Resources and Environment and approved by the Government in August 2020. The Strategy will include<sup>16</sup> provisions on increase of funding for the Russian Antarctic Expedition from the federal budget; implementation of investment projects on construction and equipment of residential and service complexes at the Russian stations; and development of complex scientific research."

In February 2021, the Ministry of Natural resources and Environment prepared a Plan for the implementation of the Strategy. The Plan aims, among other issues, at developing complex fundamental and applied scientific research, including geological, geophysical, and hydrographic works, remote sensing, expeditionary research of marine biological resources and ecosystems in the coastal waters of the Southern Ocean."<sup>17</sup>

#### Other polar research related documents

Practical implementation of the scientific research in the Polar regions is regulated by the sub-programme "Organisation and support of work and scientific research in the Arctic and Antarctic" of the state programme "Environmental Protection" for 2012–2020, approved in 2014 and updated in March 2020. The Ministry of Natural resources and Environment is named responsible for the implementation of the sub-programme, and Federal service for hydrometeorology and environmental

<sup>&</sup>lt;sup>13</sup> The Federal Target programme "World Ocean" available at: <a href="http://docs.cntd.ru/document/420282736">http://docs.cntd.ru/document/420282736</a>

<sup>&</sup>lt;sup>14</sup> Decree of April 19, 2018 No. 699-r on the approval of the Action Plan and the parameters of the activities in the Antarctic of the Russian Antarctic Expedition in 2018-2022 / Распоряжение от 19 апреля 2018 г. № 699-р об утверждении Плана мероприятий и параметрос деятельности в Антарктике Российской антарктической экспедиции в 2018-2022 годах

<sup>&</sup>lt;sup>15</sup> approved by the Government resolution No. 326, 15 April 2014

<sup>&</sup>lt;sup>16</sup> Russian Ministry of Environment develops Strategy for Antarctic until 2030, TASS, 15.07.2020 https://tass.com/economy/1178933

<sup>&</sup>lt;sup>17</sup> The Ministry prepared a Plan for the implementation of the Strategy in the Antarctic until 2030. https://www.mnr.gov.ru/press/news/podgotovlen\_plan\_realisatsii\_strategii\_razvitiya\_deyatelnosti\_rossii\_v\_antarktike/

monitoring as a participant. The implementation period is 2012-2024. The volume of allocations from the federal budget is 3496345.7 thousand roubles.

The objectives of the sub-programmes include: development of expeditionary activities in the Arctic, including Svalbard archipelago; creation of a unified infrastructure for monitoring environmental changes; phased introduction of automated systems for continuous measurement of the content of pollutants in the atmospheric air; increasing the capabilities of the "North" system for hydrometeorological support of navigation in the waters of the Northern Sea Route; expansion and modernisation of the transport infrastructure of the Russian Antarctic Expedition, and commissioning of the research vessel "Akademik Treshnikov".

In 2012 Vladimir Putin signed the so-called "May decrees" – which comprise 11 decrees setting up specific targets to be achieved by 2020. The decree "On measures to implement state policy in education and science" establishes the goals for the development of science such as raising the volume of funding for state scientific funds to 25 billion roubles.

In 2018 the President signed one more decree "On the national goals and strategic objectives of the development of the Russian Federation for the period up to 2024"<sup>19</sup> that adds new aims in the area of science such as: increasing at least twice the number of foreign citizens studying in educational institutions of higher education and scientific organisations; creation of an advanced infrastructure for research and development, creation and development of a network "mega-science" facilities; and updating at least half of the instrumentation base of leading organisations carrying out research and development activities.

The **2015 Maritime Doctrine of the Russian Federation** provides the legal basis for the marine research and activities in both Polar regions, and aims to provide systematic studies of the marine environment, resources, and spaces of the oceans and seas, and the entire complex of issues associated with the use of the World Ocean; establishment and development of a unified system monitoring the World Ocean and its seas, based on remote sensing and manual observations; a maritime scientific research fleet; experimental bases for development of ocean engineering and marine biotechnology; undersea equipment/vehicles; cartographic support; databases and data banks on the marine environment.

In line with the Doctrine, the new version of the Strategy for the development of maritime activities of the Russian Federation until 2030 was approved in August 2019<sup>20</sup>. The documents highlight the

<sup>&</sup>lt;sup>18</sup> Decree of the President of the Russian Federation of May 7, 2012 N 599 "On measures to implement state policy in the field of education and science"/ Указ Президента Российской Федерации от 7 мая 2012 г. N 599 "О мерах по реализации государственной политики в области образования и науки"

<sup>&</sup>lt;sup>19</sup> Decree of the President of the Russian Federation of May 7, 2018 "On national goals and strategic objectives of the development of the Russian Federation for the period up to 2024"/ Указ Президента Российской Федерации от 7 мая 2018 «О национальных целях и стратегических задачах развития Российской Федерации на период до 2024 года» <sup>20</sup> Strategy for the development of maritime activities of the Russian Federation until 2030 <a href="http://static.government.ru/media/files/f97zDwh44IJsniyhDZuV85gaL4AkE5M4.pdf">http://static.government.ru/media/files/f97zDwh44IJsniyhDZuV85gaL4AkE5M4.pdf</a>

need for advancement of the research in marine sciences, decrease in scientific expeditions, deterioration of research vessels, as well as lack of academic staff in marine research institutes as key problems.

Finally, the most recent **State programme "Scientific and technological development of Russian Federation"**<sup>21</sup> approved in 2019 determines the objectives and tasks for the scientific development, main actors concerned, lists sub-programmes, indicators for the implementation and monitoring of realisation of the programme, and determines the budget allocated to tackle these needs.

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<sup>&</sup>lt;sup>21</sup> Decision March 29, 2019 No. 377 "On approval of the state programme of the Russian Federation" Scientific and technological development of the Russian Federation "/ Постановление от 29 марта 2019 г. № 377 "Об утверждении государственной программы Российской Федерации "Научно-технологическое развитие Российской Федерации"

#### International polar cooperation

Russia is the member of the various organisations implicated in the polar cooperation:

- The Northern Forum (joined in 1992)
- Conference of Parliamentarians of the Arctic Region (1994)
- International Arctic Science Committee (IASC). The International Science Initiative in the Russian Arctic (ISIRA) is a Russian and international cooperative initiative to assist Arctic science and sustainable development in the Russian Arctic launched in 1993. Head Arkady Tishkov
- Scientific Committee on Antarctic Research (SCAR) (1958). Currently, the delegates from Russia
  to SCAR are Dr A. Makarov and Dr I. Repin, and SCAR delegate from the International
  Geographical Union V. Kotlyakov. National representation in SCAR is carried out through the
  RAS' Scientific Council for the Study of the Arctic and Antarctic. <u>Russian representatives</u> to the
  SCAR programmes.
- Association of Polar Early Career Scientists (APECS) Russian chapter (Cooperates closely with various European polar research institutes, also among the EPB members)
- The Arctic Council (1996) (see below) The Russian Association of Indigenous Peoples of the North (RAIPON) is a permanent participant of the Council.

#### EU – Russia scientific cooperation in polar regions

Scientific cooperation plays an important role in the EU-Russia relations in the North. Besides major collaborative opportunities such as Horizon 2020, the two sides actively <u>collaborate</u> on the Arctic research issues in the framework of the various mechanisms of cross-border cooperation such as Kolarctic programme, Karelia programme, Interreg (for ex. APP4SEA, the Northern Periphery and Arctic 2014-2020 programme) and other regional networks.

- Barents Euro-Arctic Council BEAC (1993), including cooperation through their Joint Working Group on Education and Research (JWGER). Sergey Petrovich is Russian Representative at the Committee of Senior Officials of the Barents Euro-Arctic Council.
- Council of the Baltic Sea States (CBSS) (1992)
- Nordic Council of Ministers has the <u>Nordic-Russia programme</u> that provide funding support for the projects of Northern institutes with Russian partners.

#### Russia's Arctic Council Chairmanship of 2021-2023

Russia took on the AC chairmanship in 2004-2006 and assumed the Chairmanship of 2021-2023.

"Responsible Governance for Sustainable Arctic"<sup>22</sup> is the cross-cutting priority of the ongoing Russian Chairmanship in the Arctic Council. <u>Russia's Chairmanship programme</u> is set to promote multilateral cooperation in several priority areas:

- Arctic people, including Indigenous peoples of the North
- Environmental protection, including climate change
- Socio economic development in the region
- Strengthening the Arctic Council

More than 100 <u>international Arctic events</u>, divided into 11 thematic clusters, are planned within the framework of the Russian Chairmanship in a hybrid face-to-face and online format.

