

Materials for the final information about implemented Russian researches within the framework of the IPY 2007-2008

The main target of Russia's participation in the IPY 2007-2008 was in obtaining new knowledge about hydrometeorological and geophysical processes in the polar regions of the Russian Federation and the Antarctic on the basis of considerable increase of synchronized, coordinated and consistent in methodical aspect hydrometeorological and geophysical observations in the key regions of the polar areas and intensification of means and methods of natural environment complex study development, evaluations and predictions in the Arctic and the Antarctic in varying climate conditions.

Coordinated observations in the Arctic and the Antarctic with application of ongoing monitoring systems, by conducting special experiments on sea vessels, stations and bases, using autonomous means of observations and space exploration facilities, were a practical baseline of the IPY 2007-2008 tasks' solution.

The following practical arrangements to achieve the IPY target became priority for the Russian Federation :

- modernization and development of the ice, hydrometeorological and geophysical environment lighting system with application of cosmic, specialized automated technical facilities and ongoing system of ground-based observations in the Arctic and the Antarctic ;
- conducting of complex high-latitude expeditions in the Arctic and elaboration of the Russian Antarctic expedition activity;
- creation of the full and high-quality databases in the Earth's polar areas;
- development and elaboration of climate monitoring system and monitoring of the polar regions' natural environment state on the basis of up-to-date system of allocated informational resources on the Earth's polar areas, methods, analytic technologies and forecasting the processes in the atmosphere, marine environment, superficial land waters, near-Earth space environment.

Wide range of field studies was carried out during 2007-2008. The subject matters included complex studies of natural environment state, researches of climate and paleoclimate, atmosphere, marine environment, cryosphere, lithosphere, near-Earth space, as well as ecosystems of the polar areas.

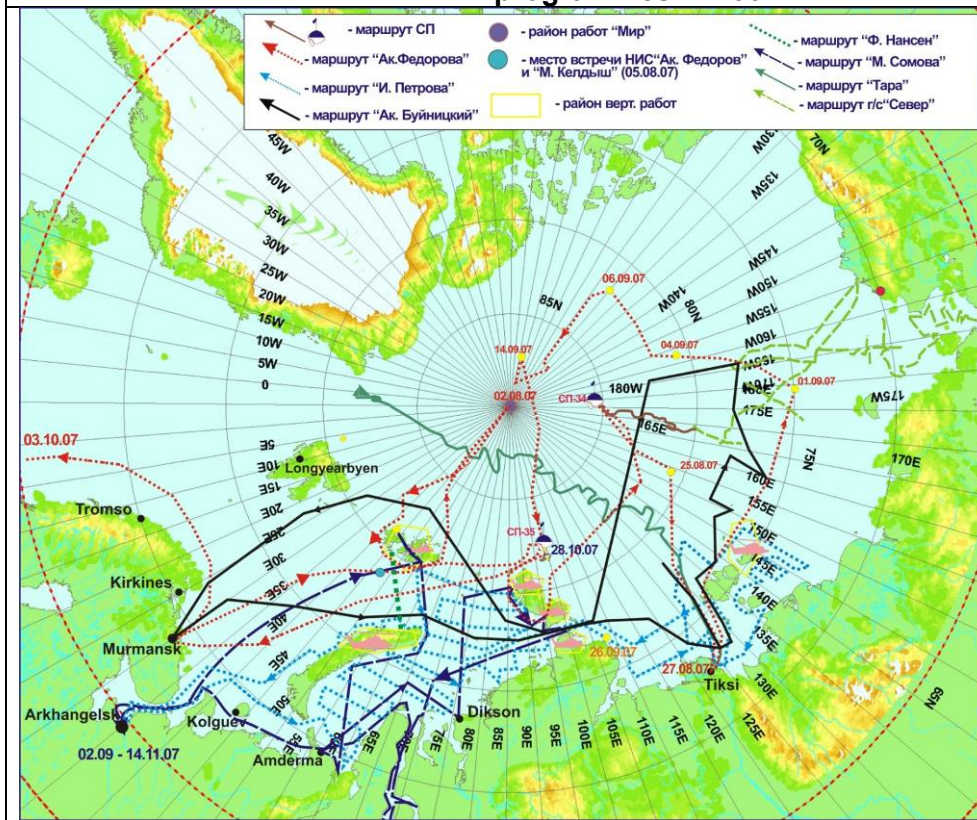
These developments were carried out on the basis of the Action Plan for the participation of the Russian Federation in the preparation and carrying out International Polar Year 2007-2008 and the Scientific Programme of the Russian Federation participation in carrying out the IPY, developed by joint efforts of Roshydromet (the Federal Service for Hydrometeorology and Environmental Monitoring) and RAS (the Russian Academy of Sciences).

More than 80 institutes and organizations, 8 ministries and agencies, non-governmental organizations, associations, foundations (the Polar Foundation, Community Organization for Native Minorities of the North, Siberia and Far East of the Russian Federation and others) take part in the IPY events.

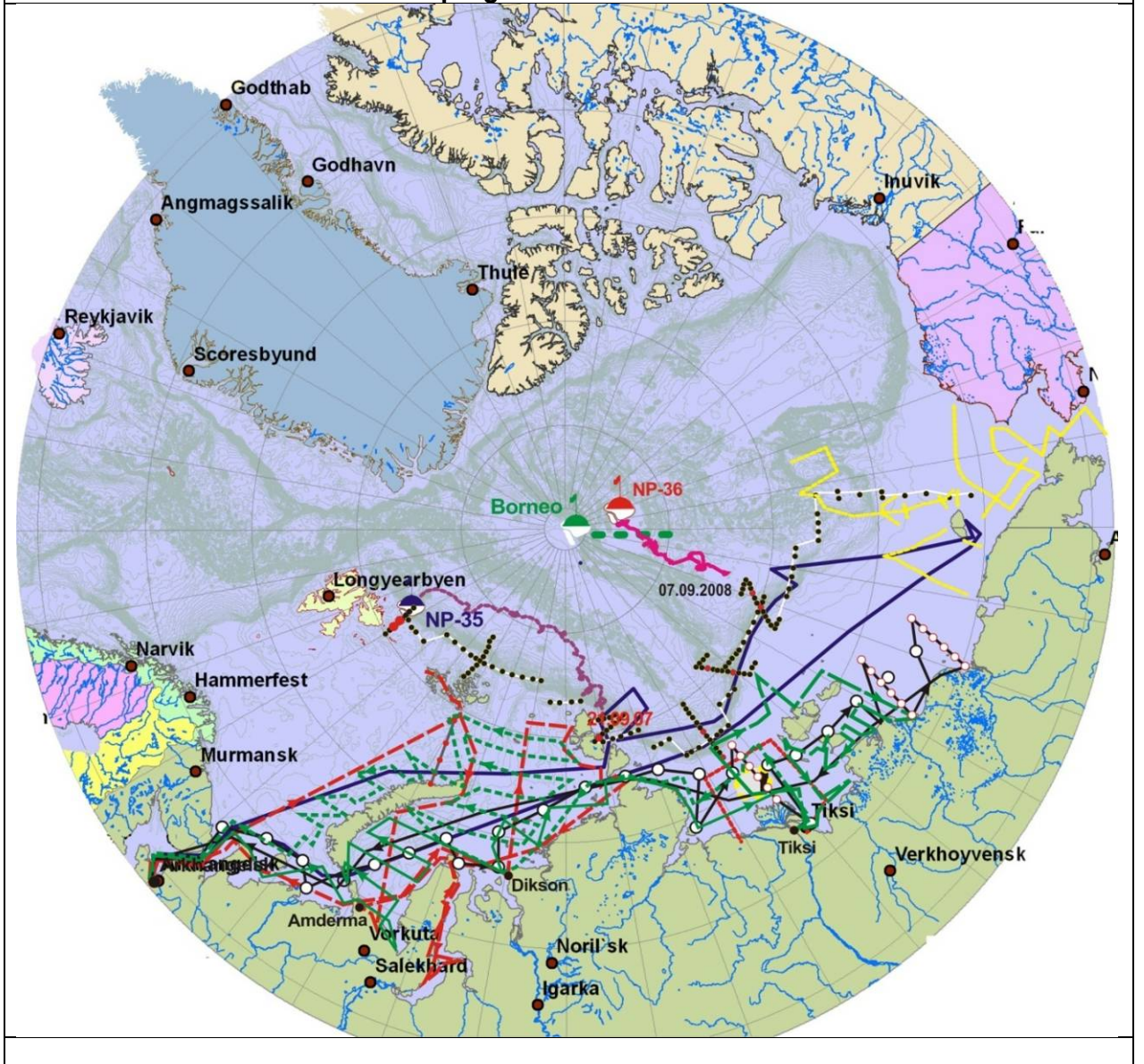
There has been collected the unique volume of the field data throughout all directions of the Scientific Programme. Set up of integrated surveillance systems and databases is being carried out. Hundreds of solid data descriptions, obtained in the national projects as well as numerous descriptions of historical data have been already registered at the IPY-Info website.

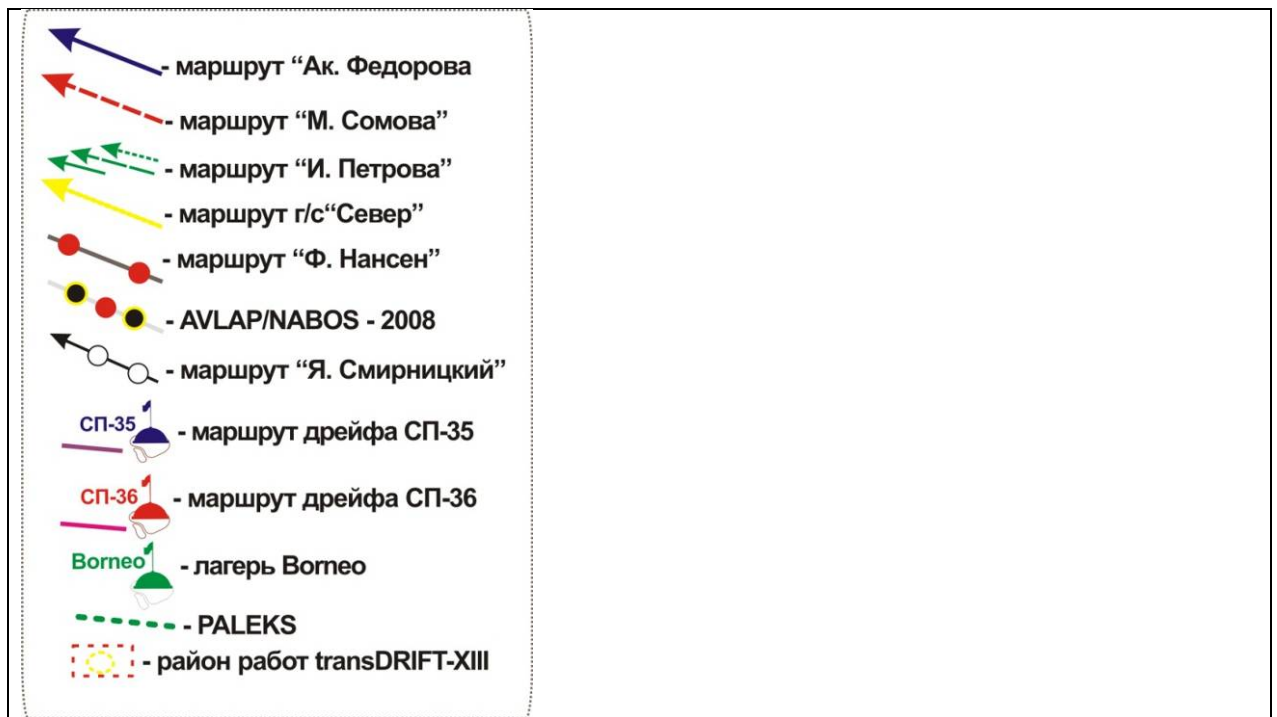
A map, showing implemented Russian researches in both polar areas (on land and sea)

Routes and regions of the Russian marine expeditions in accordance with the IPY programmes in 2007



Routes and regions of the Russian marine expeditions in accordance with the IPY programmes in 2008





Route of "Ak.Fyodorov"

Route of "M.Somov"

Route of "I.Petrov"

Route of "Sever"

Route of "F.Nansen"

AVLAP/NABOS-2008

Route of "Ya.Smirnitsky"

Drift route of NP-35

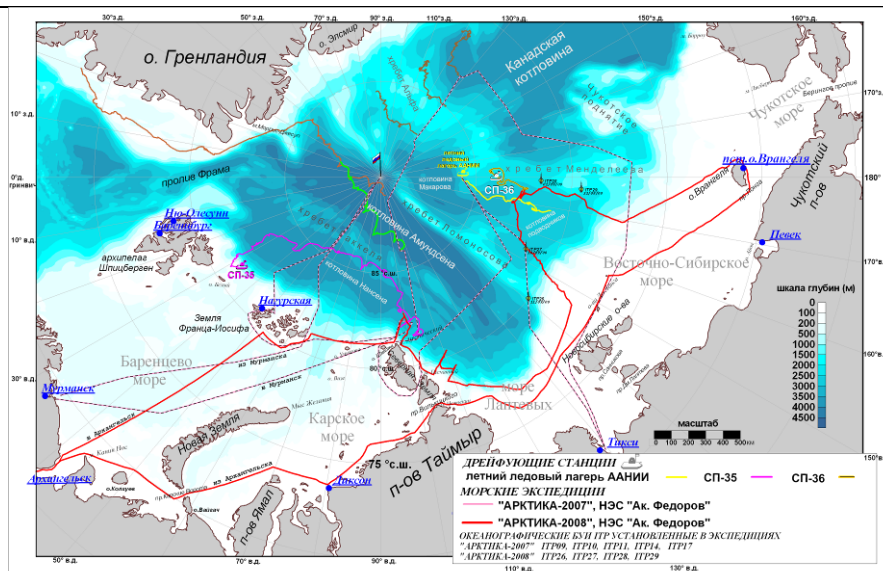
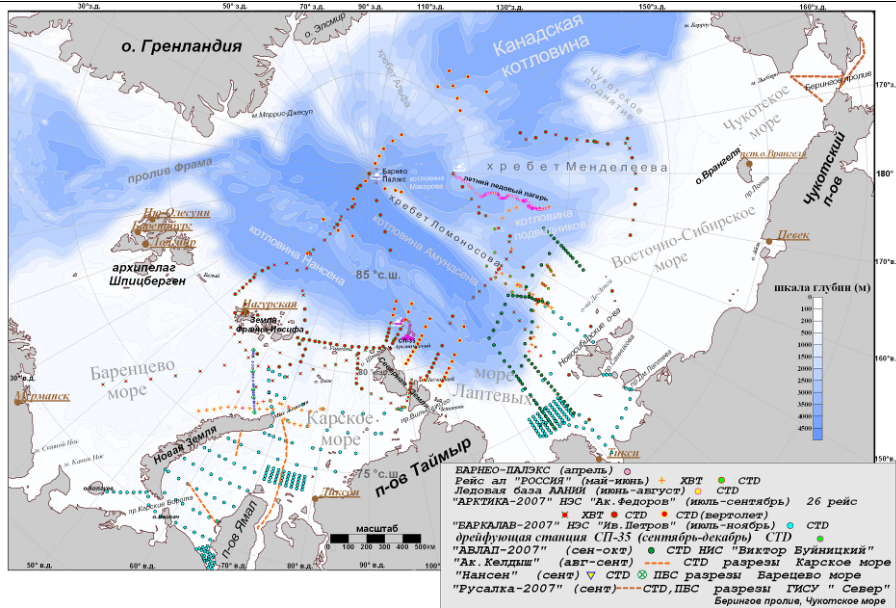
Drift route of NP-36

Borneo camp

PALEKS

Region of the Transdrift-XIII operations

Schematic of the "Arctic -2007/ 2008" campaigns along with "Ice bases" NP-35 and NP-36 drift routes



Routes

List of the main scientific achievements

Description of expeditionary complex researches

87 marine and terrestrial expeditions were organized in Russia in 2007 and 72 expeditions in 2008. Foreign scientists took part in many expeditions.

