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### **THE PRESIDENT OF THE RUSSIAN FEDERATION VLADIMIR PUTIN HAS SUGGESTED THE ESTABLISHMENT OF AN ARCTIC COUNCIL (A JOINT CONFERENCE WITH THE PARTICIPATION OF THE PRESIDUM OF THE STATE ASSEMBLY AND THE MARINE COLLEGIUM OF THE GOVERNMENT OF THE RUSSIAN FEDERATION)**

2 May: at Murmansk onboard a nuclear powered icebreaker *50 Let Pobedy* (Fifty Years of Victory) a joint conference was held with the participation of the Presidium of the State Assembly and the Marine Collegium of the Government of the Russian Federation, chaired by the President of Russia, Vladimir Putin. Chairmen for the organizing committee for Russia's preparation and participation in the 2007/08 International Polar Year, A. Bedritsky and A. Chilingarov also took part in the conference. The problem of developing maritime transport infrastructure was discussed. As part of the conference the problem of arctic shipping routes was touched upon. In his opening speech the President of the Russian Federation noted:

Questions concerning the development of the Arctic ice shelves were touched, such as deciding on strategic development, the formation of special companies, and also tax benefits to act as an impetus for marine oil extraction. The Governor of Murmansk Region, Yu. Evdokimov noted that coordinating all areas of activity was essential in the Arctic: "Murmansk is the beginning of the North Sea Route and the base for developing the largest deposits of fossil fuels on the shelf.

From this point of view we must evaluate everything holistically. And from here, it is extremely clear that each problem is being dealt with in isolation: development of the shelf – a single problem, the North Sea Route – another problem, transport system – a third problem.



"Being here, in Murmansk, we are obliged to look at proposals for modernizing the Arctic transport system. This matter is relevant to Arctic ports, the maritime and icebreaking fleets as well as for ensuring maritime and aeronautical navigation along the North Sea routes.

In particular I will observe that each year the role of maritime transport grows in the development of Arctic oil and gas deposits. By 2015 a significant growth in the shipping of hydrocarbons in the western region of the Arctic is expected. According to predictions it will reach 40 millions tons. Associated with this we must not only actively develop our Arctic transport system but take measure for the preservation of the ecological balance of the region (we know how vulnerable this environment is), as a whole to resolve issues connected with Russia's strategic interests in Antarctica: Russia's economic, scientific and defense interests."

I have not seen any connection between these, not even in our documents. This paper is an excellent, carefully prepared, analytical document. Doubtless a huge amount of effort has gone into it with input from the Ministry of Transport, but I cannot see any form of coordination. Somebody must coordinate this work. The Americans are demanding the internationalization of the North Sea Route. They are practically declaring 'humanitarian intervention' on us, thinking that without their investments, their economic and humanitarian intervention the north of Russia will stagnate.

The European Union has taken a different tact. In the guise of protecting indigenous peoples they block everything, they torpedo and assault us not giving us any opportunity to implement any investment projects in our region. For this reason we need some sort of coordination for our activities.

Vladimir Putin, you are a sensible person, it is hard for us to make suggestions but someone should head this work, specifically the work for developing the Arctic and for asserting our national interests in the Arctic. Furthermore, Vice Admiral Makarov has called Russia a building with the rear façade looking onto the Arctic Ocean. And when he built the most powerful icebreaker for his time, the *Ermak*, he said: "Here is the shell that will break through the window to Europe, which Peter the Great created during his reign". These were the words of a great admiral, scientist and a man who understood the North".

Concluding the conference, V. Putin paused on the problems of the Arctic:

"The former system for work in this branch has been broken up, the government's attention to these problems has been reduced. How is it possible that we stopped financing this vessel on which we are located in 1993. Until 2003 this ship was not financed! This means that we began to withdraw from the Arctic.

According to the proposals that several of our colleagues have initiated, we really do need a coordinating agency for work in this area. And should consider the possibility of establishing a national council attached to the Office of the Chairman of the Government of the Russian Federation and grant it appropriate powers for developing Russia's policy for strengthening our interests in this part of the world and for developing our business activities. Along with developing these policies and confirming them at the very least by Presidential Decree and possibly with appropriate legislation. I am sure Artur Chilingarov will be able to provide support in the State Duma.