The Russian Chairmanship team is led by Nikolay Korchunov, the Chair of the Senior Arctic Officials and Ambassador-at-large for the Arctic Cooperation at the Ministry of Foreign Affairs (MFA). He previously served as the Head of Russia's delegation to the Arctic Council Task Force on Arctic Marine Cooperation and Task Force on Improved Connectivity in the Arctic. Mr. Korchunov's and his team's contacts may be found <a href="https://example.com/here">here</a>.

The first meeting of the Organising Committee for the preparation and provision of the Russian chairmanship in the Arctic Council in 2021–2023 was held on February 17, 2021. The action plan was developed by the Ministry for the Development of the Russian Far East in cooperation with the Ministry of Foreign Affairs, relevant federal ministries, and departments. The Committee is chaired by Yury Trutnev, Deputy Prime Minister of the Russian Federation, Plenipotentiary Representative of the President in the Far Eastern Federal District. The Committee announced that the events within the framework of Russia's Arctic Council Chairmanship will involve 17 federal agencies, 11 constituent entities of the Federation, 12 NGOs and educational institutions, 3 corporations (Rosatom, Sovcomflot, Norilsk Nickel) with more than 12 thousand people participating<sup>23</sup>.

#### International Forums and Conferences held in Russia

The International Arctic Forum (2010, 2011, 2013, 2017, 2019, 2021)

Arctic: Today and the Future Forum

Days of Arctic and Antarctic in Moscow

<sup>&</sup>lt;sup>22</sup> Russian Chairmanship 2021-2023, Arctic Council, <a href="https://arctic-council.org/about/russian-chairmanship-2/">https://arctic-council.org/about/russian-chairmanship-2/</a>

<sup>&</sup>lt;sup>23</sup> Yury Trutnev chaired the first meeting of the organising committee for the preparation and provision of the Russian chairmanship in the Arctic Council in 2021-2023 <a href="http://government.ru/news/41562/">http://government.ru/news/41562/</a>

# Polar research governance and coordination

#### State actors

For detailed information and links go to the Glossary.

#### Federal Authorities

There are several major state actors responsible for development, implementation and monitoring of policies concerning the Arctic and Antarctic research.

The **State commission on the Arctic development** was created in 2015 by the Government with the aim to coordinate the work of federal and regional authorities and other state bodies in addressing social and economic issues in the Arctic, as well as in the areas of transport development, environmental issues, international collaboration, science, and national security.

The Head of the Commission is Russia's Deputy Prime Minister and Presidential Plenipotentiary Envoy to the Far Eastern Federal District Yury Trutnev. Among the members of the Commission are Alexander Kozlov, Minister for Development of the Russian Far East and Arctic, Alexander Akimov, the Vice-president of the Federation Council Committee on Federation, Regional Policy, Local governance, and Northern Affairs, and Valery Bondur, the Vice-President of RAS.

In September 2020, the Commission announced plans to create a *scientific council* under its auspices. It would ensure coordination of federal executive bodies and scientific organisations and help to shape the Arctic research agenda. It is also planned to create a commission that would be charged with grant allocations<sup>24</sup>.

In August 2020, the President signed a Decree on the establishment of an Interdepartmental commission of the Security Council of the Russian Federation on the issues of ensuring the national interests in the Arctic<sup>25</sup>. According to the document, the commission will work on the elaboration of measures to ensure the national security of the Russian Federation in the Arctic and the socioeconomic

<sup>&</sup>lt;sup>24</sup> A scientific council will be created under the State Commission for the Development of the Arctic, Parlamentskaya Gazeta, 21.09.2020/При Госкомиссии по вопросам развития Арктики будет создан научный совет, Парламентская газета, 21.09.2020 <a href="https://www.pnp.ru/expert/pri-goskomissii-po-voprosam-razvitiya-arktiki-budet-sozdan-nauchnyy-sovet.html">https://www.pnp.ru/expert/pri-goskomissii-po-voprosam-razvitiya-arktiki-budet-sozdan-nauchnyy-sovet.html</a>

<sup>&</sup>lt;sup>25</sup> On the Interdepartmental Commission of the Security Council of the Russian Federation on the issues of ensuring the national interests of the Russian Federation in the Arctic/O Межведомственной комиссии Совета Безопасности Российской Федерации по вопросам обеспечения национальных интересов Российской Федерации в Арктике <a href="http://docs.cntd.ru/document/565592756">http://docs.cntd.ru/document/565592756</a>

development of the Arctic zone, as well as coordination of the activities of federal, regional, and local authorities. It is noted that the implementation of complex scientific research in the domain of socio-economic development of the region will also be one of the functions of the new commission.

The Commission will be headed by Dmitry Medvedev, currently Deputy Head of the Security Council. Among the Members of the Commission are the Minister of Foreign Affairs, the Minister of Science and higher education, as well as the President of Russian Academy of Science.

Council on the Development of the Far East, Arctic and Antarctic at the Federation Council of the Federal Assembly is formed in February 2021. It replaced Arctic and Antarctic Council of the Federal Assembly of the Russian Federation - a standing expert advisory body to the Federation Council of the Federal Assembly. The Council was composed of representatives of federal and regional authorities, and other state bodies, scientific institutions and expert communities, and educational organisations.

The new Council is headed by Galina Karelova, the acting Deputy Chairwoman of the Federation Council. The Council will be working on monitoring the implementation of state programmes for the development of the Far East and the Arctic zone (including transport infrastructure, support of small and medium-sized businesses, education, healthcare and employment)<sup>26</sup>.

In 2019, the public administration system was reorganised considering the challenges associated with the development of the Arctic zone and "ensuring national security": the powers of State Commission for the Development of the Arctic were expanded, **the Ministry of the Russian Federation for the Development of the Far East and the Arctic** was established, the competence of the development institutions of the Far East to the Arctic zone were broadened.

The Presidential Council for Science and Education is a consultative body "established to inform the President on the situation in these areas, coordinate his contacts with scientific organisations, educational establishments, and members of the science and education communities, and draft proposals on topical issues concerning state science, technology and innovation policy and state education policy". The Council also receives and organises examination of nominees for the Russian Federation State Prize for Science and Technology and President of the Russian Federation's Prize for Young Scientists for Achievements in Science and Innovation.

In February 2021, at a meeting of the Council for Science and Education, the rector of the St. Petersburg Mining University, Vladimir Litvinenko, proposed to single out the Antarctic, "as it was before: as a specific object of scientific research. Litvinenko underlined that this may improve the situation with funding research activities, for instance, the study of the subglacial relict Lake Vostok<sup>27</sup>. At the moment, the drilling of wells at the facility is mostly financed from private funds.

<sup>&</sup>lt;sup>26</sup> The first meeting of the Council for the Development of the Far East, Arctic and Antarctic was held/Прошло первое заседание Совета по вопросам развития Дальнего Востока, Арктики и Антарктики <a href="http://council.gov.ru/events/news/126173/">http://council.gov.ru/events/news/126173/</a>

<sup>&</sup>lt;sup>27</sup> Заседание Совета по науке и образованию/ The Council for Science and Education meeting <a href="http://special.kremlin.ru/events/president/transcripts/64977">http://special.kremlin.ru/events/president/transcripts/64977</a>

**Specialised federal agencies and ministries** tasked with implementation of the Polar research activities:

**Federal service for hydrometeorology and environmental monitoring of Russia (Roshydromet)** is one of the main actors in the implementation of the state programmes concerning the polar regions. Its "northern branch" Northern Directorate for hydrometeorology and environmental monitoring (Arkhangelsk) and other relevant institutions provide scientific and technical support for expeditions.

The most important institution in terms of implementation of the Polar research activities is the **State Scientific Center of the Russian Federation the Arctic and Antarctic Research Institute – AARI**, which belongs to the Russian Federal service on hydrometeorology and environmental monitoring. AARI carries out fundamental and applied research and development in the Arctic region of Russia and the Antarctic within the framework of federal target programmes and decrees of the Government.

In addition to the various scientific departments, AARI supervises the Arctic and Antarctic Museum, the Center of Ice and Hydrometeorological Information, World Data Center-B on sea ice, Russian Antarctic Expedition (RAE), The High-latitude Arctic Expedition (VAE), scientific research and experimental base: the station in the Arctic and Antarctic and in the country, research vessels, and experimental departments and laboratories for the development and production of scientific instruments and devices.

The Institute also actively cooperate with regional governments (for example, cooperation with Yamal region on implementation of the research station on the Bely Island), various state agencies, and private companies involved in the polar affairs and exploration.

AARI has many international partners, including several EPB members. The Institute cooperates, among others, with CNRS (France), together with RAN, IPEV, CNRS, Grenoble-Alpes University on the International Research Project "Ice core archives".

**Ministry of Science and Higher Education** of Russia coordinates scientific projects in polar regions (including those in the framework the Arctic council).

**Ministry for the Development of the Russian Far East and Arctic** developed the Strategy for the Arctic up to 2035 and provides the implementation of the state programmes in the concerned regions.