Expeditions in the Arctic

The key events of the IPY 2007-2008 became numerous expeditions, carried out in the Arctic Ocean regions. Many of them were of the complex character.

Drifting research stations "Severny Polyus -35" ("North Pole-35") and "Severny Polyus -36" ("North Pole-36"), French yacht "Tara", Russian scientific research expeditionary vessels "Akademik Fyodorov" and "Mikhail Somov", scientific research vessels "Akademik Buynitsky", "Akademik Mstislav Keldysh", "Fritjof Nansen", "Ivan Petrov", "Sever", icebreaker "Kapitan Dranitsyn", German scientific research icebreaker "Polarstern", Swedish icebreaker "Oden",

American icebreakers "Healy" and "Amundsen", Polish scientific research vessel "Oceania", Norwegian "Yan Mayen" and others worked in the Arctic and North-European basins of the AO and the Arctic seas .

On the 2nd of August 2007 deep-water manned vehicles " Mir-1" ("Peace-1") and " Mir-2" ("Peace-2"), based on board of the scientific research vessel "Akademik Fyodorov", for the first time in the history of the polar researches, made diving at the point of the geographic North Pole and placed the State Flag of the Russian Federation there.

Part of carried out expeditions has got national character, many expeditions presented themselves as International. Representatives of Russian, American, Canadian, Norwegian, Swedish, German, French, Polish, Chinese, Japanese scientific research institutions, carrying out observations and measurements of various atmosphere, hydrosphere, cryosphere and biosphere characteristics of the Arctic high latitudes, worked in these expeditions

Along with traditional methods of researches during the IPY 2007-2008 period, new scientific and technical developments were widely in use, thus making it possible to obtain data on the atmosphere and ocean conditions with high spatio-temporal resolution. They have begun to widely use a drifting instrument, the Ice-Tethered Profiler (ITP) for probing the ocean's upper layer down to the depth of 500-600 meters and promptly transmitting the obtained results via satellite channels.

Application of these new technical facilities of the ocean studies made it possible to considerably develop monitoring system of the Arctic natural environment. At the present time data, obtained with the application of the ITP, are being promptly introduced at the websites of the Woods Hole Oceanographic Institution and the Arctic and Antarctic Research Institute (AARI). 20 automatic drifting buoys of different classes, including the ITP and IMB, were set in the AO from board of the RV "Akademik Fyodorov" in co-operation with France and USA in 2007 and 2008.

Information, obtained in the course of expeditionary operations in 2007-2008, was registered in specialized databases, in particular in the database of the Arctic Ocean and its thermohaline characteristics, developed and sustained in the AARI.

There have been implemented a set of operations and scientific and technical arrangements on renewal and development of the observation network in the Arctic, including purchase and repair of building constructions and technological equipment, renewal of aerological and geophysical observations, meteorological rockets launches. Altogether 23 Russian polar stations have been brought up to date.

The most important contribution to development of the observations system as per the IPY 2007-2008 programmes are works to set up the hydrometeorological observatory in Tiksi, organization of the Roshydromet's supporting climatic network stations in Tiksi within the joint project of Roshydromet and NOAA (USA) on the atmospheric observations. Office-and-home laboratory block, meteorological equipment were purchased and fit for these purposes, works on putting observatory equipment and satellite communications system of the AARI branch in St. Petersburg into operations were implemented to send and receive observations data, installation of the pedestal for satellite antenna "Mitra" was carried out in Tiksi.

There were implemented out complex observations within PALEX (PAICEX) (PALEX, IO RAS, AARI, Roshydromet) experiment at the temporary drifting ice base, working in the polar region of the Arctic basin, which included under-ice diving works for plankton gathering, as well as complex geochemical researches of the sea ice and water, streams of the substance from ice to water.

In summer time, organizations of Roshydromet, RAS, MNR (the RF Ministry of Natural Resources) with participation of foreign scientists carried out complex studies on the "Barkalav" programme (including geologic-geophysical works) in the Barents, Kara, Laptev and East Siberian seas on the Roshydromet's RV "Ivan Petrov". Researches on the role of the Atlantic waters transformation processes on continental slopes and the adjoining part of the ocean bed in the area of the Laptev, East Siberian and Barents seas in formation of climatic changes in the Arctic, were carried out from the icebreaker "Kapitan Dranitsyn" (expedition AVLAP/NABOS).

There were implemented researches of glades and frontal watersheds in the Laptev sea as an indicator of the state and natural environment's climatic variability of the Siberian shelf. For the first time defrosting influence of the Atlantic waters, penetrating from the north parts of

the Laptev sea, was fixed in the near-bottom layer in the regions of researches (expedition "Polynya-2008/Transdrift-XIII").

Data, obtained by Russian and American scientists in the expedition "RUSALCA-2008", carry on long-term observations in the Bering Strait and the adjoining seas. Obtained information will allow to carry on studies of oceanographic characteristics, their spatial and temporal (from one hour to several years) variability. Expeditionary researches on the programme "RUSALCA" offer the unique material to study the processes, taking place in the zone of the Pacific and the Arctic Oceans' water exchange.

Considerable complex of researches was carried out by Roshydromet, RF MNR and RAS organizations on the Spitsbergen archipelago and in its near-shore waters. Those were hydrometeorological, glaciological, ecosystemic, geologic-geophysical works of Russian organizations, focused on estimation of current changes in the near-Arctic natural environment, assessment of anthropogenic impact on ecosystems of the archipelago.

AARI scientists in co-operation with Norwegian specialists have got new data on the state and variability of the archipelago's natural environment main components (hydrosphere, atmosphere, cryosphere, biosphere), put the newest tools for measuring and registration of hydrometeorological parameters (oceanographic probes, actinometric sensors, ADC) into operation.

Researches of the NWB SPA "Typhoon" showed, that contents of the main groups of the natural environments' pollutants and contaminants in the area of Barentsburg settlement are typical for areas of the coal-mining industry development and are not critical.

In April-May of 2008, the second stage of measurements of snowpack's pollution level inside the Republic of Sakha (Yakutia) and the Chukotka (or Chukchi) Autonomous Area. Preliminary analysis of the data showed, that in the eastern part of the Russian Arctic, concentrations of sooty aerosol in snow are low and do not exceed average values, measured a quarter of the century ago beyond the Russian Arctic.

Drilling works on the permafrost borehole of 200 m deep have been initiated on the Eljgygytgyn lakeside to expose the unique paleoclimatic characteristics of the Chukchi Peninsula.

There were obtained new data on the origin and development of the Lena river estuary and the Laptev sea coastal zone (expedition "Lena-2008"). There was brought to light lack of significant changes in temperatures and depths of the seasonal thawing of ever-frozen upper layer's rocks on the polygon of the Samoylovsky peninsula in the Lena river delta during last 7 years of observations.

Complex studies of the near-Earth air composition were carried out by IPA RAS scientists in co-operation with the Roshydromet and University of Helsinki specialists within expedition of the observatory carriage from Moscow to Vladivostok.

Researches on monitoring of cosmic-rays in the Arctic atmosphere and at the sea level were carried out. Observable streams of charged particles in the Earth's atmosphere from the Earth level up to 30-35 km height are evidence of unusually deep and continuous current minimum of solar activity.

Monitoring of persistent organic pollutants in the Russian Arctic atmosphere air was carried out by the NWB SPA "Typhoon" specialists.

Students and postgraduates of Russian institutions of higher education took an active part in AARI expeditionary researches. Thus, 30 young Russian scientists worked in marine researches in the expeditions "Arktika 2007" ("Arctic 2007"), "Barkalav-2007", AVLAP/NABOS, terrestrial researches (the Lena river estuary, the Samoylovsky peninsula) and in Spitsbergen in 2007. All these expeditions were implemented at International participation, which promoted maintenance of contacts with representatives of different scientific schools.

Special issue is an assessment of social and economic consequences of the natural environment's state changes in the polar regions, which, in the first place, influence on indigenous people's life activity in the Arctic, for ensuring reasonable natural resources usage and other activities and working out recommendations on the statistics of the changing climate conditions and state of natural environment in the interest of social and economic development in the Arctic and ensuring Russia's presence in the Antarctic.

In 2008 Institute for Systems Analysis RAS, Institute of Geography RAS and AARI conducted ethno-ecological and social and economic researches in the coastal zone of the

Arctic. 900 examinations of children and adults were carried out by medical specialists. There were implemented questioning of adults and anthropometry of children and adults for assessment of their nutritional state. Sampling of the air, water, soil, vegetation, food stuffs was done. The given assessment of heavy metals composition (chromium, nickel, cadmium) showed, that there are exceeding values of MPC on nickel, exceeding concentration of heavy metals in Kharp settlement. High level of ENT pathology was registered and growth of oncological diseases was observed.

Works in the Antarctic

Russia carried out the following IPY 2007-2008 projects in the Antarctic:

- “Meteorological measurements’ data collection into an active phase of the IPY for scientific and applied researches”;
- “Ice and climate of the Antarctic peninsula”;
- “Atmospheric circulation and climate”;
- “Climate of the Antarctic and of the Southern Ocean”;
- “Interaction of the Antarctic slope and shelf waters”;
- “Ecologically clean penetration and complex research of subglacial lake Vostok”;
- “Glacial and geophysical researches of current lines of ice, through-passing subglacial lake Vostok”;
- “Trans-Antarctic scientific expedition – Ice divides of the Eastern Antarctic”;
- “Nature of subglacial lakes in the Antarctic”;
- “International partnership in researches of ice cores”;
- “Antarctic superficial accumulation and ice run-off”;
- “Impact of solar activity on changes in the atmosphere” ;
- “The cosmic weather in the Antarctic”;
- “Researches of impulse signals of no electromagnetic nature”;
- “The ozone layer and ultraviolet radiation in changing climate”;
- “Aerosol optical thickness, average values, variability and trends of climatic significant aerosol parameters in the polar areas”;
- “Evolution and bio variety in the Antarctic” ;
- “Climatic interactions and dynamics of the Southern Ocean ecosystems” .;
- “Plate tectonics and polar oceanic connections in the history of the Earth”;
- “Origin, evolution and position of the Gamburtsev Subglacial Mountains: study of unknown Antarctic territories”;
- “Soils and of permafrost of the Antarctic”;
- “Age of the Antarctic permafrost and its applications in geo-and biological sciences”;
- “Network of the polar monitoring”
- Expeditionary works and researches on all items of the Framework were carried out within the IPY projects’ implementations in the Antarctic. Expeditionary works on the twenty four field projects were carried out. Meteorological measurements’ data collection, researches of atmospheric circulation, the ozone layer and ultraviolet radiation, evaluation of aerosol optical atmosphere thickness, variability and trends of climatic significant aerosol parameters in the polar areas were part of the work range. Climate forming processes in the Southern Ocean, interactions of the Antarctic slope and shelf waters were explored. Researches of superficial accumulation and ice run-off were carried out on the Antarctic glacial sheet. Impact of solar activity on changes in the Antarctic atmosphere and cosmic weather was studied. Biological researches included study of ecosystems’ evolution and dynamics in the Antarctic and in the Southern Ocean in current climatic conditions. Geological aspect engaged plate tectonics, as well as origin, evolution and position of the Gamburtsev Subglacial Mountains. Special attention was paid to ecologically clean penetration to subglacial lake Vostok and glacial and geophysical researches alongside current lines of ice, through-passing subglacial lake Vostok. Works were carried out at active International partnership.

Main results

Works in the Arctic

State of the AO and sea ice

Oceanographic observations data, obtained through the IPY2007-2008 period, made it possible to evaluate characteristics of water masses’ state on the Arctic water basin of almost

the whole AO and the Arctic seas and compare them with the values of the 1970s. In the beginning of the XXI century maximal temperature in the Atlantic waters (AW) layer has increased by 1–1,5°C in the east of the region. At the same time, the upper border of the AW layer, identified with zero isotherm, has risen up. Decrease of the zero isotherm depth has made from 20 to 80 m relatively its depth in the 1970s. Owing to these changes, desalinated upper layer at the AW stream area decreased and part water of this layer shifted to Greenland and the Canadian archipelago, as a result, desalinated water run-off from the Arctic basin through Canadian straits became stronger.