Ministry of Natural Resources and the Environment of the Russian Federation is responsible for implementation of the sub-programme "Organisation and support of work and scientific research in the Arctic and Antarctic" of the state programme "Environmental Protection", co-executor of the Agreement on Strengthening International Arctic Scientific Cooperation. It also runs "Russian Arctic" National park.

**Ministry of Economic Development of the Russian Federation** is responsible for monitoring of the implementation of the Arctic strategy and other state programmes.

#### **Regional Authorities**

Regional governments (Arctic regions) often create or fund local agencies and commissions to support implementation of the research activities and fund them.

**Saint-Petersburg** is taking an active part in the Arctic affairs. The *Committee for Arctic Affairs*, and its Centre for Arctic Initiatives (scientific consultative body) implements state policy in the field of scientific research, cultural, socio-economic, environmental, and other domains of cooperation of St. Petersburg with other Russian Arctic regions, and coordinates activities of executive bodies of St. Petersburg in these areas; and *Polar Commission of the Maritime Council* is a permanent advisory coordinating body at the Government of St. Petersburg.

**Arkhangelsk region** actively supports Marine research and expeditionary activities in the Arctic (fleet) and cooperates with state funding mechanisms to provide support for the polar research.

Yamal-Nenets Autonomous Okrug operates a Scientific Centre for the Study of the Arctic (Salekhard) is a multi-discipline research institution founded Under the department of external relations of the Yamal region.

#### **Academic institutions**

#### Research centres and institutes

See the list and more info on the research centres in Glossary.

**Russian Academy of Science (RAS)** is the major coordinating academic institution for the Polar research activities. Its Institute of Oceanology (set up in 2016) operates the Ocean Expedition Centre and manages the research vessels based in Kaliningrad and Vladivostok.

Scientific Council of RAS for the study of the Arctic and Antarctic is planning and coordinating fundamental and applied research in the polar regions. It also implements decisions adopted by the International Arctic Scientific Committee (IASC) and the International Committee for Antarctic Research (SCAR).

Among the major RAS centres carrying out research in the polar regions are:

- -Kola Science Centre of the Russian Academy of Sciences (FRC KSC RAS) with its Kola Arctic Geophysical Infrastructure Network of the Polar Geophysical Institute (KAGIN) (Murmansk);
- -Murmansk Marine Biological Institute of the Russian Academy of Sciences (MMBI RAS);
- -Karelian Research Centre of the Russian Academy of Sciences (KarRC RAS) (Petrozavodsk).

#### The regional branches of RAS:

- -Ural Branch of RAS has the Federal Centre for Integrated Arctic Research of the Russian Academy of Sciences (FCIARctic);
- -Siberian Branch of RAS organised Big Norilsk Expedition (summer 2020). Its Melnikov Permafrost Institute (Yakutsk) cooperates, inter alia, with CNRS (TOMCAR-PERMAFROST project);
- -Far Eastern Branch of RAS has two institutions working on the Arctic issues based in Magadan and various institution on biology of the World ocean. FEBRAS operates several research vessels (see Office of Scientific research Fleet) of various types, purposes, and cruising range.

Many research institutes from the regional brunches of RAS are actively involved in international scientific cooperation. For example, together with NERC they created a UK-SRFE (Siberia and the Russian Far East (SRFE) network <u>DIMA</u> (Developing Innovative Multiproxy Analyses) in SRFE.

#### **Universities**

Various universities provide scientific expertise in the polar research related domains. Many of the universities from the Arctic regions, and those having research centres working on the polar issues, are also members of UArctic, and collaborate with international partners. Among the major universities actively involved in the polar research are northern universities: **Northern (Arctic) Federal University (NarFU) (Arhangelsk)** and **Murmansk Arctic State University**. They also actively engage in cooperation with the universities from other Arctic countries.

The joint project of NArFU and Northern branch of Roshydromet "Arctic Floating University" has been carried out since 2012. Arctic Floating University is an international research and educational programme and expedition that includes lectures, seminars and fieldwork on board of a research vessel and in the waters of Barents, Kara and White Seas. Due to the coronavirus restrictions the 2021 expedition included only Russian participants. Also, the latest expedition was carried out on board of RV "Mikhail Somov", while previous expeditions took place on the RV "Professor Molchanov".

NarFU collaborates with EPB members such as CNRS, ARCUM, University of Oulu (AGE-Arctic and NORRUS-AGE projects).

**Lomonosov Moscow State University's Marine research centre** provides environmental monitoring of the Russian offshore projects in the Arctic and Far East regions. The university cooperates with CNRS (ncluding on Pertsov White Sea Biological Station (PWSBS)), ARCUM and others.

**Moscow Institute of Physics and Technology's** I (MIPT) laboratory for Geophysical research of the Arctic and continental margins of the World Ocean. Laboratory staff participate in regular annual marine scientific expeditions in the Arctic in cooperation with the Shirshov Institute of Oceanology.

The institute has also initiated a project Arctic Hydrogen Energy Applications and Demonstrations" (AHEAD) in the Arctic Council's Sustainable Development Working Group (SDWG). Together with its Russian and foreign partners, MIPT will build a year-round fully autonomous International Arctic Station (IAS) in the Land of Hope "Snowflake", which is scheduled to run from 2022. The project is supported by the Russian Ministry of Science and Higher Education, the Ministry of Foreign Affairs, the Ministry for the Development of the Russian Far East and Arctic, the governor of Yamal-Nenets Autonomous Okrug, and the EnergyNet infrastructure center of the National Technology Initiative <sup>28</sup>.

**Russian State Hydrometeorological University** has a Center for Arctic and Climate Research (CACR), a Laboratory of Satellite Oceanography. Several projects such as Arctic Syntool and Polar Cyclones implemented by the Laboratory.

<sup>&</sup>lt;sup>28</sup> Sun, wind, and hydrogen: New Arctic station will do without diesel fuel, MIPT, 28.1.2020 https://mipt.ru/english/news/sun wind and hydrogen new arctic station will do without diesel fuel

#### Non-state stakeholders

#### **Companies**

Private companies often participate in research activities in the Arctic and Antarctic - they are commissioned for implementation of specific technological means, and provide funding for Polar research. Among them, for example, are:

Rosgeo (Rosgeologya) that provides equipment, R&D expeditions support (construction of North Pole drifting station). It includes "Polar Marine Geological Expedition" (PMGE), founded in 1962, performs complex geological and geophysical research. Within the framework of the Russian Antarctic Expedition (RAE), the company carries out comprehensive geological and geophysical studies of the subsoil of the Antarctic.

The company is also the executor of work under a 15-year contract between Russia and the International Seabed Authority (ISA), aimed at exploration of deep-water polymetallic sulphide deposits in the central part of the Atlantic Ocean.

**Rosneft** has the LLC "Arctic Scientific Centre" that conducts extensive research work in the Arctic, organises expeditions (for example, together with the Severtsov Institute of Ecology and Evolution of the Russian Academy of Sciences and the Marine Research Centre of the Lomonosov Moscow State University), conducts studies on polar bears and walrus conservation. The company also restored the automatic meteorological observation system in the Kara Sea.

Together with Innopraktika, a non-governmental development institute, Rosneft has issued the atlas "The Russian Arctic. Space, time, resources", and edited the atlas of the Arctic seas.

**Norilsk Nickel** participates in funding of research projects in the Arctic. It has, for instance, signed the cooperation agreement with Federal Agency for Ethnic Affairs. The company plans to hold an international summit of leaders of the indigenous peoples of the Arctic, "promote the participation" of representatives of the indigenous population in international fora on the rights of indigenous peoples, develop methodology for an ethnographic research of the indigenous peoples of the Taimyr Peninsula<sup>29</sup>.

<sup>&</sup>lt;sup>29</sup> «Норникель» и Федеральное агентство по делам национальностей будут вместе поддерживать коренные народы Севера/Norilsk Nickel and the Federal Agency for Ethnic Affairs will jointly support the indigenous peoples of the North, 3.3.2021 <a href="https://www.vedomosti.ru/press">https://www.vedomosti.ru/press</a> releases/2021/03/04/nornikel-i-federalnoe-agentstvo-po-delamnatsionalnostei-budut-vmeste-podderzhivat-korennie-narodi-severa

#### NGOs

One of the major NGOs active in the Arctic affairs is Russian **Association of Indigenous Peoples of the North (RAIPON).** It acts a permanent member of the Arctic Council and participates in shaping state policies concerning indigenous peoples.

The National Arctic Scientific and Educational Consortium is a voluntary association of universities, scientific organisations, enterprises implementing training programmes for the Russian Arctic, conducting research, economic and economic activities in the Arctic territories and on Arctic topics.

The non-profit partnership "Russian Centre for Arctic Development", established following the Presidential decree in 2014 by the government of Yamal-Nenets Autonomous region. Participates in ecological monitoring in the Arctic, provides expeditionary assistance, etc.