Desalination of the superficial layer in summer 2008 was observed on the bigger part of the Amerasian sub-basin, furthermore, negative anomalies (desalination) in some regions reached –2 ‰. In Eurasian sub-basin from the Fram strait along the continental slope to the Laptev sea salinity of the superficial layer was observed, but and in the northern part of the Laptev sea negative anomalies of salinity reached –2 ‰. In whole, the superficial layer of the Amerasian sub-basin was abnormally desalinated, but the superficial layer of the Eurasian sub-basin was abnormally salt. The contrast of salinity between two sub-basins has reached 4 ‰.

Phenomenon of summer 2007, thereupon followed by abnormal summer of 2008, along with preceding them oceanological processes on the whole thickness of the ocean (extreme warming of the Atlantic waters, reduction of the Pacific ocean summer waters' spreading area and their considerable temperature increase, expansion of the Pacific ocean winter waters area up to boundaries of the maximal expansion, increase of temperature and salinity of the Eurasian sub-basin's bottom waters), put forward many actual questions, and the most important among them was and is being now the following one: whether current changes of the atmosphere and ocean state in the Arctic are the characteristic of the arctic climatic system, which will be followed by return to one of the states observed before (conditional equilibrium state), or irreversible restructuring of the climatic system structure itself will occur – of thermohaline fields, circulation of waters on the whole thickness of the ocean, macrostructure of the ice sheet and its drift system, including occurrence of new, not observed earlier, peculiarities of state and circulation of the AO.

Through the IPY2007-2008 period, incidental measurements of the ice thickness in the summer period from July to September were carried out. Obtained data are being processed and will allow to follow up changes in allocation of the ice thickness during thawing and to compare them with allocation of the ice thickness in earlier years, beginning from 1977.

Implemented research shows possibility of using incidental measurements for monitoring of sea ice thickness from board of icebreakers and other vessels, capable to sail in ice-covered waters. Proceeding of these observations, processing and analysis of their results make considerable contribution to researches on the programme of the International Polar Year and implementation of the International programme "Climate and cryosphere".

During field studies at the drifting stations "North Pole-34" and "North Pole-35" in 2007-2008 the hypothesis (Alekseev, Nagurny, 2007) about active role of seasoning sea ice transformation in the Arctic in increase of the amplitude of annual CO₂ concentration variability in the Arctic atmosphere has got its evidence.

It is known, that the amplitude of annual CO₂ concentration variability is growing from the equator up to the Northern Pole. Supposition, that the mechanism of this increase is connected with screening by the ice interchange of gases between the ocean and atmosphere during winter period, turned out to be groundless, since decrease of CO₂ run-off to the ocean cannot increase its content in the atmosphere in winter without additional source. The atmosphere above adjoining latitudes cannot be such a source either, as the average concentration of CO₂ at least is not going down, especially in winter, towards the Pole and from the shore to the sea, covered with ice. Measurements of CO₂ streams, carried out by A.Nedashkovsky and A. Makshtas on the surface of growing ice during the "NP-35" drifting, confirmed its entry to the atmosphere in winter time at growth of ice and increase of CO₂ run-off in summer time at its thawing. In this connection, CO₂ run-off prevails over entry.

In such a case, accelerated reduction of the sea ice area and increase of its thawing intensity can bring to growth of the amplitude of annual CO₂ concentration variability.

Researches of the Spitsbergen archipelago

Collaborators of AARI studied the current state of the Spitsbergen climatic system. In the process of expeditionary works researches were carried out on the following directions: oceanography, hydrology, glaciology, meteorology, actinometry, polar medicine. Researches were carried out in three stages: spring, summer and autumn.

As a result of the spring stage of expeditionary researches, there were obtained data about the current state of the archipelago's natural environment, including study of incoming part of water balance of the Gryonfiord gulf drained basin; conducted study of the ice masses interchange processes, obtained the value of winter ice mass balance of the Aldegond glacier, implemented inter-calibrating researches of domestic and foreign actinometric sensors.

Complex oceanological researches in the Billefiord and Gryonfiord gulfs in summer 2007/08 carried on works on study of the Spitsbergen archipelago's fiords, resumed in 2006. Measurements in the superficial layer allowed to specify the character of hydrophysical, hydrochemical and hydrobiological allocation values. Spatial allocation of temperature and salinity of water, as well as biogenic elements in the superficial layer of the Billefiord and Gryonfiord gulfs in many ways is being defined not only by spreading fluvial run-off, but by intensity of upwelling, available in the inner parts of the gulfs.

As a result of the summer hydrological researches, there were obtained data on seasonal fluvial run-off variability with diverse degree of the basins' glaciation. Study of suspended loads' run-off made it possible to give evaluating characteristics of the volume of suspended material removal from river water collections to the fiord's waters. There were obtained data on interrelation of the air temperature and values of thawing on the Gryonfiord gulf's glaciers. The model of the Aldegond glacier's thawing was verified by means of the 2008 data.

Reflective characteristics of the Aldegond glacier were studied. Study of summer ice mass balance was carried out. There was obtained the value of the vertical temperature gradient. A map of the hydrological network of the Aldegond glacier's surface was made.

The main task of the field paleogeographic works was exposure of the peat deposits development area, their description and samples selection for paleobotanical analysis and radiocarbon dating.

Study of man's adaptation mechanisms to extreme climatic conditions of Spitsbergen and Barentsburg settlement. Medical examination of the Barentsburg settlement inhabitants included consultation of paediatrician, examination and consultation of gastroenterologist, ultrasonic examination of abdominal cavity organs, urinoexcretory system organs, thyroid gland, mammary gland, small pelvis organs, prostate gland, support and locomotion system, heart. There was rendered consultative assistance with recommendations on medical treatment and further supervision.

Set up of the International hydrometeorological observatory (Tiksi)

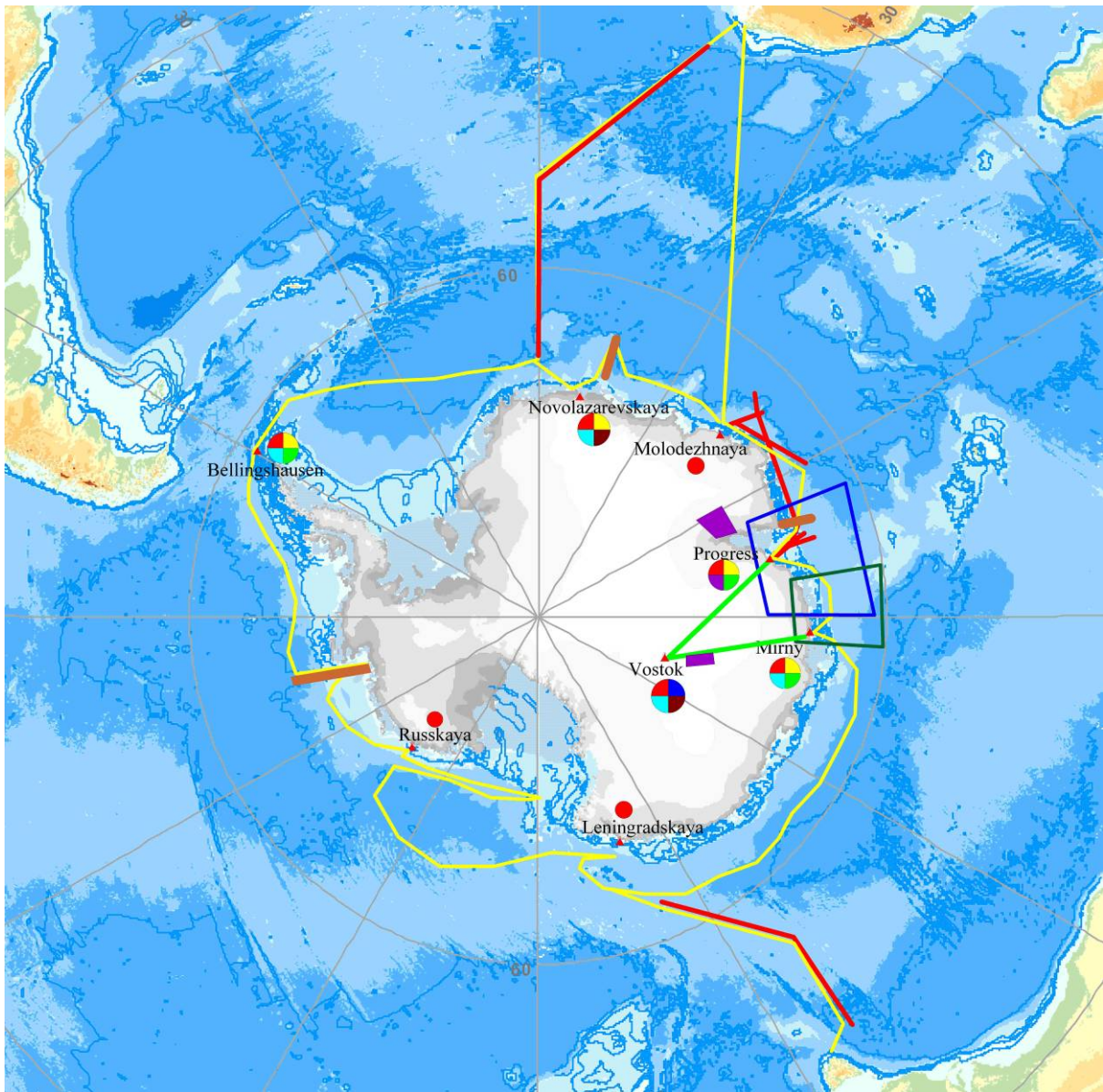
Set up of the hydrometeorological observatory in Tiksi through the IPY period is the stage of organization of the polar stations International network for monitoring of long-term climate changes in the Arctic, including also the polar observatories, located in Alaska (Barrow), the Canadian Archipelago (Alert – Eurica), Spitsbergen (New-Alesund), Greenland (Sammit) and Scandinavia (Pallas and Abisco). Set up of the observatories network, carrying out long-term hydrometeorological observations on the agreed programme, with application of identical measuring complexes, specified, on the one hand, by necessity to understand the known phenomenon of the polar enhancement, meaning maximal climate variability exactly in the polar areas, on the other hand – by special vulnerability of the Arctic region ecosystems, as a result of anthropogenic and natural origin.

Works in the Antarctic

Researches of the Antarctic climate

In the IPY projects on the researches of the current Antarctic climate, there were obtained assessments of parameters of spatio-temporal variability of the Antarctic atmosphere thermal regime in the near-Earth layer, thickness of the troposphere and lower stratosphere for the period of instrumental observations. It was fixed, that during last decades noticeable warming of climate is being observed in the Antarctic peninsula area in the near-Earth layer, as well as in the troposphere. Phenomenon of the "regional warming", being the biggest in the

Southern Hemisphere, is being revealed in reduction of the amplitude of the annual and diurnal motion of air temperature, due to growth of its minimal values, thickness of cloudy layers, degradation of permafrost and reduction of the sea ice sheet. The warming process, specified by the unique on intensity development of cyclonic and mesoscale vertical activity in the Antarctic peninsula area, has already influenced on marine and surface ecosystems, where more heat-loving biotic components have began to show up.



- 1 атмосферные
- 2 биологические
- 3 гляциологические
- 4 геолого-геофизические
- 5 подледниковые озера
- 6 прибрежная гидрология/морской лед
- 7 геофизика атмосферы
- геолого-геофизические работы (полигон)
- маршрут Восток-Мирный
- маршрут НЭС Академик Федоров
- разрезы ХВТ
- Разрезы CTD

Russian researches in the Antarctic during the IPY

Researches of the Antarctic atmosphere

There was carried out monitoring of the current state, analysis of tendencies and anomalies of the total solar radiation variation and spectral aerosol-optical thickness of the Antarctic atmosphere. Specialized data archive of actinometric observations and spectral aerosol-optical thickness of the atmosphere at the Russian Antarctic stations was enlarged with new data of the field measurements. By the present time information from 1956 to 2009 at the seven Russian Antarctic stations was included to the data archive of actinometric observations, but information from 1983 to 2009 was included to the archive of aerosol-optical thickness of the atmosphere.

Analysis of characteristics of the long-term total solar radiation variation and the atmosphere transparency showed, that statistically significant trend in total radiation entry has been missing more than 50 years. During the period under consideration, the integral atmosphere transparency in the Antarctic considerably decreased only after strong volcanic eruptions. In between volcanic periods the atmosphere transparency, as well as aerosol weakening, were stable.

Research of subglacial lake Vostok

In study of subglacial lake Vostok, the most important results are connected with researches of new ice cores. At the present time the borehole's depth has reached the level of 3666.54 m. During researches of the lake ice core, there were obtained new data on mineral composition and age (on uranium-lead dating of zircon) of sedimentary rocks, set up data bank about isotopic, gas and biological composition of the lake ice, size of crystals, composing it, and orientation of their principle axes. Analysis of the implemented researches results made it possible to specify the notion about mechanism of the lake ice formation to obtain important information about gas, isotopic and hydrological regimes of subglacial basin. It has been fixed, particularly, that development of zonal (horizontal) orientation of the crystals' principle axes is being observed in the lower part of the studied lake ice thickness, which is the evidence of excessive cold thaw water entry from the lake's northern parts. The results of isotopic researches point out asynchronous on the depth change of oxygen 18 and deuterium content in the lake ice, which reflects irregularity of hydrothermal waters entry to the lake from the bottom of the basin. According to the data of terrestrial geophysical researches, there were made maps of the under-ice relief and thickness of the glacier and water layer of Vostok lake in scale 1:1 000 000. There were made assessments of air temperature changes and thickness of glacial cover in the central areas of the Antarctic through the period of time 0,5-1 million years ago.

Researches of the Southern Ocean

Among marine works the most important things were oceanographic cross-sections in the Commonwealth and Lazarev seas and probing with expendable bathythermographs (XBT) between Africa and Antarctica. In the Commonwealth sea there were defined regions of formation and the ways of allocation of the Antarctic shelf and modified circumpolar deep waters and natural laws of their properties transformations. There was selected new water mass – bottom water of the Prydz bay, defined its thermohaline and hydrochemical parameters, shown its role in ventilation of circumpolar deep water and formation of the Antarctic bottom water. On the basis of the given observations, there was shown significant temporal and spatial variability of the intensity of the Prydz bay's bottom water formation processes and its spreading down to the continental slope of the Antarctic continent.

Heliogeophysical researches

In heliogeophysical researches in the Antarctic there are given assessments of galactic rays impact, directed by the solar wind, on temperature and wind regimes in the southern circumpolar area. As a result of the carried out researches, there was discovered, that the atmosphere state in a crucial way depends on changes of the solar wind parameters, that is of interplanetary electric field.