#### Polar research infrastructure

See the list and more info on the research stations and fleet in Glossary.

#### **Arctic**

#### **AARI**

The Institute leads dozens of expeditions in the Arctic annually, including joint expeditions with international researchers from the US and European countries.

The High-latitude Arctic Expedition (VAE) is an expeditionary unit of AARI. It carries out expeditions on sea vessels and icebreakers, as well as air expeditions to provide hydrometeorological observations at meteorological stations and drifting buoys in remote areas of the Arctic Ocean and on the high-latitude Arctic islands. The Unit also provides logistic support for scientific projects carried out by various ministries and other governmental institutions.

Department Manager: Vladimir Sokolov

The Russian scientific Arctic expedition to the Svalbard (Spitsbergen) archipelago (RAE-S) was created as a structural unit of the FSBI "AARI" in 2016 and conducts fundamental and applied scientific research on the Svalbard archipelago.

The AARI scales down its expeditionary programme in Svalbard archipelago in 2021 (number of staff will be decreased from 40 to 15). The reduction in the programme was mainly due to the Covid-19 restrictions. Nevertheless, the lack of staff, as well as the deterioration of infrastructure, transport, and equipment, also remain major problems<sup>30</sup>.

Department Manager: Yuri Ugryumov

On December 18, 2020, the ice-resistant *self-propelled platform "North Pole"* was launched. The platform would allow the continuation of regular studies of the natural environment of the Central Arctic, suspended in 2013 along with the North Pole drifting expedition project. The platform may start its first voyage in 2022<sup>31</sup>.

The platform will be equipped with 15 scientific laboratories allowing scientists to carry out research all year round. It was announced that the platform will be able to arrive at site without aid of an icebreaker and drift in the Arctic Ocean for about two years continiously. One of the decks will be

<sup>&</sup>lt;sup>30</sup> Арктический и Антарктический НИИ сократит программу экспедиций на Шпицбергене в 2021 году/ Arctic and Antarctic Research Institute will reduce the programme of expeditions to Svalbard in 2021 <a href="https://tass.ru/obschestvo/10668509">https://tass.ru/obschestvo/10668509</a>

<sup>&</sup>lt;sup>31</sup> Первый рейс ледостойкой платформы для изучения Арктики запланирован на 2022 год/ The first voyage of the ice-resistant platform to explore the Arctic is scheduled for 2022 <a href="https://iz.ru/1123117/2021-02-10/pervyi-reis-ledostoikoi-platformy-dlia-izucheniia-arktiki-zaplanirovan-na-2022-god">https://iz.ru/1123117/2021-02-10/pervyi-reis-ledostoikoi-platformy-dlia-izucheniia-arktiki-zaplanirovan-na-2022-god</a>

equipped with a helicopter landing pad for receiving Mi-8 and Mi-38 helicopters. The platform should play a key role in the weather and ice forecasting system, gathering data from coastal observatories.<sup>32</sup>

AARI manages the training and methodological centre for polar research – field base "Ladoga", as well as "Ladozhskaya" and "Gorkovskaya" Stations (near St. Petersburg). The Institute also operates Research Station Ice Base Baranova Cape of Severnaya Zemlya (research projects in the framework of international cooperation with the National Research University of Finland, the Republic of Korea, Japan, and Germany) and temporary research field base Khastyr (Khatanga Bay), and carries out high-latitude air expeditions (and flight units), ship high-latitude expeditions, as well as island and coastal expeditions.

In addition, the Institute manages the Tiksi Hydrometeorological Observatory, established in the framework of Russian-American cooperation. Representatives of scientific organisations of Roshydromet, RAS, the National Oceanic and Atmospheric Administration, the University of Colorado and the Finnish Meteorological Institute collect data from the observatory in the framework of IPY 2007/08. GMO Tiksi serves as a regional station for the Global Atmosphere Watch (GAW)

Other Arctic stations are operated by universities or regional governments (see list in glossary). 33

#### **Antarctic**

Russian scientists have been conducting oceanographic, meteorological and hydrobiological studies of the waters of the Southern Ocean since 1947-1948. In 1955, the Complex Antarctic Expedition of the USSR Academy of Sciences was formed and tasked with implementation of the scientific projects of the International Geophysical Year 1957-58.

Since 1992 Russian Antarctic Expedition (RAE) has been organising and coordinating Russian research activities in the region. More than 20 scientific organisations and state agencies participate in RAE. The composition of the staff of the stations and seasonal expeditions is determined by the Government for a five-year period.

Five Russian stations are permanently operating in the Antarctic: Mirny, Vostok, Progress, Novolazarevskaya, Bellingshausen. Also, automatic meteorological and geodetic stations operate year-round at the seasonal field bases Molodezhnaya, Russkaya, and Leningradskaya.

<sup>32</sup> AARI, news http://www.aari.ru/main.php?lg=0&id=147

<sup>&</sup>lt;sup>33</sup> There are currently 52 polar stations of the Murmansk, Northern, Yakutsk and Chukotka Hydrometeorological Service Administrations that operate and transmit information to the automatic weather stations of Roshydromet, where standard meteorological (52 polar stations), marine hydrological (44 polar stations), actinometric (10 polar stations), aerological (7 polar stations) observations. 32 polar stations are situated in remote areas, 27 are reference stations, 23 are correspondents of the World Meteorological Organisation. <a href="https://geographyofrussia.com/polyarnye-stancii-rossijskogo-sektora-arktiki/">https://geographyofrussia.com/polyarnye-stancii-rossijskogo-sektora-arktiki/</a>

In 2020 and 2021 new wintering complexes were built for Mirny and Vostok stations. The new wintering complex for the Vostok Antarctic station should provide facilities for 35 people during the seasonal period and 15 people during the wintering period<sup>34</sup>. The project was co-financed by Leonid Mikhelson, CEO and chairman of the gas company Novatek. The new station in the Antarctic was planned to be operational by 2023, and its installation was supposed to begin in 2020<sup>35</sup>.

The annual Antarctic expeditions include:

- 120 people of staff in seasonal work, 110 in year-round work at permanent stations (125 members of the permanent staff starting from 2021);
- scientific expedition vessels (AARI) "Akademik Fedorov" and "Akademik Treshnikov"; research vessel "Akademik Alexander Karpinsky" owned by the Polar Marine Geological Expedition.
- aircrafts and other transport include 2-4 helicopters (leased), an aircraft-laboratory for geophysical work on the basis of AN-2, transport aircraft on a ski-wheeled chassis such as Twin-Otter and BT-67 Turbo Basler, as well as heavy aircraft for intercontinental flights such as IL-76 TD-90VD and Boeing-757. The sledge-caterpillar traverse and aircraft flights are carried out to Vostok station from Progress station (route length 1350 km).

The programme of scientific observations and expeditionary work of the 66th RAE was formed considering coronavirus restrictions. In total, 110 people will go to Antarctica for wintering, the number of the seasonal composition has been reduced to 70 people due to the COVID-19 pandemic<sup>36</sup>.

Head of department: Klepikov Alexander

Contacts here

#### Research fleet

#### Russian Academy of Science (RAS) fleet

In 2016, Ocean Expedition Centre (OEC) was established at the Institute of Oceanology of the Russian Academy of Sciences (IORAS), which now operates most of the currently used research vessels.

Organisationally, the Marine Expeditionary Research Centre is responsible for the fleet management, as well as for the applications for expeditions from other institutions; the Council for the Hydrosphere

<sup>&</sup>lt;sup>34</sup> About the station's architecture <a href="https://archi.ru/russia/92429/polyarnaya-tikhokhodka">https://archi.ru/russia/92429/polyarnaya-tikhokhodka</a>

<sup>&</sup>lt;sup>35</sup> Завершено создание нового зимовочного комплекса антарктической станции Восток/the creation of the wintering station Vostok is completed, Ministry of Natural resources and Ecology <a href="https://www.mnr.gov.ru/press/news/zaversheno">https://www.mnr.gov.ru/press/news/zaversheno</a> sozdanie novogo zimovochnogo kompleksa antarkticheskoy stantsii vostok/

<sup>&</sup>lt;sup>36</sup> НЭС «Академик Трёшников» выйдет из порта Санкт-Петербург в Антарктиду 24 октября/Akademik Treshnikov will leave the port on the 24<sup>th</sup> of October <a href="https://portnews.ru/news/303717/">https://portnews.ru/news/303717/</a>

of the Earth (later the Working Group on the planification) approve expedition plans, the federal agency FANO, and then its successor, the Ministry of Education and Science – for finances<sup>37</sup>.

OEC comprises the Atlantic fleet base (AFB) in Kaliningrad and the Pacific fleet base (PFB) in Vladivostok which must become the largest bases of the research fleet in Russia. It operates the research vessels: Akademik Sergey Vavilov, Akademik Ioffe, Akademik Mstislav Keldysh, Akademik Nikolaj Strakhov, Professor Shtokma, Akademik Boris Petrov. Four other RVs are transferred to Far East branch of RAS (Vladivostok): Akademik Oparin, Akademik M.A.Lavrentyev, Professor Bogorov, Professor Gagarinskiy.

Also, the Far Eastern Branch of RAS, Murmansk Marine Biological Institute, Vernadsky Institute of Geochemistry and Analytical Chemistry, and Geological Institute operate their own research vessels.

In summer 2020 it was announced that 25,35 bln roubles will be spent to build two new multifunctional research vessels for works in the World ocean and on the Arctic shelf. Commissioning is scheduled for 2025, the contracting authority is Scientific Research Fleet Directorate of the Far Eastern Branch of the Russian Academy of Sciences<sup>38</sup>.

AARI (Federal service for hydrometeorology and environmental monitoring of Russia) operates several research vessels, including the newest flagship vessel working in Antarctic "Akademik Tryoshnikov".

Northern Directorate for hydrometeorology and environmental monitoring and Far Eastern regional hydrometeorological research institute (FERHRI) also own research vessels operating in polar regions.

<sup>&</sup>lt;sup>37</sup> Covered the ninth wave The Russian scientific fleet got into a serious "storm", O Lukash, Rossiyskaya Gazeta - Federal issue № 100 (8154)/ Накрыл девятый вал. Научный флот России попал в серьезный "шторм", О. Лукаш, Российская газета - Федеральный выпуск № 100(8154) <a href="https://rg.ru/2020/05/04/pochemu-nauchnyj-flot-rossii-popal-v-sereznyj-shtorm.html">https://rg.ru/2020/05/04/pochemu-nauchnyj-flot-rossii-popal-v-sereznyj-shtorm.html</a>

<sup>&</sup>lt;sup>38</sup> Russia will build two scientific vessels for work in the Arctic for 25 billion roubles. by 2025, Interfax, 3.07.2020/ Россия построит два научных судна для работы в Арктике за 25 млрд руб. к 2025, Интерфакс, <a href="https://www.interfax-russia.ru/far-east/news/rossiya-postroit-dva-nauchnyh-sudna-dlya-raboty-v-arktike-za-25-mlrd-rub-k-2025-g">https://www.interfax-russia.ru/far-east/news/rossiya-postroit-dva-nauchnyh-sudna-dlya-raboty-v-arktike-za-25-mlrd-rub-k-2025-g</a>

# Polar research funding

#### Federal Budget

Polar research activities are majorly funded through the "Environment protection" state programme<sup>39</sup>, and specifically its *sub-programme* "Organisation and Provision of Works and Scientific Research in the Arctic and Antarctic". The Ministry of natural resources and ecology is designated responsible for the implementation of the sub-programme, and Federal service for hydrometeorology and environmental monitoring as a participant. The implementation period is 2012-2024. The volume of allocations from the federal budget – 3496345.7 thousand roubles. It is expected that the funding of this programme (including works on the Russian Antarctic Expedition) will be reduced through 2021-2022.

Some activities are also funded through the sub-programme "Hydrometeorology and environmental monitoring", for instance, organisation of research at the North Pole drifting station (budget allocated to the Polar Fund).

The Federal target programme "World Ocean" programme<sup>40</sup> running in 2016-2031 provides framework for marine research, expedition activities and polar stations support in both Arctic and Antarctic. The programme includes sub-programmes "Expeditionary Research in the World Ocean", "Comprehensive Antarctic Research", "Applied Research of the World Ocean Nature", "Improvement of Information Support for Marine Activities". The programme budget is 87 200,2 million roubles.

"The World Ocean Exploration programme", a part of the **National "Science" Project** (2019-2024) aims to increase in the number of sea expeditions and support the development of the research fleet.

Some projects in the field of polar research were funded within the framework of **the Federal Target programme** "Research and Development in Priority Areas of Development of the Scientific and Technological Complex of Russia for 2014-2020"<sup>41</sup>. One of its priority areas is "the connectivity of the territory of the Russian Federation through the creation of intelligent transport and telecommunication systems, the development and use of outer space and air space, the World Ocean, the Arctic and Antarctic".

<sup>&</sup>lt;sup>39</sup> Russian Federation State programme "Environmental protection"/Государственная программа Российской Федерации "Охрана окружающей среды" <a href="http://gov.garant.ru/SESSION/PILOT/main.htm">http://gov.garant.ru/SESSION/PILOT/main.htm</a>

<sup>&</sup>lt;sup>40</sup> Passport of the Federal Target programme "World Ocean"/Паспорт федеральной целевой программы Мировой Океан <a href="http://pravo.gov.ru/proxy/ips/?docbody=&nd=102054870&rdk=3">http://pravo.gov.ru/proxy/ips/?docbody=&nd=102054870&rdk=3</a>

<sup>&</sup>lt;sup>41</sup> Federal Target programme "Research and Development in Priority Areas of Development of the Scientific and Technological Complex of Russia for 2014-2020"/Федеральная целевая программа «Исследования и разработки по приоритетным направлениям развития научно-технологического комплекса России на 2014—2021 годы» <a href="https://www.fcpir.ru/">https://www.fcpir.ru/</a>

#### Major state funds

Grant support was (until recently) provided by two large foundations: **the Russian Foundation for Basic Research** and **the Russian Science Foundation** 

<u>Russian Science Foundation</u> (RSF) funds basic research and development projects. <u>Cooperates</u> with several foreign national funding institutions such as FWO, DFG, Helmholtz Association, ANR.

A foreign researcher can participate in a project funded by the RSF (in Russia (s)he would work under an employment contract).

Russian Foundation for Basic Research (RFBR) funded research in various domains:

- provided specific grants (for example, 2018 Grants for interdisciplinary research projects "Fundamentals of the study and development of mineral and renewable resources of the Russian Arctic" ("Arctic Resources");
- provided funding together with regional governments (for example, a competition of scientific projects for interdisciplinary fundamental research, conducted by the RFBR in cooperation with the Government of the Arkhangelsk Region) and international partners such as French CNRS, German DFG, Austrian FWF, UK's Royal Society and others<sup>42</sup>. Together with other participants of the Belmont Forum funded projects through Collaborative Research Action: Resilience in Rapidly Changing Arctic Systems initiative in 2020<sup>43</sup>.

At the end of November 2020, Prime Minister Mikhail Mishustin announced plans to annex the RFBR to the Russian Science Foundation<sup>44</sup>, the decision was largely criticised by the academic community.

On March 1, 2021, the RFBR announced the cancellation of the most massive competition for fundamental research projects ("a").<sup>45</sup> The next day the RSF announced that they plan on maintaining the continuity of types of grant support for scientific research and the amount of grant funding."

The new grant competitions of the RSF announced in 2021, and the financing of the winners will begin in 2022. Within the framework of funding "fundamental scientific research and exploratory research

<sup>&</sup>lt;sup>42</sup> Scientific collaborations, Russian Foundation for Basic Research/Научные связи, РФФИ https://www.rfbr.ru/rffi/ru/scientific communications

<sup>&</sup>lt;sup>43</sup> ANNOUNCEMENT of Research Funding Opportunity for ARCTIC research Belmont Forum Collaborative Research Action on Resilience in Rapidly Changing Arctic Systems (CRA Arctic II) <a href="https://www.belmontforum.org/news/arctic-announcement/">https://www.belmontforum.org/news/arctic-announcement/</a>

<sup>&</sup>lt;sup>44</sup> Operational meeting with deputy prime ministers On the optimization of development institutions; on the elimination of excessive administrative barriers in the implementation of infrastructure projects; on expanding the list of online services for exporters, November 23, 2020/Оперативное совещание с вице-премьерами Об оптимизации институтов развития; об устранении избыточных административных барьеров при реализации инфраструктурных проектов; о расширении перечня онлайн-сервисов для экспортёров, 23 ноября 2020 <a href="http://government.ru/news/40921/">http://government.ru/news/40921/</a>

<sup>&</sup>lt;sup>45</sup> Competition for the best fundamental research projects of 2021 cancelled/Отменен конкурс на лучшие проекты фундаментальных научных исследований 2021 года <a href="https://www.rfbr.ru/rffi/ru/classifieds/o">https://www.rfbr.ru/rffi/ru/classifieds/o</a> 2119256

by small individual scientific groups", it is proposed to finance teams of 2 to 4 researchers (including the project leader) for up to 1.5 million roubles per year, with the duration of project of 1 or 2 years<sup>46</sup>.

#### Presidential Grants programme

The Council for Grants of the President of the Russian Federation provides state support for young Russian scientists and for state support for leading scientific schools.