Summary

Development of the hydrometeorological monitoring system and hydrometeorological provision of marine and economic activity in the Arctic will ensure reduction of negative consequences and increase of activity efficiency in the polar areas through the timely of unfavourable hydrometeorological conditions' record keeping.

Implemented works on monitoring of the Arctic Ocean ice situation, geodynamic observations of the Arctic, will make it possible to find new solutions of problems in assessment of glaciation changes, disturbances of permafrost and ice crusts, transformation of deer pastures, shore erosions, mapping of the sea currents, fixation of anthropogenic impacts, islands drifting, with application of up-to-date satellite technologies, including the ones, which are based on the data of remote probing of the Earth, will promote set up of permanently operating satellite differential stations' network for cartographer-geodetic and navigational supply of the Arctic zone territory, transport systems, including the Northern Sea Route.

Qualitative assessment, extension of the natural environment knowledge and forecasting of possible changes in future are necessary for supply of navigation in the Arctic with reliable hydrometeorological and ice information, for designing of vessels and icebreakers, at the development and maintenance of the shelf platforms.

Works in the Antarctic have got, in whole, fundamental character. Obtained data made considerable contribution to achievement of the main target of the Antarctic researches – definition of the former and current changes as well as evaluation of future changes of the Antarctic natural environment .

The results of the IPY 2007-2008 will make it possible to keep national heritage – outcomes of various generations activity of Russian and Soviet explorers of the Earth polar areas for future usage, will create potential for development of scientific researches and informational supply of activity in the polar areas, will make considerable contribution to development of the domestic and world science, will give possibility to realize the limits of the climatic system natural variability and to evaluate tendencies of future climatic variability, will make the basis for higher quality of natural environment condition forecasting .

List of meetings, conferences and symposia, held in Russia on the IPY themes

Conferences and other meetings

2004

1. International meeting “Collaboration in preparation for the International Polar Year 2007 – 2008” (22-23 January, 2004, St. Petersburg)
2. The Arctic and the Antarctic Research Institute of Roshydromet. Business meeting on preparation of the Roshydromet Scientific Programme and implementation of the International Polar Year (IPY) 2007-2008. (12 May, 2004, St. Petersburg)

2005

3. International seminar, related to presentation of Russian translation of the Consolidated Report programme on assessment of climatic impacts in the Arctic (ASIA), problems of the Arctic climate changes and questions of preparation for the International Polar Year (IPY) 2007-2008 (30 March - 1 April, 2005, St. Petersburg)
4. Theoretical and practical meeting-seminar on the regional researches in the sphere of hydrometeorology and monitoring of natural environment pollution in the Eastern Siberia and Far East regions (31 March, 2005, Yakutsk)
5. Committee meeting of the Arctic Council senior officials (6-7 April, 2005, Yakutsk)
6. The VII International Scientific and Industrial Forum “The Great Rivers – 2005/ICF” (17-20 May, 2005, Nizhny Novgorod)
7. Russian-Finish meeting on preresearch and implementation of the International Polar Year (IPY) 2007-2008. (19 May 2005, St. Petersburg)
8. Meeting on the preparation of the International Polar Year (IPY) 2007-2008 (16-21 October, 2005, Sochi)
9. Session of the Marine Board under the government of the Russian Federation (8 June, 2005, Moscow)

10. The IX Economic Forum (14-16 June, 2005, St. Petersburg)
 11. Russian-French seminar "Vostok 2005" (5–8 July, 2005, St. Petersburg);
 12. The 19th meeting of the AMAP Working group and the 3rd meeting of the Arctic Council: the authors, who made an assessment of activity on oil and gas development in the Arctic (12,13 and 16 September, 2005, St. Petersburg);
 13. Committee meeting of the Arctic Council senior officials (11-14 October, 2005, Khanty-Mansiysk)
 14. The 5th symposium "Meteorological researches in the Antarctic" (14-16 November, 2005, St. Petersburg);
 15. WMO Coordinating meeting on meteorology of the Antarctic and preparation of the IPY (21-23 November, 2005, St. Petersburg);
 16. Informational and coordinating meeting on the problems of methodological and operative-industrial activity of the Roshydromet institutions in the Arctic (28 November, 2005, St. Petersburg)
- 2006.**
17. Scientific conference "Russia in the IPY 2007-2008" (3-5 October, 2006, Sochi)
- 2007**
18. International forum at the Polar circle "Images of the North", dedicated to opening of the International Polar Year (15-18 February, 2007, Salekhard)
 19. Session of the Marine Board under the government of the Russian Federation (28 March, 2007, Moscow)
 20. International conference "Cryogenic resources of the polar areas" (17-21 June, 2007, Salekhard))
 21. Grand session "Days of the Arctic in Russia" (21 June, 2007, Moscow)
 22. Session of the Roshydromet Scientific and technical Council "About Roshydromet's participation in the Russian scientific programme of the International Polar Year 2007-2008 implementation" (6 July, 2007, Moscow)
 23. Scientific conference "Russia in the IPY – the first results" (3-9 October, 2007, Sochi)
 24. Conference "The Seas of the High Latitudes and the Marine Cryosphere" (25-27 October, 2007, St. Petersburg)
 25. Press conference at the InformNauka (Science News Agency) (13 November, 2007, Moscow)
- 2008**
26. International theoretical and practical conference "75 years since the beginning of the Northern Sea Route's systematic study and development " (21-22 February, 2008, St. Petersburg)
 27. The IV Northern social-ecological congress (27 - 28 March, 2008, Syktyvkar)
 28. The week of the Arctic science (ASSW-08) (26 March – 2 April, 2008, Syktyvkar)
 29. Conference "Adaptation to the climate change and its role in ensuring steady development of regions" (13-14 May, 2008, Murmansk)
 30. Polar researches — perspectives of the Arctic and the Antarctic study through the International Polar Year period" (St. Petersburg, Russia, 8-11 July, 2008).
 31. The XIV Glaciological symposium "Glaciology from the International geophysical year to the International Polar Year" (3-7 September, 2008, Irkutsk)
 32. Scientific conference "Contribution of Russia to the IPY" (2-8 October, 2008, Sochi)
 33. Scientific conference on the subject matter of the International Polar Year within the International Youth's "Omega -forum" (12-13 November, 2008, St. Petersburg).
 34. The VII medical Assembly of the polar regions and the Far North Cities Union and the V theoretical and practical conference of the AARI Center of the polar medicine (3 - 4 December, 2008, St. Petersburg).
- 2009.**
35. The V Northern social-ecological congress "The northern measurement of Russia: science, innovation, International collaboration" (21 April, 2009, Moscow)
- Exhibitions**
1. The XI International exhibition-congress "HIGH TECHNOLOGIES. INNOVATIONS. INVESTMENTS" (HI-TECH'2006) 25 – 28 September, 2006, St. Petersburg

2. Exhibition within the “International conference on the hydrometeorological security problems” (26-29 September, 2006, Moscow).
3. International exhibitions “Ocean 2006” (25-28 April, 2006, Moscow), “Ocean 2007” (23-26 April, 2006, Moscow)
4. Exhibitions-conferences “Neva-2005” (26-29 September, 2005, St. Petersburg), “Neva-2007” (24-27 September, 2007, St. Petersburg)
5. The VIII Moscow International saloon of innovations and investments (2008, Moscow)
6. The II International exhibition-congress “Perspective Technologies of the XXI century” (30 September - 3 October, 2008, Moscow)
7. METEOREX-2008 (27-29 November, 2008, St. Petersburg)

The principle data about financial support of Russia’s participation in the IPY

Joint financing of the IPY 2007-2008 events in Russia has made approximately 2300 million roubles in 2007-2008.

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International projects of the IPY 2007-2009, carried out with Russian specialists participation

Country-leader	Region	Cluster	Title
Australia	Antarctic	53	A Census of Antarctic Marine Life
	Bipolar	56	Quantifying the relationship of solar variability with the atmosphere, weather and climate (particularly via the global electric circuit and ozone variability associated with solar activity)
		132	Climate of Antarctica and the Southern Ocean – Ocean Circulation Cluster
		341	Taking the Antarctic Arctic Polar Pulse-IPY 2007-8 Human Biology and Medicine Research
Canada	Arctic	11	Arctic Wildlife Observatories Linking Vulnerable EcoSystems
		145	Workshop / Conference summarizing the results of the Arctic Monitoring and Assessment Program's Human Health Assessment Group (AMAP HHAG Research Program (2002 – 2008))
		162	Starting the clock for the CARMA Network: Impacts on Human-Rangifer Systems in the Circumarctic
		188	International Tundra Experiment (ITEX): impacts of long-term experimental warming and climate variability on tundra ecosystems
		257	Wildlife Health: Assessing the Cumulative Impacts of Multiple Stressors
		300	Arctic Biodiversity of Chars – Network for Monitoring and Research
		327	INterContinental Atmospheric Transport of Anthropogenic Pollutants to the Arctic
		431	ARCTEC: A Cumulative Effects Toolbox for Northern Ecological and Social Systems
Denmark	Arctic	134	Polar bear (<i>Ursus maritimus</i>) circumpolar health assessment in relation to toxicants and climate change
		210	Global Change - Social Challenges Processes of socio-economic changes in the Circumpolar North, with focus on gender and inter and intra-generational relations
		227	The Political Economy of Northern Development
Finland	Arctic	58	Change and variability of Arctic Systems Nordaustlandet, Svalbard
		400	ANTLER Network Secretariat and Workshop Series
	Bipolar	63	ICESTAR/IHY – Interhemispheric Conjugacy in Geospace Phenomena and their Heliospheric Drivers
France	Arctic	40	Developing Arctic Modelling and Observing Capabilities for Long-term Environmental Studies
	Bipolar	16	Hydro-sensor-FLOWS , Arctic and antarctic glacier hydrosystems as natural sensors for recent climatic variability
		315	Tectonic Map of the Earth's Polar Regions
Germany	Antarctic	34	Impact of CLimate induced glacial melting on marine and terrestrial COastal communities on a gradient along the Western Antarctic PENinsula
		67	Origin, evolution and setting of the Gamburtsev subglacial highlands: Exploring an unknown Antarctic territory
		131	Integrated circumpolar studies of Antarctic marine ecosystems to the conservation of living resources
		152	Trans-Antarctic Scientific Traverses Expeditions – Ice Divide of East Antarctica
	Arctic	90	Arctic Circum-Polar Coastal Observatory Network
		390	Biodiversity and Climate Induced Lifecycle Changes of Arctic Spiders

		408	Social - science migrating field station: monitoring the Human-Rangifer link by following herd migration
	Bipolar	66	ANDEEP – SYSTCO (ANtartic benthic DEEP-sea biodiversity: colonisation history and recent community patterns – SYSTem COupling)
		77	Plate Tectonics and Polar Gateways in Earth History
		99	Ozone layer and UV radiation in a changing climate evaluated during IPY
		130	Bipolar Climate Machinery
Greenland	Arctic	69	International Congress of Arctic Social Sciences VI in Nuuk, 2007-2008
		386	Survey of Living Conditions in the Arctic, SLiCA - Remote Access Analysis System
Iceland	Arctic	104	The Arctic Hydrological Cycle Monitoring, Modelling and Assessment Program
Italy	Antarctic	137	Evolution and Biodiversity in the Antarctic: the Response of Life to Change
	Arctic	38	Ocean-Atmosphere-Sea Ice-Snowpack Interactions affecting Atmospheric Biogeochemistry and Ecosystems in the Arctic
	Bipolar	171	POLAR - AOD: a network to characterize the means, variability, and trends of the climate-forcing properties of aerosols in polar regions
Japan	Bipolar	55	Microbiological and Ecological Responses to Global Environmental Changes in Polar Regions
Netherlands	Arctic	37	The dynamic response of Arctic glaciers to global warming
		120	Northern High Latitude Climate variability during the past 2000 years: implications for human settlement
	Bipolar	10	Large Scale Historical Industrial Exploitation of Polar Areas
		35	International Polar Year GEOTRACES: An international study of the biogeochemical cycles of Trace Elements and Isotopes in the Arctic and Southern Oceans
		172	Health of Arctic and Antarctic bird populations
		175	Fate, uptake and effects of contaminants in the Arctic and Antarctic ecosystem
Norway	Arctic	26	The Pan Arctic cluster for Climate forcing of the Arctic Marine Ecosystem
		28	Climate of the Arctic and its role for Europe/Arctic System Reanalysis
		32	POLar study using Aircraft, Remote sensing, surface measurements and modelling of Climate, chemistry, Aerosols and Transport (POLARCAT)
		36	Arctic Ocean Warming in the Past
		46	Monitoring of Oil Development in Traditional Indigenous Lands of the Nenets Autonomous Okrug, Northwestern Russia
		72	Network for ARCTic Climate and Biological DIVersity Studies
		151	Present day processes, Past changes, and Spatiotemporal variability of biotic, abiotic and socio-environmental conditions and resource components along and across the Arctic delimitation zone
		155	Ecosystem Studies of Subarctic and Arctic Regions
		157	Community Adaptation and Vulnerability in Arctic Regions
		310	The Impacts of Oil and Gas Activity on Peoples in the Arctic Using a Multiple Securities Perspective
		318	TUNU-Programme: MARINE FISHES OF NE GREENLAND – diversity and adaptation
		378	Impact Assessment with Indigenous Perspectives
		379	IPY Operational Oceanography for the Arctic Ocean and adjacent seas
		399	Reindeer Herders Vulnerability Network Study: Reindeer Pastoralism in a Changing Climate