Russian Foundation for Humanities (RFH) organises annual competitions for grants for: research projects, publications; projects of organising Russian and international scientific events in Russia, participation of Russian scientists in scientific events abroad, organising expeditions, field, experimental laboratory research. The Foundation collaborates internationally.

#### Smaller-scale funds and targeted grants

The Project Office for the Development of the Arctic (PORA) provides small grants for projects in the Arctic.

Non-profit organisation "Polar Initiative" provides small grants for best bachelor, master and doctoral levels thesis in polar sciences.

<u>Arctic-sg</u> foundation for Russian and Belarus researchers working on socio-economic development of the Arctic

<u>Foundation for Assistance To Small Innovative Enterprises</u>, <u>Russian Foundation for Advanced Research</u>
<u>Projects in the Defence Industry</u>, and <u>Polar Fund</u> provide financial support for research and development projects in the polar regions

#### Regional funds

<u>The Krasnovarsk Regional Science Foundation</u> provides grants for applied research projects for undergraduates and postgraduates to "ensure sustainable development of the Arctic".

Regional Fund for Scientific and Technical Development of St. Petersburg is a non-profit organisation promoting the regional scientific and technical potential and the development of innovative activities in the North-West region.

<sup>&</sup>lt;sup>46</sup> О планах Российского научного фонда по объявлению новых конкурсов/
On the plans of the Russian Science Foundation to announce new competitions <a href="https://www.rscf.ru/news/found/o-planakh-rossiyskogo-nauchnogo-fonda-po-obyavleniyu-novykh-konkursov/">https://www.rscf.ru/news/found/o-planakh-rossiyskogo-nauchnogo-fonda-po-obyavleniyu-novykh-konkursov/</a>

<u>Far East Development Fund</u> finances major industrial and infrastructural projects in the Russian Far East and in the Arctic Region in the form of loans and direct investments, develops hi-tech facilities for investors, supports small and medium business in the region and promotes international cooperation.

# Appendix 1. Glossary

#### 1. Polar research actors

#### 1.1 Federal authorities

The <u>State commission on the Arctic development</u> (Государственная комиссия по вопросам развития Арктики) coordinates the work of federal and regional authorities and other state bodies in addressing social and economic issues in the Arctic, transport development, environmental matters, international collaboration, science, and national security. The Head of the Commission is Russia's Deputy Prime Minister and Presidential Plenipotentiary Envoy to the Far Eastern Federal District Yury Trutney.

Council on the Development of the Far East, Arctic and Antarctic at the Federation Council of the Federal Assembly (Совет по вопросам развития Дальнего Востока, Арктики и Антарктики при Совете Федерации) is formed in February 2021. It replaced the standing expert advisory body to the Federation Council of the Federal Assembly - the Arctic and Antarctic Council (Совет по Арктике и Антарктике при Совете Федерации Федерального Собрания Российской Федерации). The Council is headed by Galina Karelova, the acting Deputy Chairwoman of the Federation Council. The Council will be working on monitoring the implementation of state programmes for the development of the Far East and the Arctic zone (including transport infrastructure, support of small and medium-sized businesses, education, healthcare and employment).

The Presidential Council for Science and Education (Совет по науке и образованию при Президенте  $P\Phi$ ) is a consultative body "established to inform the President on the situation in these areas, coordinate his contacts with scientific organisations, educational establishments, and members of the science and education communities, and draft proposals on topical issues concerning state science, technology and innovation policy and state education policy". The Council also select nominees for the Russian Federation State Prize for Science and Technology and President of the Russian Federation's Prize for Young Scientists for Achievements in Science and Innovation.

Federal Service for hydrometeorology and environmental monitoring of Russia (Roshydromet) (Федеральная служба по гидрометеорологии и мониторингу окружающей среды - Росгидромет) is one of the main actors implementing the state programmes concerning the polar regions and one of the executors of the Agreement on Strengthening International Arctic Scientific Cooperation (signed in 2017).

Northern "branch" of Roshydromet - <u>Northern Directorate for Hydrometeorology and Environmental Monitoring</u> (Северное Управление по гидрометеорологии и мониторингу окружающей среды ) (Arkhangelsk) is engaged in research activities in the field of hydrometeorology,

monitoring of environmental pollution; ensures the delivery of material and technical means, equipment, personnel to hard-to-reach and polar weather stations. It operates three vessels used for polar expeditions.

Other relevant institutions of Roshydromet

Ministry for the Development of the Russian Far East and Arctic (Министерство Российской Федерации по развитию Дальнего Востока и Арктики) developed the Strategy for the Arctic up to 2035 and implements the state programmes in the concerned regions. Head — Alexei Chekunkov.

Ministry of Natural Resources and the Environment (Ecology) of the Russian Federation (Министерство природных ресурсов и экологии Российской Федерации) is responsible for implementation of the sub-programme "Organisation and support of work and scientific research in the Arctic and Antarctic" of the state programme "Environmental Protection", co-executor of the Agreement on Strengthening International Arctic Scientific Cooperation. Has a Department of the state policy and regulation in the sphere of hydrometeorology, Arctic and Antarctic studies and World ocean. Head — Alexander Kozlov, former Minister for the Development of the Far East and the Arctic.

Russian Arctic National Park (Национальный парк Русская Арктика) is run by the Ministry. Cooperates with CNRS, France.

Ministry of Economic Development of the Russian Federation (Министерство Экономического развития Российской Федерации) is responsible for monitoring of the implementation of the Arctic strategy and some of the state programmes related to the Arctic. Head – Maxim Reshetnikov.

Ministry of Science and Higher Education of Russia (Министерство Науки и Высшего Образования Российской Федерации) co-executor of the Agreement on Strengthening International Arctic Scientific Cooperation. Coordinates scientific projects in polar regions (including within the Arctic council, etc.). Head — Valery Falkov.

The Ministry supervises the <u>Inter-Agency National Oceanographic Commission of the Russian</u> <u>Federation</u> (Межведомственная национальная океанографическая комиссия Российской Федерации).

<u>The Federal Service for State Registration, Cadastre and Cartography</u> (before Federal Agency for Geodesy and Cartography) (*Pocpeecmp*). Head - Oleg Skufinsky.

<u>Russian Geographical Society</u> (*Pусское географическое общество*). The Society leads <u>expeditions</u> to explore Arctic archipelagos.

Russian Scientific Fund (Российский научный фонд) (see FUNDING) funds basic scientific research and development projects.

Russian Foundation for Basic Research (RFBR) (Российский Фонд фундаментальных исследований). Will be annexed to RSF in 2021.

Federal Agency for Scientific Organisations of Russia (Closed in 2018)

#### Saint-Petersburg:

The St. Petersburg Committee for Arctic Affairs (Комитет Санкт-Петербурга по делам Арктики) + its Centre for Arctic Initiatives (Центр Арктических инициатив) (scientific consultative body). The Committee implements state policy in the field of scientific research, cultural, socio-economic, environmental and other domains of cooperation of St. Petersburg with the regions of the Arctic zone of the Russian Federation, and also coordinates the activities of other executive bodies of St. Petersburg in these areas.

Polar Commission of the Maritime Council (Полярная комиссия Морского Совета при Правительстве Санкт-Петербурга) (Government of St. Petersburg) is a permanent coordinating body ensuring the implementation of the main provisions of the strategy and policy of the Russian Federation in the Arctic and Antarctic. The decisions of the Polar Commission are advisory.

<u>The Arctic Public Academy of Sciences (AOAN)</u> (Санкт-Петербургская Арктическая общественная академия наук (AOAH) is based on the Arctic direction of the Geopolitics and Security Section of the Russian Academy of Natural Sciences.

#### Yamal-Nenets Autonomous Okrug:

Scientific Center for the Study of the Arctic (Научный центр изучения Арктики) (Salekhard) is a multidiscipline research institution with the research divisions in the fields of the cryosphere, history and archaeology, ethnology, social and humanitarian research, environmental monitoring, environmental and biological research, social and medico-psychological research. Founded Under the department of external relations of the Yamal region. (<u>UArctic member</u>)

#### 1.3 Research institutes

State Scientific Center of the Russian Federation the Arctic and Antarctic Research Institute - AARI (Αρκπυνεςκυὔ υ αμπαρκπυνεςκυὔ μαγνηο-υςςπεδοβαπεπεσκυὔ υμςπυμημη (ΑΑΗΝΝ) is supervised by the Russian Federal Service on hydrometeorology and environmental protection. The major research institution in the polar sciences. It manages the Arctic and Antarctic Museum, the Center of Ice and Hydrometeorological Information, World Data Center-B on sea ice, Russian Antarctic Expedition (RAE), The High-latitude Arctic Expedition (VAE), scientific research and experimental base: the station in the Arctic and Antarctic and throughout the country, research vessels, and experimental departments and laboratories for the development and production of research devices. The external relations department of AARI. Director – Dr. Aleksandr Makarov.