		411	Norwegian and The Russian Federation Arctic Resources: Prospects for Social and Economic Development
	Bipolar	23	Bipolar Atlantic Thermohaline Circulation
		71	Polar Aquatic Microbial Ecology
		121	Improved numerical weather forecasting and climate simulations by exploitation of in-situ, airborne remote-sensing and satellite data, advanced modelling systems and basic research into polar processes and into polar-global interactions
Russia	Antarctic	267	Comprehensive Meteorological dataset of active IPY Antarctic measurement phase for Scientific and applied Studies
	Arctic	262	Response of Arctic and Subarctic soils in a changing Earth: dynamic and frontier studies
		266	Remote sensing monitoring and forecast of surging glaciers' evolution with the investigation of modern fluctuations of surging glaciers of the Alaska, Svalbard and high elevated Asia glaciers
		276	Initial Human Colonization of Arctic in Changing Palaeoenvironments
		284	Development of a system of complex monitoring and elaboration of information-analytical system on protected natural areas of the Polar zone
		285	Northern Genealogies: Development of an ethnodemographic informational system influence peoples of Siberia and the The Russian Federation North
		357	Spitsbergen Climate System Current State – SCSCS
Sweden	Antarctic	33	Antarctic and sub-Antarctic Permafrost, Periglacial and Soil Environments
	Arctic	14	Integrated Arctic Ocean Observing System
		39	Arctic Palaeoclimate and its Extremes
		213	Environmental baselines, processes, changes and Impacts on people in sub-arctic Sweden and the Nordic Arctic Regions
		305	Consortium for coordination of Observation and Monitoring of the Arctic for Assessment and Research
		337	Dynamics of Circumpolar Land Use and Ethnicity
		448	People and wilderness resources in arctic. Is local subsistence harvest and exclusive wilderness tourism a road to sustainable well-being or a source of conflict
	Bipolar	214	Retrospective and Prospective Vegetation Change in the Polar Regions: Back to the Future
		373	Carbon Pools In Permafrost Regions
United Kingdom	Antarctic	92	Integrated analyses of circumpolar Climate interactions and Ecosystem Dynamics in the Southern Ocean–International Polar Year
	Bipolar	13	Sea level and tidal science in the polar oceans
		100	Polar Field Stations and IPY History: Culture, Heritage, Governance (1882-Present)
USA	Antarctic	42	Subglacial Antarctic Lake Environments – Unified International Team for Exploration and Discovery
		88	Antarctic Surface Accumulation and Ice Discharge (ASAIID)
		141	Antarctic Sea Ice in International Polar Year
	Arctic	95	The State of the Arctic sea ice cover: Physical and biological properties and processes in a changing environment
		112	Circumpolar Center for Learning and Indigenous Knowledge Systems
		138	Cold Land Processes in the Northern Hemisphere continents and their Coastal Zone: Regional and Global

		Climate and Societal-Ecosystem Linkages and Interactions	
	139	Greening of the arctic: circumpolar biomass	
	140	Hydrological Impact of Arctic Aerosols	
	166	Sea Ice Knowledge and Use: Assessing Arctic Environmental and Social Change	
	167	Arctic Human Health Initiative	
	196	International Arctic Systems for Observing the Atmosphere	
	247	Bering Sea Sub-Network of Community-Based Environmental Monitoring, Observation and Information Stations	
	275	Polar Disturbance and Ecosystem Services: Links between Climate and Human Well-being	
	436	Moved by the State: Perspectives on Relocation and Resettlement in the Circumpolar North	
	Bipolar	49	International Polar Year (IPY) Data and Information Service (DIS) for Distributed Data Management
		50	Permafrost Observatory Project: A Contribution to the Thermal State of Permafrost (TSP-125)
		86	US Geological Survey participation in the International Polar Year
		105	The State and Fate of the Cryosphere
		185	Polar Earth Observing Network

The Russian Federation Antarctic studies give the input to the following IPY Antarctic and Bipolar projects:

Comprehensive Meteorological dataset of active IPY Antarctic measurement phase for Scientific and applied Studies

[Antarctic Climate and Atmospheric Circulation](#)

Impact of Climate Induced glacial melting on marine Coastal communities off the Western Antarctic Peninsula

Climate of the Antarctic and Southern Ocean

Synoptic Antarctic Shelf-Slope Interaction Study

Antarctic Sea Ice in IPY

Ecologically pure penetration and comprehensive studies of the Vostok sub-glacial Lake

Trans-Antarctic Scientific Traverses Expeditions – Ice Divide of East Antarctica

[Antarctic and sub-Antarctic Permafrost, Periglacial and Soil Environments](#)

[Antarctic Surface Accumulation and Ice Discharge](#)

[Ozone layer and UV radiation in a changing climate evaluated during IPY](#)

[International Partnerships in Ice Core Science \(IPICS\)-International Polar Year Initiative](#)

[POLAR-AOD: a network to characterize the means, variability, and trends of the climate-forcing properties of aerosols in polar regions](#)

[Antarctic and sub-Antarctic Permafrost, Periglacial and Soil Environments](#)

[Integrated analyses of circumpolar Climate interactions and Ecosystem Dynamics in the Southern Ocean–International Polar Year](#)

[Health of Arctic and Antarctic bird populations](#)

[A Census of Antarctic Marine Life](#)

[Origin, evolution and setting of the Gamburtsev sub-glacial highlands: Exploring an unknown Antarctic territory](#)

[Plate Tectonics and Polar Gateways in Earth History](#)

Space climate at polar latitudes
Solar Drivers of Atmospheric Change
Polar Earth Observing Network

List of Russian scientific projects and events on the guiding lines of the Scientific Programme of the Russian Federation's participation in implementation of the International Polar Year (2007-2008)

No	Foreign participation	Guiding lines of the Scientific programme	Project name	Main executive	Project manager	Lead time	Region
			Guiding line 1. Hydrometeorological and heliogeophysical conditions of the polar areas Coordinator (team manager RNKK) V. Kotlyakov (IG RAS) V.Gruzinov (SOI)				
			Section 1.1 Climate and paleoclimate Coordinator (team manager RNKK) V.Gruzinov. (SOI)				
1.	Yes	1, 4, 7	Research of radiation climatic factors and meteorological regime of the Eastern Arctic on the basis of the observations data at the Spitsbergen archipelagos (Barentsburg, New-Alesun), Franz Josef Land (Hayes island) and Novaya Zemlya (Malye Karmakuly)	AARI	I.Frolov (B.Ivanov)	2008-2009	N
2.	Yes	1	Crater of the Eljgygytgyn lake and paleoclimate of the Arctic	AARI on Roshydromet	D.Bolyshiyarov	2008-2009	N
3.	Yes	1	Continental setting of the Laptev sea – natural environment (current state, dynamics)	AARI	D.Bolyshiyarov	2007-2009	N
4.	Yes	1	Current state of Spitsbergen climatic system	AARI	S. Pryamikov	2008	N
5.	No	1, 2	Ecologically clean penetration and complex research of subglacial lake Vostok	AARI	V.Lipenkov	2008-2009	S
6.	No	1, 3, 4, 5, 6	Experimental researches of greenhouse gases concentrations' changes (methane and dioxide carbon) in the Arctic regions atmosphere of the RF and the Antarctic	MGO	A.Reshetnikov	2008-2009	N, S
7.	No	1.5	Disclosure mechanism of the polar climatic changes	IWP RAS	G.Panin	2008-2009	N
8.	Yes	1	Modelling and statistical research of interconnection parameters of climate and snowpack in the high-latitude regions of Eurasia and their economic effect	IG RAS	A.Shmakin	2008-2009	N
9.	Yes	1, 6, 7	Climatic factors of current evolution of the North-Eastern Siberia glaciations	IG RAS	M.Anicheva	2008-2009	N
10.		1	Modelling and forecasting of climatic changes at the European territory of Russia with consideration of circulating processes in the North Atlantic	API RAS		2008	
11.	No	1,3	Long-term and seasonal changes of the western Arctic seas' biocenoses	MMBI KSC RAS	P.Makarevich	2008	
12.	No	1,3	Regularities of formation of anomalous abiotic ecosystemic conditions in the seas of the European Arctic	MMBI KSC RAS	V.Denisov	2008	
13.	No	3	Variation of climate and state of the sea and near-shore ecosystems in the polar areas	RSHGU	N.Smironov	2008-2009	B
			Section 1.2 Upper atmosphere and near-Earth space Coordinator (team manager RNKK) V.Gruzinov. (SOI)				

14.	No	1, 4	Research of effects and nature of impulsive cosmophysical radiation on the data of high-precision synchronous measurements at the Novolazarevskaya st. (Antarctica)	AARI	O.Troshichev	2008-2010	S
15.	Yes	1	Implementation of experiments at the Bellingsgauzen station in the summer seasons of 2007 and 2008. Set up of the station for year-round monitoring of energy balance constituents	API RAS	I.Repina	2008	S
16.	Yes	1	Experimental research of the atmosphere energy interactions with underlying surface of different types in the Arctic Ocean	API RAS	I.Repina	2008	N
17.	No	1, 4, 5	Complex studies of the terrestrial magnetosphere dynamics and geomagnetic activity with application of satellite and terrestrial measurements	PGI KSC RAS	E.Tereschenko	2008-2009	B
18.	Yes	1, 4	Research of physical processes of the polar and sub-polar ionosphere and impact of high-latitude disturbances on medium-latitude ionosphere with application of satellite and terrestrial measurements	PGI KSC RAS	E.Tereschenko	2008-2009	B
19.	Yes	1, 4	High-latitude monitoring of the charged particles streams, including cosmic rays, in the Earth polar atmosphere and their connection with solar and geomagnetic disturbances	LPI RAS	Yu.Stozhkov	2008-2009	B
			Section 1.3 Free and near-Earth atmosphere Coordinator (team manager RNKK) V.Gruzinov. (SOI)				
20.	No	1	Observations of aerosol and optical parameters and constituents of radiation regime in the Antarctic atmosphere	AARI SPA "Typhoon"	V.Radionov	2008-2009	S
21.	Yes	1	Soot in arctic snow and ice and its influence on surface albedo	AARI	V.Radionov	2008	N
22.	Yes	1, 4, 5	Complex monitoring of the Antarctic meteorological regime parameters	AARI	A.Danilov	2008-2009	S
23.	No	1	Climatic changes of restored cloudiness and main parameters of the atmosphere above the polar regions	ARIHMI-WDC	I.Chernyh	2008	B
24.	Yes	1, 5	Elaboration of parameterization of snowpack's vertical structure for numerical modelling in the B polar areas of the Earth.	HMRC RF	K.Rubinshteyn	2008-2009	B
25.	No	1	Complex studies of variability of the trace gas constituents' content in the Antarctic atmosphere and above the World Ocean basin	SPA "Typhoon"	F.Kashin	2008-2009	S
26.		1, 5	Monitoring of the Earth atmosphere state with application of the unique radio-tomographic installation during campaign of the International Polar Year	PGI KSC RAS	E.Tereschenko	2008	B
			Section 1.4 Marine environment of the polar oceans and seas, sea ice Coordinator (team manager RNKK) V.Gruzinov(SOI)				
27.	Yes	1, 3, 4, 5, 7	Complex studies of the seasonal cycles in the Arctic seas (including expedition on RV "Ivan Petrov")	AARI Northern AHM	I.Frolov(L.Timokhov) L.Vasilyev.	2008-2009	N
28.	Yes	1, 3	Complex geographically dispersed researches from drifting arctic ice on the basis of the drifting ice camps in the near-pole regions	Polar Foundation IO RAS, AARI	A.Chilingarov	2008	N
29.	Yes	1	Oceanographic researches in the Antarctic zone of the Southern Ocean	AARI	A.Klepikov	2008-2009	S
30.	Yes	1	Formation, dynamics and destruction of icebergs in the western sector of the Russian Arctic	AARI Northern AHM	G.Zubakin L.Vasilyev.	2008-2009	N
31.	Yes	1, 2, 3, 4, 5	Complex high-latitude researches of the Arctic	AARI	V.Sokolov I.Ashik	2008	
32.		1, 2, 3, 4, 5	Priority development of the instrumental base and implementation of researches in the polar areas of the World Ocean with application of the unique installation on the scientific and expeditionary vessel "Akademik Fyodorov"	AARI	I.Ashik	2008	
33.		1	Research of current state and variability of the Laptev sea region's natural environment as reflection of global processes	AARI VNII Okeangeologia	L.Timokhov	2008	
34.		1	Research of mechanisms of long-term Atlantic waters circulation changes for forecasting climatic variability in the European territory of Russia	IO RAS		2008	
35.	No	1,3	Development of the Arctic shelf ecosystems in the conditions of the sea peregial	MMBI KSC RAS	G.Matishov.	2008	
36.	Yes	1	Bipolar Atlantic thermohaline circulation	PINRO		2008-2009	N
37.	Yes	1	Frontal zones in the Barents sea and adjoining regions	PINRO		2008-	N

			Section 1.5 Superficial waters of land and estuaries of the rivers in the polar areas: ice conditions and floods			2009	
			Coordinator (team manager RNKK)				
			V.Gruzinov (SOI)				
38.	No	1, 3, 4, 6	Complex assessment of current and expected changes of hydrological-ecological and ice condition of the land superficial waters and rivers estuaries in the polar areas of Russia under climatic and anthropogenic factors	AARI	V.Ivanov.	2008-2009	N
39.	Yes	1	Impact of climate changes on water resources and fluvial run-off, falling into the AO	SHI	I.Shiklomanov	2008-2009	
40.	No	1	Assessment of water resources dynamics, water consumption and supply of the biggest water systems in Siberia	SHI	I.Shiklomanov	2008-2009	
41.	No	1, 3, 7	Study of chemical composition and water colour change phenomenon, determined by entry of sulphur, in the lakes of the polar regions	SPA	I.Kuzin	2008-2009	N
42.	No	1	Research of landscape distinctions and their register at the forecast of possible hydrological cycle changes and fluvial run-off in the permafrost zone	IWP RAS	L.Kuchment	2008-2009	N
43.	No	1	Spatio-temporal variability of ice phenomena in the Arctic western estuarine areas in the conditions of changing climate	IWP RAS	V.Debolysky	2008	N
44.	No	1	Economic assessment of the damage from climate changes and snowpack in the northern and arctic regions of Russia	IG RAS	A.Shmakin	2008	N
			Section 1.6 Soils, cryosphere of the polar areas' land, glaciation and permafrost				
			Coordinator (team manager RNKK)				
			V.Kotlyakov (IG RAS)				
45.	Yes	1	Complex monitoring of permafrost and soil parameters in the Antarctic and sub-Antarctic	AARI	V.Lagun	2008-2009	S
46.	Yes	1	Glacial and geophysical researches along the ice current lines, passing through subglacial lake Vostok (the Antarctic)	AARI	V.Lipenkov	2008-2009	S
47.	No	1	Evolution of soils of the Continental north-east tundra in the late Holocene	IB Komi SC UrDRAS	G.Rusanova	2008-2009	N
48.	No	1, 3, 6	Genesis, functions and firmness of tundra soils in the conditions of changing natural environment	IB Komi SC UrDRAS	E.Shmarikova	2008-2009	N
49.		1	Research of landscape diversities and their register at the forecast of possible hydrological cycle changes and fluvial run-off in the permafrost zone	IWP RAS	L.Kuchment	2008	N
50.	Yes	1	Spatio-temporal variability of ice phenomena in the Arctic western estuarine areas in the conditions of changing climate	IWP RAS	V.Debolysky	2008	N
51.	No	1	Remote monitoring and forecast of the pulsing glaciers evolution, learning by example of the unstable glaciers current fluctuations in Russia, Asia, Spitsbergen	IG RAS	V.Kotlyakov	2008-2009	
52.	No	1	Usage of the up-to-date data microwave snapshots from space for definition of snowpack's characteristics in the northern Eurasia regions	IG RAS	G.Nosenko	2008-2009	
53.	Yes	1	Research of the regional peculiarities of the glaciers state and dynamics in the Northern Eurasia mountain regions in the context of the current climate changes	IG RAS	V.Kotlyakov G.Nosenko	2008	
54.	Yes	1	Assessment of changes in accumulation and thawing of snowpack in the Northern Eurasia during the IPY against its long-term variability: their causes and effect	IG RAS	V.Kotlyakov	2008 – 2009	
55.	No	1	Reaction of Arctic and sub-Arctic soils to changes of conditions on the Earth: study of dynamics and borderline condition	IG RAS	S.Goryachkin	2008-2009	
56.	Yes	1	Probing of the western glacial plateau Elbrus	IG RAS	V.Mikhalevko	2008	
57.	Yes	1, 7	Study of continental ice run-off of the Eastern Antarctic	IG RAS	V.Kotlyakov	2008-2009	
58.	No	1	Peculiarities of glaciers regime of the sub-Arctic mountain regions in the second half of the XX century	IG RAS	V.Kotlyakov	2008	
59.	Yes	1	Hydrothermal state of sub-polar and warm glaciers' regime	IG RAS	Yu.Marechet	2008	N
60.	Yes	1	Zone and landscape natural laws of current fluvial run-off changes in the regions of allocation of many years not frozen soils in the Eastern Siberia (the Lena river basin)	IG RAS	A.Gergjadi	2008	N
61.	No	1	Spatio-temporal variability of snow-ice phenomena parameters and dynamics of superficial thickness of the Arctic permafrost in conditions of changing climate	IG RAS	N.Osokin	2008	N
62.			Mathematical modelling of the Arctic permafrost dynamics on the basis of combination of determined and probabilistic methods	IGE RAS	G.Perlyshcheyn	2008	N
63.	Yes	1, 2,	Structure and evolution of coastal and marine areas' cryosphere and shelf of the Russian Arctic	ECI SB RAS	V.Melynikov	2008-	N

		3, 4, 7					2009		
64.		1, 2	Researches of shallow shelf sedimentations for detection of cryolithogenesis processes traces	ECI SB RAS MSU	E.Slagoda		2008-2009	N	
65.		1, 3	Microorganisms and their properties in cryogenic environments, impact on the regulations of life activity's processes in ecosystems	TSC SB RAS	Yu.Sukhovey		2008-2009		
66.	Yes	1, 4	Role of surface and coastal processes in formation of natural and anthropogenic geosystems of the Central Yamal and Yugorsky peninsula	ECI SB RAS	M.Leybman		2008-2009	N	
67.	Yes	1, 4	Application of cosmic technologies and models for problems' solution of terrestrial covers/land use changes on the Yamal peninsula	ECI SB RAS	N.Moskalenko		2008-2009	N	
68.	Yes	1, 4	Researches of the structure and evolution of the coastal and shelf permafrost in conditions of changing climate.	ECI SB RAS MSU	A.Vasilyev		2008-2009	N	
69.	Yes	1, 4	Natural factors of stability and anthropogenic factors of the Eurasia permafrost dynamics. Cartographic models of the permafrost state	ECI SB RAS	D.Drozdov		2008-2009	N	
70.	Yes	1	Diagnostic and modelling of the current changes of the fluvial run-off in the regions of ever-frozen soils allocation	API RAS	I.Mokhov		2008	N	
71.	Yes	1, 3	Cryobiosphere: viable paleobiological systems and genetic resources in the Russian Arctic permafrost	ISSP RAS	D.Gilichinsky		2008-2009	N	
72.	Yes	1, 3	Age of the Antarctic permafrost and its applications in the sciences about the Earth and astrobiology	ISSP RAS	D.Gilichinsky		2008-2009	S	
73.	No	1	Greenhouse gases in the permafrost	ISSP RAS	E.Rivkina		2008-2009	N	
74.	No	1, 4	Monitoring of many years not frozen soils temperature in coves	ISSP RAS	V.Ostroumov		2008-2009		
75.	No	1	Organic matter of the frozen quaternary sedimentations of the eastern sector of the Russian Arctic: role of carbon in global cycle	ISSP RAS	A.Kholodov		2008-2009	N	
76.	No	1, 5	Database on temperature of Russia's cold regions' soils in the XX-XXI centuries	ISSP RAS	V.Sorokovikov		2008-2009	N	
77.		1,6, 4	Monitoring of engineering constructions in the Western Siberia's arctic regions	FundamentStroyArkos ECI SB RAS	V.Feklistov		2008-2009	N	
			Guiding line 2. Structure and history of geological development of the polar regions' lithosphere						
			Coordinator (team manager RNKK)						
			Yr.Leonov (RAS)						
			Section 2.1 Geo- and lithodynamics of the polar regions in the Phanerozoe						
			Coordinator (team manager RNKK)						
			Yr.Leonov. (RAS)						
78.	No	2	Assessment of the sedimentary basins' resource potential of the Eurasian North on the basis of lithogeodynamic analysis	ARGI	N.Sobolev.		2008	N	
79.		2	Physicochemical conditions of formation and geodynamics of the Arctic basin current oceanic crust	GEOKHI RAS	M.Levitan		2008	N	
80.		2	Physicochemical conditions of formation and geodynamics of the Arctic basin current oceanic crust	GEOKHI RAS	A.Sobolev		2008	N	
81.	Yes	2	Biopolar climate machine and ocean gateways of the Arctic Ocean	GEOKHI RAS	E.Galimov		2008	N	
82.	Yes	2	Complex geological study of sedimentary and magmatic complexes of the late Palaeozoic era – the Jura of the Novosibirsk islands	GIN RAS	A.Kuzymichov		2008-2009	N	
83.	Yes	1, 2	The late Mesozoic-Cainozoic tectono-magmatic evolution of the Barents sea shelf and continental slope as a key to paleogeodynamic reconstructions in the Arctic Ocean	GIN RAS	A.Zayonchek		2008	N	
84.	No	2	Geological peculiarities and evolution of the sea basins and continental fringes of the Eastern Arctic	GIN RAS	S.Sokolov		2008-2009	N	
85.	No	2	Tectonic map and GIS-project of the Eurasian shelf and adjoining regions of the Arctic	GIN RAS	A.Mazarovich		2008	N	
86.	No	2	Structure and evolution of the Eurasian sector's continental fringes of the Arctic. Tectonic map	GIN RAS	A.Mazarovich		2008	N	
87.		2	Research of geothermal field of the Arctic passive transition zones for the purpose of deep temperatures, lithosphere capacity and perspectives of oil and gas presences on the continental slope assessment, and abyssals of these water basins	GIN RAS	M.Khutorskoy.		2008	N	
88.	No	2	Thermal evolution and deep temperatures of the Eurasian basin of the Arctic	GIN RAS	Yr.Leonov.		2008	N	

89.		2	Tectono-magmatic evolution of the shelf and continental slope, current stress field, seismicity and geodynamics of the Northern polar area	GIN RAS	D.Dodin.	2008	N
90.			Structure and evolution of the White (Belomor)-Southern-Barents seas region	IG KSC RAS	N.Sharov	2008	N
91.		2	Construction of deep trenches formation geodynamic models in the Eastern part of the Arctic Ocean and its Eurasian continental slope on the basis of the geophysical data interpretation	IPE RAS	E.Artyushkov	2008	N
92.	No	2	Researches of geological construction and tectonic peculiarities of the Spitsbergen archipelago and Franz Josef Land and the Barents – Kara seas' shelf for the purpose of reconstruction of the new oceanic formation geodynamic conditions in the Arctic	MMBI KSC RAS	E.Shipilov	2008	N
93.	No	2	Geological and geophysical study of the Antarctic and its fringing seas: western part of the d'Urville sea, mountain regions of the Mac-Robertson Land and Princess Elizabeth Land (as part of the 53 rd RAE)	PMGPE	V.Masolov	2007-2009	S
94.	Yes	2	History of geodynamic development, sedimentation and changes of natural environment in the region of the Commonwealth sea – plateau Kergelen, the Eastern Antarctica – processing of the obtained data	PMGPE ARIO	G.Leychenkov	2007-2009	S
95.	Yes	1, 2, 5,	Tectonic evolution of the Western Arctic - Northern Atlantic (Franz Josef Land, Spitsbergen, east and north of Greenland, the Canadian Arctic)	PMGPE	A.Tebenykov.	2007-2010	N
96.	Yes		Study under-ice relief and glacial cover of the Antarctic within the ABRIS project	PMGPE ARIO IG RAS	S.Popov	2007-2009	S
97.	No	2	Geological and geophysical study of the Antarctic and its fringing seas: eastern part of the Commonwealth sea, mountain regions of Mac-Robertson Land (as part of the 52 nd RAE) – processing of the obtained data	PMGPE	V.Masolov	2006 - 2009	S
98.	No	2	High-precision magnetic snapshot of abnormal magnetic field's three constituents and its geological and geophysical interpretation as per drifting stations "Severnyj polyus" ("Northern Pole") data	CGRIFE	V.Shneer	2008	N
			Section 2.2 Paleogeography, geoecology, changes of natural environment in the Pleistocene- Holocene Coordinator (team manager RNKK) Yr.Leonov (RAS)				
99.	Yes	1, 2	Evolution of the Barents and White seas – fringes of the Arctic Ocean	GI KSC RAS	V.Kolyka	2008-2009	N
100.	No	1, 2	Evolution of relief and sedimentations of the Kola region in the Holocene	GI KSC RAS	V.Kolyka	2008-2009	N
101.	Yes	2	Evolution of relief and sedimentations of the Kola region in the Holocene	GI KSC RAS	F.Mitrofanov	2008	N
102.		2	Evolution of the Barents and White seas – fringes of the Arctic Ocean	GI KSC RAS	V.Evzerov	2008	N
103.		2	The Arctic in the late Triassic, Jura and early Cretaceous: biotic, paleogeographic, hydrological and climatic events and their chronology	GIN RAS	V.Zakharov	2008	N
104.		2	The Pleistocene and the Holocene of the Russian Arctic polar areas: stratigraphy, biota, paleoclimate и paleogeography	GIN RAS	A.Dodonov.	2008	N
105.		2	High-resolution stratigraphy of extreme natural events in the Arctic basin and their ecological consequences in the water basin and adjoining land during last 60 thousand years	GIN RAS	Yu.Lavrushin	2008	N
106.	No	2.2.	Development of high-resolution stratigraphy of extreme natural events in the Arctic basin and their ecological consequences in the water basin and adjoining land during last 135 thousand years	GIN RAS	Yu.Lavrushin	2008-2009	N
107.	No	2.2.	The Pleistocene and the Holocene of the Russian Arctic polar areas: stratigraphy, biota, paleoclimate и paleogeography	GIN RAS	A.Dodonov.	2008	N
108.	Yes	2, 6	Natural conditions of the most ancient epoch of the Northern Eurasia peopling in the late Pleistocene and the Holocene	IG RAS	A.Velichko	2008	N
109.	Yes	2	Stratigraphy, quarter paleogeography and current geodynamic territory of the Arctic sector of the Northern Verhoyanje (Eastern Yakutia) coastal and shelf zone	IGDPM SB RAS IEC(ISC) SB RAS	L.Imaeva	2008-2009	N
110.	No	2	Study of loose sedimentations' structures and the late Cainozoic history of the Barents sea shelf development	MMBI KSC RAS	G.Tarasov.	2008-2009	N
111.	No	2	Natural processes in the Barents and Kara seas in interaction with adjoining regions of the continental slope and the ocean bed, islands and continent	MMBI KSC RAS	G.Tarasov.	2008	N
112.	No	2	Research of the geological structure and peculiarities of the Spitsbergen and Franz Josef Land archipelagos and the Barents – Kara seas shelf tectonic for the purpose of reconstruction of the new oceanic formation geodynamic conditions in the Arctic	MMBI KSC RAS	E.Shipilov	2008	N
113.	Yes	1, 2	Under-ice relief and the Antarctic ice sheet	PMGPE ARIO	S.Popov	2008-2009	S