Russian Academy of Science (Российская Академия Наук) (RAS) includes:

P.P. Shirshov Institute of Oceanology of RAS. (Институт Океанологии им. П.П. Ширшова) In March 2016 Ocean Expedition Centre (OEC) (Центр морских экспедиционных исследований (ЦМЭИ)) was set up within the Institute. They operate 6 research vessels based in Kaliningrad. Collaborates with CNRS, France.

Scientific Council of RAS for the study of the Arctic and Antarctic (Научный совет РАН по изучению Арктики и Антарктики) is planning and coordinating fundamental and applied research in the polar regions, implements decisions adopted by the International Arctic Scientific Committee (IASC) and the International Committee for Antarctic Research (SCAR).

Kola Science Centre of the Russian Academy of Sciences (FRC KSC RAS) (Кольский научный центр PAH) carries out fundamental studies of high-latitude environment in the Euro-Arctic region and provides a scientific basis for assessing the resource potential and developing a rational strategy for the North. (UArctic member). Collaborates with CNRS, France, NERC, UK.

Kola Arctic Geophysical Infrastructure Network of the Polar Geophysical Institute (KAGIN) (Полярный геофизический институт" (ПГИ) (Murmansk)

Murmansk Marine Biological Institute of the Russian Academy of Sciences (MMBI RAS) (Мурманский морской биологический институт Российской академии наук (ММБИ РАН)), before was included in the FRC KSC RAS. Studies issues of climate change, marine periglacial, bio-productivity, quaternary and geology, aquaculture, bioresources and environmental safety. Operates RV Dalnie Zelentsy.

The Federal Center for Integrated Arctic Research of the Russian Academy of Sciences (FCIAR UrB RAS) (Федеральный исследовательский центр комплексного изучения Арктики Уральского отделения РАН) of Ural Branch of RAS.

Siberian Branch of the Russian Academy of Sciences (Сибирское отделение РАН) is the largest regional branch of RAS. It organised Big Norilsk Expedition (summer 2020).

Its V.E. Zuev Institute of Atmospheric Optics, Melnikov Permafrost Institute collaborate with CNRS, France.

Far Eastern Branch of RAS (Дальневосточное отделение РАН) has two institutions working on the Arctic issues based in Magadan (Scientific research centre "Arctica"), and various institution on biology of the World ocean, etc. This is the only organisation in the Russian Far East conducting applied scientific research in various parts of the World Ocean. Has 8 research vessels (see Office of Scientific research Fleet (Управление Научно-Исследовательского флота)) of various types, purposes, and cruising range (based in the Zolotoy Rog or the Golden Horn Bay).

<u>Karelian Research Centre of the Russian Academy of Sciences</u> (KarRC RAS) (Федеральный исследовательский центр «Карельский научный центр Российской академии наук» (КарНЦ PAH)) (Petrozavodsk). (UArctic member).

#### 1.4 Universities

<u>Lomonosov Moscow State University</u> (Московский Государственный Университет имени Ломоносова) (<u>UArctic member</u>).

Marine research center (Центр Морских Исследований МГУ) provides environmental monitoring of the Russian offshore projects in the Arctic and Far East regions.

<u>Saint Petersburg State University</u> (Санкт-Петербургский Государственный Университет) — the University's researchers will participate in expeditions of the new drifting station (planned implementation in 2022). (<u>UArctic member</u>)

Laboratory of "Palaeogeography and geomorphology of polar regions and the World Ocean (Научная лаборатория геоморфологических и палеогеографических исследований полярных регионов и Мирового океана)

The laboratory leads a Russian-German master's degree programme Polar and Marine Sciences (POMOR)

St. Petersburg Polytechnic University (Санкт-Петербургский политехнический университет)

European University (Европейский университет) (Saint-Petersburg), (UArctic member).

Centre for Arctic Social Studies (CESIS) (Центр социальных исследований Севера)

Northern (Arctic) Federal University (NarFU) (Северный (Арктический) федеральный университет имени М.В. Ломоносова) (Arkhangelsk), (UArctic member)

In 2016 the National Arctic Scientific and Educational Consortium (see below) was created on the premises of the University

Together with the Northern branch of Roshydromet organises annual Arctic Floating University on board the research vessel Professor Molchanov – a high-latitude Arctic expedition providing an interdisciplinary course for students.

Moscow Institute of Physics and Technology (Московский физико-технический институт)

Operates the laboratory for Geophysical research of the Arctic and continental margins of the World Ocean. The laboratory staff participate in regular annual marine scientific expeditions in the Arctic. Expeditions are carried out in cooperation with the Shirshov Institute of Oceanology of RAS on the research vessels "Akademik Nikolai Strakhov" and "Akademik MA Lavrentyev".

Murmansk Arctic State University (Мурманский Арктический Государственный университет), (UArctic member).

Murmansk State Technical University (Мурманский Государственный технический университет), (UArctic member).

North-Eastern Federal University (Северо-Восточный федеральный университет имени М.К. Аммосова) (Yakutsk). Signed a framework agreement between NEFU Yakutsk and University of Versailles-Saint-Quentin (joint degree in law, student exchange programme with UVSQ Arctic Master since 2010), (UArctic member).

<u>Petrozavodsk State University</u> (*Петрозаводский Государственный университет*) collaborates with ARCUM, Sweden, (<u>UArctic member</u>).

Russian State Hydrometeorological University (Российский государственный гидрометеорологический университет) (Saint-Petersburg) has a Centre for Arctic and Climate Research (CACR), a Laboratory of Satellite Oceanography. Several polar research projects such as Arctic Syntool and Polar Cyclones implemented by the Laboratory, (UArctic member).

Fedorovsky Polar State University (Заполярный государственный университет имени Н. М. Федоровского) until 2021 called Norilsk State Industrial Institute (Норильский государственный индустриальный институт), (UArctic member).

<u>Siberian Federal University</u> (*Cuбирский Федеральный университет*) (Krasnoyarsk), (<u>UArctic</u> member).

<u>Tomsk Polytechnic University</u> (*Toмский политехнический университет*) <u>established</u> International Arctic Siberian Scientific Centre, IASSC in 2016, (UArctic member).

<u>Industrial University of Tyumen</u> (Тюменский индустриальный университет), (<u>UArctic member</u>).

<u>Tyumen State University</u> (Тюменский государственный университет), (<u>UArctic member</u>).

Yugra State University, (Югорский государственный университет) Khanty-Mansi Autonomous Okrug — Yugra. Has such departments as: UNESCO Chair "Environmental dynamics and global climate change", Centre of Northern Peoples, Environmental problems of oil-producing areas, (UArctic member).

#### 1.5 Non-state actors

Rosgeo (*Poczeoлогия*) (Rosgeologya) – "geological exploration holding" providing equipment, R&D expeditions support (North Pole drifting station).

Its "Polar Marine Geological Expedition" (PMGE), founded in 1962, performs complex geological and geophysical research. Within the framework of the Russian Antarctic Expedition (RAE), the company carries out comprehensive geological and geophysical studies of the subsoil of the Antarctic.

The company is the executor of works under a 15-year contract between Russia and the International Seabed Authority (ISA), aimed at prospecting and exploration of deep-water polymetallic sulphide deposits in the central part of the Atlantic Ocean.

#### Rosneft (Роснефть) energy company

Has an LLC "Arctic Scientific Centre" that conducts extensive research work in the Arctic, organises expeditions (for example, together with the Severtsov Institute of Ecology and Evolution of the Russian Academy of Sciences and the Marine Research Centre of the Lomonosov Moscow State University). Restored the automatic meteorological observation system in the Kara Sea. Also conducts research on polar bears and walrus conservation.

Together with Innopraktika, a non-governmental development institute, has issued the atlas "The Russian Arctic. Space, time, resources", and edited the atlas of the Arctic seas.

Polar Fund, (Полярный фонд) NGO, commissioned by the Roshydromet for implementation of the drifting station "North Pole".

Russian Association of Indigenous Peoples of the North (RAIPON) (Ассоциация коренных малочисленных народов Севера, Сибири и Дальнего Востока) is a permanent member of the Arctic Council, participates in shaping state policies concerning indigenous peoples.

<u>The Project Office for the Development of the Arctic (PORA)</u> (Проектный офис развития Арктики ПОРА) implements programmes throughout the Russian Arctic, supports young scholars, and works to increase public awareness of the Arctic issues.

<u>The National Arctic Scientific and Educational Consortium</u> (Национальный арктический научнообразовательный консорциум) is a voluntary association of universities, scientific organisations, and business that implement research activities and training programmes in the Russian Arctic and on the issues of the Arctic.

Non-profit organisation Research and Information Centre "Polar Initiative" (АНО Полярная Инициатива) (ANO Research Centre "Polar Initiative") NGO created by the young polar scientists. Organises yearly competition of graduate thesis.