			Guiding line 3. Terrestrial and sea ecosystems of the Arctic and the Antarctic Coordinator (team manager RNKK) G. Matishov (RAS) A. Tishkov (IG RAS)				
			Section 3.1 Assessment and forecast of the natural environment's pollution in the polar regions, their impact on ecosystems of the polar regions Coordinator (team manager RNKK) G. Matishov (RAS) A. Tishkov (IG RAS)				
114.	No	3	Research of the biogenic elements' streams in the coastal regions, estuaries and estuary sea zones in the Siberian Arctic	AARI	V. Smagin	2008-2009	N
115.	No	3, 4	Monitoring of humid falls of contaminants in the Russian Arctic ecosystems	MGO	A. Polischuk	2008-2009	N
116.	No	1, 3, 4, 5	Assessment of the current ecological state and perspective variability of the character and degree of the Russian Arctic rivers' pollution	HKHI	A. Nikanorov	2008-2009	N
117.	No	3	Assessment and forecast of the European Arctic terrestrial and water ecosystems' pollution under influence of coal mining (industrial region of Vorkuta)	IB Komi SC UrDRAS	E. Patova	2008-2009	N
118.	No	3	Geochemical and biotic criteria of the polar landscapes firmness	IG RAS	T. Kuderina	2008	N
119.	Yes	3	Researches of the processes of radioactive and stable contaminants transfer and accumulation in the Kola region landscapes, waters and bottom sediments of the Barents sea coastal zone for the purpose of assessments of nuclear-radiation objects, connected with Nuclear-Powered Fleet operations, impact on the environment	IGEM RAS	V. Velichkin	2008	N
120.	Yes	3	Pollution of the polar atmosphere in the near-poles regions, entry of persistent anthropogenic toxicants to the environment and their allocation on the trophic chains	API RAS IO RAS MMBI KSC RAS	A. Vinogradova	2008	N
121.	Yes	3	Artificial radionuclides in the Arctic ecosystems	MMBI KSC RAS	D. Matishov	2008-2009	N
122.	No	3	Entry of persistent anthropogenic toxicants to the Western Arctic marine environment	MMBI KS CRAS	D. Matishov	2008	N
123.	Yes	3	Rehabilitation of contaminated and polluted lands of the Franz Josef Land archipelago – the 2 nd stage	NO " Polar Fund" SOI	A. Chilingarov	2008-2009	N
124.	No	3	Assessment of the natural environment's pollution current condition in the places of Russian enterprises' economic activity on the Spitsbergen archipelago (Barentsburg settlement and adjoining territory) as per results of background and local ecological monitoring	NWB " Typhoon"	V. Klopov	2008-2009	N
			Section 3.2 State of populations and their reaction on climatic and anthropogenic changes of the polar regions' ecosystems Coordinator (team manager RNKK) G. Matishov (RAS) A. Tishkov (IG RAS)				
125.	Yes	3	Assessment of the key sea birds populations' state in the high-latitude polar regions: islands of the Western Arctic and the Eastern Antarctic	AARI	M. Gavrilov	2008-2009	B
126.	Yes	1, 3, 5	Complex monitoring of the natural ecosystems' parameters in the region of the Antarctic peninsula	AARI	V. Lagun	2008-2009	S
127.	No	3	Study of the Southern Ocean biota (ecology of the Antarctic benthic and pelagic)	ZIN RAS	A. Neelov	2008-2009	S
128.	Yes	3, 7	Research of the Arctic benthic and pelagic biota	ZIN RAS	B. Sirenko	2008 – 2009	N
129.	No	3, 6	Biological resources for indigenous people of the Western Chukotka (Chukchi peninsula): new perspectives	ZIN RAS	A. Tikhonov	2008	N
130.	Yes	3	Examination and comparative analysis of the usual eiders from the Northern Norway, White Sea and Spitsbergen archipelago (within the project "Birds' Health")	ZIN RAS Akvaplan-niva, MMBI KSC RAS	V. Kuklin	2008	
131.	No	3	Characteristics of the spatial-temporal structure of the birds' population in the Continental tundra's lakes and rivers	IB Komi SC UrDRAS	Yu. Mineev	2008	N
132.	Yes	5	Remote probing technologies in researches of biological variety and productional potential of the eastern European tundra	IB Komi SC	V. Elsakov	2008-	N

			phytocenosis	UrDRAS		2009	
133.			Climatogenic and anthropogenic of the Russian Arctic biota and ecosystems changes: analysis of the current tendencies and forecast	IG RAS	A.Tishkov	2008	N
134.	Yes	3	Study of quantity and range of animals and plants in the polar areas in conditions of changing climate and economic mastering of the North and expeditions (the White Sea , Kolguyev Island, Gydan peninsula, Taimyr peninsula)	IG RAS	A.Tishkov	2008	N
135.	No	3	Study of the Antarctic sea ice ecosystems	IO RAS	I.Melynikova	2008-2009	S
136.	Yes	3	Current tendencies of the water basins biota changes in Murmansk area	IPIEN KSC RAS	N.Kashulin	2008	N
137.	No	3	Researches of algae adaptation mechanisms, regulation of growth and reproduction in the Russian northern seas	MMBI KSC RAS	G.Voskoboynikov	2008-2009	N
138.	No	3	Monitoring of climatic variability influence and anthropogenic impact on specific variety and structure of the Barents sea bottom communities	MMBI KSC RAS	G.Matishov.	2008-2009	N
139.	Yes	3	Assessment (with assistance of spectrometer's medium resolution image data) of carbon's carrying-out by the rivers to the Arctic (MACRO)	MMBI KSC RAS	P.Makarevich	2008	
140.	Yes	3	Long-term seasonal changes of biocenosis of the Western Arctic seas	MMBI KSC RAS	P.Makarevich	2008	N
141.	No	6	Ecological aspects of formation and dynamics of the Western Arctic birds' parasitofauna	MMBI KSC RAS	V.Kuklin	2008-2009	N
142.	No	3	Assessment of bioesort potential and the way of rational usage of the Barents sea marketable species of crabs and craboids	MMBI KSC RAS	A.Kuzymin	2008	
143.	No	3	Peculiarities of the annual syngenetic cycles micro- and nanoplanktonic communities' formation in the conditions of the Russian Arctic	MMBI KSC RAS	P.Makarevich	2008	
144.	Yes	3	Modelling of the population's areal bioclimate	SPII RAS	V.Mikhaylov	2008-2009	B
145.	Yes	3,4,5	Inventory of carbon reserves in the permafrost soils of the Northern Eurasia: meta-analysis and filling of lacunas	CPEFP RAS	D.Zamolodchikov	2008	N
			Guiding line 4. Development of surveillance systems in the polar areas Coordinator (team manager RNKK) V.Romantsov (AARI) V.Zabnev (Roskartography)				
146.6		4	Reconstruction of the surveillance network state and scientific-methods aspects of its performance, reconstruction and upgrading in the Russian Arctic	AARI	V.Romantsov	2008	N
147.	Yes	1, 4, 7	Complex studies of the Arctic basin atmosphere's processes within the International project of joint observations at the Tiksi Hydrometeorological observatory	AARI	A.Makshtas	2008-2009	N
148.	Yes	4	Set up and maintenance of permanent automatic satellite receivers in summer seasons of 2007 and 2008.	Aero geodesy	A.Matveev	2008-2009	S
149.	Yes	4	Development of surveillance systems in the polar areas	Northern AHM Chukchi AHM Yakutsk AHM Murmansk AHM Middle-Siberian AHM	Directors of AHM	2008	N
150.	No	1, 4	Implementation of works on adjustment of meteorological rocket complex's devices, meteorological rockets M100B trial launches on the SCAR of the Hayes island	CAO	G.Kokin	2008	N
			Guiding line 5. Information system. Data management Coordinator (team manager RNKK) M.Shajmardanov(ARIHMI-WDC)				
151.	No	5	Creation of the inquiry system "Russian and Soviet scientific researches in the polar areas of the Earth: basic data collection"	AARI	B.Zzamyatin	2008-2009	B
152.	No	1, 2, 3, 4, 5, 6, 7	Data management during implementation of the International Polar Year (2007-2008)	ARIHMI-WDC	M.Shajmardanov.	2008-2009	B
153.	No	1, 5,	Development of the specialized hydrographic database's formation technologies to include them to "Technological complex on	SRNHI MD RF	K.Stavrov	2008	N

		6	the Arctic basin natural environment's databank formation " (the ARCTIC bank) in the interests of the country's defence and economy					
154.	No	1, 5, 6	Researches and development of processing and usage of oceanographic data methods for ensuring marine activity in the Arctic regions	SRNHI MD RF	K.Stavrov	2008	N	
155.	No	5	Informational ensuring geophysical researches at the implementation of the IPY	GC RAS	E.Kharin	2008	B	
156.		5	Creation of Landscape and Cartographical Basis (LCB) of the Polar Binding Belt (PBB) of GeoCosmic Systemic Foundation (GCSF) for security and management of stable development of Russia	IG RAS RC "Planeta"	A.Chilingarov	2008-2009	N	
157.		2, 5, 6	Researches and development of processing and usage of geological and acoustic sea bottom properties' data methods for ensuring marine activity	OJSC "Okeanpribor"		2008	B	
			Guiding line 6. Population's quality of life and social-economic development of the polar regions Coordinator (team manager RNKK) V.Shepovaljnikov (AARI)					
158.	Yes	6	Study of the indigenous and newly arrived population's adaptation and level of health in the Far North and equated to it regions (expeditions to Yakutia and Yamalo-Nenets Autonomous District)	AARI	V.Shepovaljnikov	2008-2009	N	
159.	Yes	1, 3, 6, 7	Research of the current climate changes in the regions of smaller indigenous people habitation of the North, Siberia and Far East and their impact on natural environment and social-economic development of these territories	SPA	V.Makeev	2008	N	
160.	Yes	3, 5, 6, 7	Research of social-ecological consequences of the natural environment's pollution anthropogenic and natural affect in the Russia's Far North on the indigenous population's life activity and traditional forms of economic management. Elaboration of work-books on the study of environment contaminants' and pollutants' impact on the Russian North indigenous population's life activity and traditional economic management	SPA	V.Makeev	2008-2009	N	
161.	Yes	6	Study of archaeological and historical objects in the Grenfiord on the Spitsbergen archipelago	IA RAS	V.Starkov	2005-2008	N	
162.	Yes	3, 4, 6	Integral Arctic System of Social Observations: for implementation of circumpolar social and ecological assessment	IG RAS	T.Vlasova	2008-2009	N	
163.	No	6	Researches of social and ecological vulnerability of the Arctic coastal zone at the carbohydrates resources development. Development of adaptation to new conditions of nature management programmes	ISA RAS	E.Andreeva	2008-2009	N	
164.		6	Principles and methods of modern administrative solutions' ethno-social influence on the North population assessment: world experience and Russian experience	IEA RAS	D.Funk	2008	N	
165.		6	The peoples of the North and Siberia ethnic demography: set up of computer information system for ethnological researches	IEA RAS	D.Funk.	2008	N	
166.		6	The indigenous peoples of the North and Siberia in the globalization conditions: strategies and practices of adaptation	IEA RAS	D.Funk	2008	N	
167.	No	6	Differentiation of economic dynamics and level of life in the Russian Arctic and Far North regions	IEP KSC RAS	V.Selin	2008-2009	N	
168.	Yes	6	Complex studies of the Arctic cultural and natural environment	MACE (PRF), Institute of Heritage	P.Boyarsky	2008-2009		
169.	Yes	3,6	The Russian Federation – Support of the national plan of actions on protection of the arctic marine environment	Inter-agency expert group	V.Morgunov	2008-2010		
170.	No	3	Stable development of the Russian Euro-Arctic coastal zones in the conditions of the shelf oil and gas resources development	MMBI KSC RAS	G.Matishov.	2008-2009	N	
171.		6	Analysis of the actual nourishment of the northerners (including indigenous people of the National Autonomous District) and programme "Healthy Eating", including school nourishment. Development of new, enriched by mineral-vitamin complexes, foodstuffs for the northerners.	RI PM NSMU	G.Degteva, L.Gromova	2008-2009	N	
172.	Yes	6	Study of prevalence, clinico-epidemiological peculiarities of ENT- pathology in children and analysis of risk factors of recurrent and chronic otolaryngological pathology presence in the conditions of Arkhangelsk area and the National Autonomous District	RI PM NSMU	G.Degteva, M.Kalinin T.Vazhukova	2008-2009	N	
173.		6	Medical and social-economic assessment of population's quality of life (indigenous and newly arrived, including children's) of the northern regions of Arkhangelsk area and National Autonomous District	RI PM NSMU	G.Degteva, A.Sannikov, V.Makarov	2008-2009	N	
174.		6	Extent of medical aid to indigenous population of the National Autonomous District on the principle of mobile multidisciplinary medical teams	RI PM NSMU	G.Degteva, L.Zubov	2008-2009	N	
175.		6	Implementation of medical and ecological monitoring of the northern territories of Arkhangelsk area and the National Autonomous District	RI PM NSMU	G.Degteva, A.Gudkov	2008-2009	N	
176.		6	Programmes on dehelmintization of the population of Arkhangelsk area's coastal regions and the National Autonomous District	RI PM NSMU	G.Degteva,	2008-	N	

					T.Schepetkina	2009	
177.		6	Development of telemedical technologies for qualified health service of the remote centers of population of the Far North	RI PM NSMU	P.Sidorov, V.Kozlov	2008-2009	N
178.		6	Study of the naval warfare specialists' adaptation to conditions beyond the Arctic Circle and Far North of Russia	RI PM NSMU	P.Sidorov G.Degteva, I.Mosyagin	2008-2009	N
179.	No	6	Assessment of the weather and heliophysical factors' biotropic impact on health and efficiency of the north residents and development of information bases of life sustenance in the polar areas	RSHGU	N.Smironov	2008-2009	N
180.	No	4,5,6	Implementation of researches on the assessment of people, living and working in the polar zones, health's remote preventive monitoring system	SPII RAS	Yu.Senkevich	2008-2009	B
			Guiding line 7. Increase of educational and scientific potential in the field of the polar researches, dissemination of knowledge among the public at large Coordinator (team manager RNKK) L.Karlin (RSHGU) S. Pryamikov (AARI)				
181.	No	1, 2, 3, 4, 5, 6, 7	Scientific-method ensuring works and events on the programme of the IPY 2007-2008	AARI	A.Danilov, V.Dmitriev	2008-2009	B
182.		1, 7	Events of the 19 th session of COMNAP	AARI	V.Lukin	2008	
183.		6, 7	Publication of the book "The Forgotten Arctic"	AARI	I.Frolov	2008	
184.		6, 7	Creation of the scientific and journalistic films "Time of the Polar Countries. Russia"	AARI	I.Frolov	2008	
185.		1, 7	Events of the 30 th session of SCAR and the 3 rd open scientific conference SCAR-ICSU in St. Petersburg	AARI	I.Frolov, A.Klepikov	2008	
186.		6, 7	International theoretical and practical conference "75 years since the beginning of the systematic study and development of the Northern Sea Route"	AARI NCP "NSR"	S.Brestkin	2008	
187.		3, 7	Conduction of exhibition and lecture events on the theme "Nature of the Arctic and ecological researches on the programme of the International Polar Year"	The Timiryazev State Museum of Biology, AARI, RGO	M.Gavrilo	2008	B
188.		1-7	Scientific conference "Russia in the IPY"	IG RAS, AARI	V.Kotlyakov	2008	
189.	Yes	1, 3, 4, 7	Integration educational programme on preparation of young specialists in the sphere of the Earth's cryosphere study	MSU	V.Konischev	2008	N
190.		3, 7	International conference "Nature of the shelf and archipelagos of the European Arctic"	MMBI KSC RAS	G.Matishov.	2008	
191.		1-7	The XXVI conference of young scientists "Contribution of young scientists to researches of the Earth's polar areas"	MMBI KSC RAS	G.Matishov.	2008	
192.		1-7	Conduction of the International scientific conferences on the outcomes of the IPY "The International Polar Year: achievements of circumpolar medicine"	RI PM NSMU	G.Degteva	2008	
193.		1, 7	International conference "First outcomes of cryosphere researches within the IPY" (May of 2008)	RAS		2008	
194.		7	Announcement of grants for preparation of graduate works, master and Ph.D. thesis on the Arctic subject matter	RSHGU	V.Vorobyov	2008-2009	B
195.		7	Organization of the Arctic forum and regional competition, dealing with the Arctic subject matter and carrying out the IPY for St. Petersburg schoolchildren	RSHGU	V.Ivanov	2008-2009	B
196.		7	Organization of students scientific works' contest and International students competition on the Arctic subject matter "The International Polar Year: the past – the present – the future. Researches of the Arctic and the Antarctic "	RSHGU	A.Belotserkovsky	2008-2009	B
197.		7	Organization of extension courses in order to prepare pedagogical staff on different problems of the polar region	RSHGU	V.Ivanov	2008-2009	B
198.		7	Organization of educational and practical trainings, summer schools, research expeditions on the base of the arctic enterprises for students and postgraduates for the purpose of reinforcement of learning on fundamental theoretical courses, engaging problems of the polar region	RSHGU	V.Sakovich	2008-2009	N
199.		7	Organization of ecological tourists routes in the Arctic region	RSHGU	E.Skakunova, A.Skoblikova	2008-2009	N

200.		7	Preparation and publication of methodical and popular materials on history, current researches, development of the Arctic region (publication of booklets, posters, calendars, dealing with the arctic subject matter)	RSHGU	V.Ivanov	2008	N
201.		7	Realization of the educational programmes development in order to prepare the highest qualification staff (holders of a master's degree, candidates of science) in the sphere of the polar regions study	RSHGU	A.Belotserkovsky. L.Timokhov	2008	B
202.		7	Creation of methodical, research database for graduate work and writing of masters' and candidates' dissertations, dealing with the arctic subject matter	RSHGU	V.Ivanov	2008	N
203.		7	Organization of joint youth expeditions to the Polar Ural for the purpose of acquaintance and researches of the permafrost conditions	RSHGU	V.Sakovich, E.Skakunova	2008- 2009	N
204.		7	Carrying out the research conferences of young scientists on the problems of development in the conditions of the Arctic region	RSHGU	L.Karlin	2008	
205.		6, 7	Publication of photobook "The Arctic Russia"	CHEM	O.Tuchina	2008	
206.	Yes	6,7	International film festival of marine and adventure films "The Sea Is Calling"	International Association of Social Organizations of the Navy veterans and submariners	S.Aprelev.	2008	B

Note: N – projects in the Arctic, S – projects in the Antarctic, B – bipolar projects

List of Russian organizations-participants in the IPY 2007-2008 in 2008.

AARI	State Institution "Arctic and Antarctic research institute"
Arctic Coal (Arktikugolj)	State trust on coal mining "Arctic Coal ("Arktikugolj")"
ASPOL	Association of Polar explorers of the Russian Federation
Aero geodesy	Federal State Unitary Institution "Aero geodesy"
ARIHMI-WDC	State Institution "All-Russian Research Institute of Hydro Meteorological Information – World Data Center"
ARIRT	FSUI "All-Russian Research Institute of Railway Transport"
VNIOkeangeologia	All-Russian Research Institute of Geology and Mineral Resources of the World Ocean
ARIFO	FSUI "All-Russian Research Institute of Fishing and Oceanography"
ARGI	Federal State Unitary Institution "All-Russian Research Geological Institute named after A.Karpinsky"
The Timiryazev State Museum of Biology	The Timiryazev State Museum of Biology
SHI	State Institution "State Hydrological Institute"
MGO	State Institution "A.Voeykov Main Geophysical Observatory"
GEOKHI RAS	Order of Lenin and order of October Revolution The Vernadsky Institute of Geochemistry and Analytical Chemistry RAS
GI KSC RAS	Geological Institute of the Kola Scientific Center RAS
GI RAS	Geological Institute of the Russian Academy of Science
GMA	State Marine Academy
HMRC RF	State Institution "Hydro Meteorological Research Center of the Russian Federation"
SRNHI MD RF	State Research Navigational and Hydrographical Institute MD RF
SOI	State Institution "State Oceanographic Institute"
SPA	State Polar Academy
SNR "Usty-Lensky"	State Nature Reserve "Usty-Lensky"
Group Alliance	Open Joint Stock Company "Group Alliance"
HKHI	State Institution "Hydrochemical Institute"
GC RAS	Geophysical Center of the Russian Academy of Science
FERRHMI	State Institution "Far Eastern Regional Research Hydro Meteorological Institute"
ZIN RAS	Zoological Institute of the Russian Academy of Science
IA RAS	Institute of Archeology RAS
IB Komi SC UrDRAS	Institute of Biology Komi Scientific Center Ural Division of the Russian Academy of Science
IWP RAS	Institute of Water Problems RAS
IG KSC RAS	Institute of Geology of Karelian Scientific Center RAS

IG RAS	Institute of Geography of the Russian Academy of Science
IGDPM SB RAS	Institute of Geology of Diamond and Precious Metals SB RAS
IGEM RAS	Institute of Ore Geology, Petrography, Mineralogy and Geochemistry RAS
IGE RAS	Institute of Geo-ecology named after E.Sergeev RAS
ECI SB RAS	Earth Cryosphere Institute RAS
PI SB RAS	Permafrost Institute named after P.Melynikov SB RAS
Institute of Heritage	Russian Research Institute of Cultural and Natural Heritage named after D.Likhachov
IO RAS	Institute of Oceanology named after P.Shirshov RAS
IPIEN KSC RAS	Institute of Problems of Industrial Ecology of the North Kola Scientific Center RAS
IPEE RAS	Institute of Problems of Ecology and Evolution of animals RAS
ISA RAS	Institute of Systematic Analysis RAS
API RAS	Atmospheric Physics Institute named after A.Obuhov Russian Academy of Science
IPE RAS	Institute of physics of the Earth named after O.Shmidt RAS
ISSP RAS	Institute of Physicochemical and Biological Problems of Soil Science RAS
IEA RAS	Institute of Ethnology and Anthropology named after N.N.Miklukho-Maklay
IEP KSC RAS	Institute of Economic Problems named after G.P.Luzin Kola Scientific Center Russian Academy of Science
LI SB RAS	Limnological Institute, Siberian Branch Russian Academy of Science
MACE at Polar Researches Foundation (PRF)	Marine Arctic Complex Expedition
MSU	Moscow State University
MMBI KSCRAS	Murmansk Marine Biological Institute
International Association of Social Organizations of the Navy veterans and submariners	International Association of the Navy and Submariners Veterans' Social Organizations
MAHMME	Murmansk Administration on Hydro-Meteorology and Monitoring of Environment
RI PM NSMU	Research Institute of Polar Medicine of the Northern State Medical University
SCPCI	State Scientific Center of the RF Physicochemical Institute named after L.Karpov
RC "Planeta"	State Institution "Research Center of Space Hydro-Meteorology "Planeta"
NCP "NSR"	Non-commercial Partnership of the Coordination of Northern Sea Route Usages
SPA "Typhoon"	State Institution "Scientific Production Association "Typhoon" ("Tajfun")
OJSC "Okeanpribor"	OJSC "Concern"Okeanpribor"
PGI KSC RAS	Polar Geophysical Institute the Kola Research center RAS
PINRO	Federal State Unitary Institution "Polar Research Institute of Marine Fisheries and Oceanography named after N.Knipovitch"
PMGPE	Federal State Unitary Scientific Production Association "Polar Marine Geological Prospecting Expedition"
Polar Foundation	Non-commercial organization "Polar Researches Foundation"
RSHGU	State Educational Institution of higher vocational education "Russian State Hydro-

	Meteorological University”
RGO	Russian Geographic Society
NECRI	North-East Complex Research Institute FEB RAS
NWB SPA “ Typhoon”	North-West Branch SI “SPA” “ Typhoon”
SPbSU	St. Petersburg State University
SPII RAS	St. Petersburg Institute for Informatics and Automation of the Russian Academy of Science
MSAHMME	Middle-Siberian Administration on Hydro-Meteorology and Monitoring of Environment
NAHMME	Northern Administration Hydro-Meteorology and Monitoring of Environment
PIG RAS	Pacific Ocean Institute of Geography FEB RAS
TSC SB RAS	Tyumen Scientific Center SB RAS
POI FEB RAS	Pacific Oceanological Institute Far Eastern Branch RAS
Tyumen SOGU	Tyumen State Oil and Gas University
HDNO	Head Department of Navigation and Oceanography MD RF
LPI RAS	P.Lebedev Physical Institute of the Russian Academy of Science
FundamentStroyArkos	LLC SPA “FundamentStroyArkos”
CAO	State Institution “Central Aerological Observatory”
CGRIFE	Center of Geomagnetic Researches of Institute of Physics of the Earth RAS
CPEFP RAS	Center for Problems of Ecology and Forest Productivity RAS
CHAHMME	Chuckchi Administration on Hydro Meteorology and Monitoring of Environment
YAAHMME	Yakutsk Administration on Hydro Meteorology and Monitoring of Environment

APPENDIX

Data about preparation of the Basis of the national policy of the Russian Federation in the Arctic region, strategy of Russian organizations activity in the Antarctic, charging Marine board under the Russian Federation Government with duties for coordination of the Federal Executive Authorities activity in questions of learning and mastering the Arctic and the Antarctic regions

In September the President of the Russian Federation approved the Basis of the national policy of the Russian Federation in the Arctic region until 2020 and beyond prospects.

The Russian Federation Basis of the national policy in the Arctic are the holistic system of state activity principles and directions in this region for long-time perspective in order to ensure the national security of the country and stable social and economic development of the Arctic regions.

The main targets of the state policy of the Russian Federation in the Arctic are as follows:

- in the sphere of social and economic development – expansion of resource base of the Russian Federation Arctic zone, capable, in the considerable extent, to meet the requirements of Russia in hydrocarbon resources, water biological resources and other kind of strategic raw materials;
- in the sphere of military security, defence and protection of the Russian Federation State Boundary, running in the Arctic region of the Russian Federation – ensuring favourable operative regime in the Arctic region of the Russian Federation, including maintenance of necessary fighting potential of the general-purpose troops (forces) of the Armed Forces of the Russian Federation, other military formations and authorities in this region;
- in the sphere of ecological security – maintenance and ensuring the Arctic natural environment protection, elimination of ecological consequences of economical activity in conditions of growing economical activity and global climate changes;
- in the sphere of information technologies and communication – forming the integrated information space of the Russian Federation in its Arctic zone in view of natural peculiarities;
- in the sphere of science and technologies – ensuring sufficient level of fundamental and applied scientific researches on accumulation of knowledge and creation of up-to-date scientific and geo-informational basis of the Arctic territories management, including development of tools to solve problems of defence and security, as well as reliable functioning of life sustenance and production activity systems in the Arctic natural-climatic conditions;
- in the sphere of International collaboration – ensuring mutually beneficial bilateral and multilateral regime of the Russian Federation with the near-Arctic countries on the basis of international contracts and agreements with participation of the Russian Federation.

At the present time development of Strategy of ensuring Russia's presence in the Antarctic is being developing for the period until 2025. Russia's presence in the Antarctic includes activity of legal and physical persons on the Antarctic continent and adjoining water basins of

the Southern Ocean and activity, is being implemented on the RF territory, including scientific and scientific-applied researches of the Antarctic, as well as political, legal, logistical and any other ensuring Russia's presence in the Antarctic.

The Strategy contains mutually tied in tasks, lead times and resources joint target functions, principles and decisions, which should be implemented in complexes and plans of legal, economic, scientific and technical, organizing and political-diplomatic character events within budgetary target programmes and separate projects.

The priorities of the Strategy are as follows:

- maintenance of the Russian Federation leading positions in the Antarctic Treaty System;
- expansion and improving of Russian scientific and applied researches of the natural environment in the Antarctic;
- expansion in the number of scientific organizations and scientific brainpower staff, participating in the Antarctic researches;
- organization of reliable monitoring of natural processes and phenomena conditions throughout perimeter of the Antarctic, surrounding it ocean and its inland regions;
- development of scientific and economic grounds for definition of the place and role of the Antarctic in global natural and social processes;
- full and reliable ensuring security of the expeditionary personnel presence in the Antarctic and implementation of transport operations in the region;
- financial stability improvement and efficiency of aids and appliances usage for ensuring Russia's presence in the Antarctic;
- strict compliance with international commitments in the sphere of protection of nature in the region;
- lowering of cost per unit for usage of energy resources, owing to rationalization of their consumption, application of energy efficient technologies and equipment, reduction of losses at the maintenance of objects of the Antarctic infrastructure;
- minimization of anthropogenic impact on the Antarctic environment on the basis of new technologies introduction and timely disposal of life activity's wastes.
- involvement of scientific youth into Antarctic researches;
- popularization of the Russian Antarctic researches.

Implementation of the Strategy should ensure political, economic and scientific contribution to the number of priority nationwide and macroeconomic tasks of current stage of economic development of Russia.

The Marine Board under the Russian Federation Government has got additional powers, associated with mastering of the Arctic and the Antarctic. Respective regulation about adjustments to the Statute of the Board was signed by the prime minister Vladimir Putin.

In accordance with the adjustments, the Marine Board will coordinate activities not only in the sphere of researches in the Arctic and the Antarctic, but also in the sphere of their mastering and usage. Nowadays the Board has got the right to coordinate activity of inter-agencies and other commissions, operating in the sphere of these territories' study, mastering and usage.

The Board will also consider recommendations on usage of political, diplomatic, economic, tax, financial, informational and other mechanisms to ensure national interests of the RF in the Arctic and the Antarctic.