The non-profit partnership "Russian Centre for Arctic Development", (Российский Центр освоения Арктики) established following the Presidential decree in 2014 by the government of Yamal-Nenets Autonomous region. Participates in ecological monitoring in the Arctic, provides expeditionary assistance, operates the Beliy Island research station.

Association of polar explorers of Russia (Ассоциация полярников)

The non-profit organisation the <u>International Centre for Innovations in Science, Technology and Education (ICISTE)</u> (Аналитический центр Международных научно-технологических и образовательных программ" (МНиОП)) is an expert organisation for international science and technology cooperation issues including monitoring of the international projects.

<u>Center for Economics of the North and Arctic "institute of Regional Consulting"</u> (Институт Регионального Консалтинга) provides scientific, analytical and methodological support for strategic planning of socio-economic development of Russia's Arctic zone.

#### 2. Polar stations and fleet

#### 2.1 Antarctic stations

#### Permanently (year-round) operating stations

#### **Mirny 1956**

The main base of Russian Antarctic research, it is situated on the coast of Cape Davis at a small protrusion of Mirny Peninsula. One of the major functions is to provide support for activities at the Vostok station.

#### Vostok 1957

The Vostok station is located on the snow surface of the ice plateau of Central Antarctica in 1410 km from the Mirny station and in 1260 km from the nearest seacoast. The station is one of the major base stations of Russia in the Antarctic.

#### Novolazarevskaya 1961

The Novolazarevskaya station is located at the extreme southeastern tip of the Schirmacher Oasis approximately in 80 km from the Lazarev Sea coast.

#### **Bellingshausen** 1968

The Bellinsgausen station is situated on the Filds Peninsula in the south - western part of King-George Island (Waterloo island), being a part of the South Shetland Isles.

#### Progress 1988

Progress station (opened on April 1, 1988, moved to a new location on February 26, 1989) is located at the Larsemann Hills on the shore of Prydz Bay.

#### Seasonal stations and field bases

Molodezhnaya (1962) is located on the southern shore of Alasheyev Bay. In the 60s became the main (and all year around) base of Antarctic research as well as the Antarctic Meteorological Centre. In 1999, during the 44th RAE, Molodyozhnaya station was mothballed. Since 2006 functions as a seasonal field base.

<u>Bunger Oasis</u>, built in 1956, later handed over to Poland (renamed to A.B. Dobrowolski Polar Station). Since 2016 to the present, in the area of the Russian Oasis-2 Station, the Russian Polar Marine Geological Expedition (PMGE) conducts geological research with the logistical support of the Russian Antarctic Expedition.

<u>Leningradskaya</u> (1971) located in the northern shore of Victoria Land, at the Oates Coast. It was closed in 1991 and reopened in 2007-2008, since 1991 serves as a seasonal field base.

Russkaya (opened on March 9, 1980, closed on March 12, 1990), reopened in 2007-2008, functions as seasonal station till 2022\*.

\*Reconstruction as a permanent station is planned from 2022.

<u>Druzhnaya-4</u> (1987), closed and opened several times since 1991, served as a seasonal field-base until 2015, then mothballed.

#### 2.2 Arctic stations

The <u>Arctic Research Station</u> (former Labytnangi Ecological Research Station) is owned and managed by the Institute of Plant and Animal Ecology of the Ural Branch of the Russian Academy of Sciences. The station is located in Labytnangi, Yamal-Nenets Autonomous District. In <u>Interact catalogue</u>.

Beliy Island Research Station is owned and managed by the Government of the Yamal-Nenets autonomous district (Russian Center for the Arctic Development). The Station is situated on the Beliy Island, Yamal-Nenets autonomous district, Russian Federation. In <u>Interact catalogue</u>.

<u>Belomorskaia educational and research station</u> (Saint-Petersburg University) – marine biology station, Chupa Bay, Karelia N 66°17′21″ E 33°39′41″

Biological research station on Spitsbergen (Murmansk Marine Biological Institute)

The Chokurdakh Scientific Tundra Station. In <u>Interact catalogue</u> operated by the Institute for Biological Problems of the Cryolithozone (Siberian Branch of the Russian Academy of Sciences).

Ice Base Cape Baranova (AARI) is located on Bolshevik Island, Severnaya Zemlya

The <u>Igarka Geocryology Laboratory</u> is a scientific affiliation of the Melnikov Permafrost Institute in Yakutsk (Siberian Branch of the Russian Academy of Sciences). It is situated in Igarka on the Yenisei river. In <u>Interact catalogue</u>

Temporary research field base Khastyr (AARI) located in Khatanga Bay, Laptev Sea

The <u>Khibiny Educational and Scientific Station</u> is owned and managed by the Faculty of Geography M.V. Lomonosov Moscow State University, Moscow. The station is situated in the Khibiny Mountains on the Kola Peninsula. In <u>Interact catalogue</u>

The Khanymei Research Station of Tomsk State University in Interact catalogue

<u>Lena Nordenskiold international biological station</u> (Ministry of Nature Protection of the Republic of Sakha (Yakutia)+World Wildlife Fund – WWF)

The <u>North-East Science Station</u> of the RAS (Pacific Institute of Geography, Far Eastern Branch of the Russian Academy of Sciences) is located in Chersky, Sakha Republic in Northeast Siberia. Students from Far Eastern Federal University undergo field practice at the station. In <u>Interact catalogue</u>.

<u>Pertsov White Sea Biological Station</u> of Lomonosov Moscow State University (WSBS MSU) is an educational and research centre, created for conducting marine scientific research and field student practices at the White Sea. WSBS is a subdivision of Biology Department of Lomonosov Moscow State University. WSBS MSU is the base for the Research & Education Centre "Marine Biology, Oceanography and Geology". The Station is located on the coast of Kandalaksha Bay of the White Sea.

The <u>Research Station Samoylov Island</u> is owned and run by the Trofimuk Institute of Petroleum Geology and Geophysics, Siberian Branch of the Russian Academy of Sciences. Access of international research teams to the station has been coordinated by the Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research (Germany). The Station is located at the southern coast of Samoylov Island in the southern part of the Lena River Delta. In Interact catalogue

<u>Seasonal biological research station in Dalnie Zelentsy</u> settlement (Murmansk Marine Biological Institute)

<u>Tiksi Hydrometeorological Observatory</u> (AARI) is <u>operating</u> in the framework of Russian-American cooperation. Representatives of scientific organisations of Roshydromet, RAS, the National Oceanic and Atmospheric Administration, the University of Colorado and the Finnish Meteorological Institute collect the results in the framework of IPY 2007/08. GMO Tiksi serves as a regional station for the Global Atmosphere Watch (GAW).

The White Sea Biological Station "Kartesh" (WSBS) is at all-the-year-round marine research station of the Zoological Institute of Russian Academy of Sciences (Saint-Petersburg), located in the Chupa Inlet of the Kandalaksha Bay of the White Sea.

Willem Barentsz Biological Station is presently owned by the Administration of Taimyr Reserves, Norilsk. It is located in the western part of the Taimyr Peninsula, northeast of Meduza Bay (the northern end of the mouth of the Yenisey River), 18 km south of Dikson. In <u>Interact catalogue</u>.

#### 2.3 Research fleet

#### **Russian Academy of Science**

Research fleet of Institute of Oceanology of the Russian Academy of Sciences OEC IORAS:

#### Atlantic fleet base (AFB) in Kaliningrad:

**RV Akademik Sergey Vavilov** 

**RV** Akademik Ioffe

RV Akademik Mstislav Keldysh

**RV Professor Shtokman** 

**RV** Akademik Boris Petrov

RV Akademik Nikolaj Strakhov

#### Pacific fleet base (PFB) in Vladivostok:

(several RV were previously owned by the Far Eastern Branch of RAS)

RV Akademik M A Lavrentyev

**RV Akademik Oparin** 

**RV Professor Bogorov** 

**RV Professor Gagarinsky** 

Far Eastern Branch of RAS <u>research vessels</u> (Zolotoy Rog based, Vladivostok)

**RV** Lugovoye

Passenger ship MFNIS Project 123

Research vessel of the Murmansk Marine Biological Institute

**RV** Dalnie Zelentsy

#### Federal service for hydrometeorology and environmental monitoring of Russia

#### Research fleet

Research vessels of the AARI

**RV Akademik Tryoshnikov** 

**REV Akademik Fedorov** 

Northern branch of Roshydromet <u>fleet</u> (Arkhangelsk)

**REV Michail Somov** 

**RV Professor Molchanov** 

#### RV Ivan Petrov Expedition yacht Iceberg

Far Eastern Regional Hydrometeorological Research Institute (FERHRI) <u>fleet</u> (Vladivostok)

**RV Professor Multanovsky** 

**RV Professor Khromov** 

**RV Professor Shokalsky** 

**RV Pavel Gordienko** 

**RV** Atlas