The Russian President offered to begin work on a new Federal Program "Development of the Transport System of the Russian Federation 2010–2015".

More details at: [www.kremlin.ru](http://www.kremlin.ru)

A. DANILOV (AARI)  
(Photo RIA News)

## AT THE NORTH POLE

29 April: A delegation led by Artur Chilingarov departed for the North Pole to officially open the International Polar Year in Russia.

"All countries have organized an opening for the International Polar Year of the Arctic in spring: the Americans intended to hold theirs in New York, Europe – in Strasburg, someone else in Sweden... But we decided to hold our opening somewhere special, at the North Pole. Now that we have such an opportunity – today the North Pole is reachable, furthermore, it is largely thanks to Russian Polar explorers", commented Artur Chilingarov, Vice-Speaker in the State Duma.

Among delegation members were representatives from the holding company Gazprom-Media. "We appreciate the extreme importance for Russia of studying the Arctic and intend to publicize the events throughout the International Polar Year", stated the General Director of Gazprom-Media, Nikolai Senkevich.

The delegation will be traveling on one of the tried and proven routes. Its members were taken to Svalbard Archipelago by a regular flight – a distant location where beneath the ice there is some land. There delegates were transported on an An-74 plane belonging to Gazprom-Avia to the Barneo Ice base.

Gazprom-Avia is so far the only aviation company which undertakes landings in an An-74 plane on the ice airfield at Barneo. This spring the company has carried out 50 flights from Svalbard Archipelago (Longyearbyen) to Barneo.

The Barneo Ice Base is located several dozen kilometers from the North Pole and has living quarters.

The delegation was delayed briefly at the ice station and was then delivered to the North Pole where they carried out their honorary mission, raising the flag of the International Polar Year.

*Based on material from Izvestia N 76, 3.05.2007.  
Prepared by A. DANILOV (AARI)*



Flag of "Izvestia" at the North Pole.  
Photo S. Khvorostova

## ROSHYDROMET'S INVESTMENT IN SCIENTIFIC RESEARCH AND DEVELOPMENT FOR HYDROMETEOROLOGY AND ENVIRONMENTAL MONITORING AS PART OF THE IPY-2007/08 SCIENTIFIC PROGRAM

An essential part of the activities of the scientific research facilities belonging to the Russian Federal Service for Hydrometeorology and Environmental Monitoring (Roshydromet) being conducted in 2007 as part of the program for scientific research and development for hydrometeorology and environmental monitoring was directly connected with Russia's participation in the International Polar Year (IPY) of 2007/08 which included Arctic research.

Traditionally Russia's scientific center for studying the Arctic is the St. Petersburg Arctic and Antarctica Research Institute (AARI), whose specialists carry out meteorological monitoring and develop, perfect and introduce new program systems for monitoring. They monitor climate change within Russian polar territory, and its possible effects on humans, animal species and plant life in the Arctic.



Yakutia Scientific Conference on Climate Change  
(Organizers – Roshydromet and the Government  
of the Republic of Sakha-Yakutia, City of Yakutsk)

Besides AARI other scientific organizations have also traditionally played a part in Arctic research as well as other organizations associated with Roshydromet.

Taking into account our international obligations, especially those to the World Meteorological Organization and the United Nations Framework Convention on Climate Change, as well as other conventions and agreements, organizations attached to Roshydromet develop technology for gathering, processing and distributing meteorological and climatic data (ground based observations, satellite data, radio sensing of lower atmospheric layers, sea and ocean conditions). The current activities are directly aimed at fulfilling the tasks set for IPY for increasing the effectiveness of meteorological service for economic and any other activities in the Arctic and to provide meteorological safety.

For example, the *Planeta* scientific research center develops technology for processing satellite imagery from Russian and foreign satellites with information concerning the atmosphere, underlying surface, various, dangerous hydrometeorological phenomena, such as forest fires, flooding rivers, and distributes the processed information among interested consumers.

Among other research carried out by HydroMeteo-Center (HMC) in 2007 is the development of automated long term forecasting systems to predict the amount of ice on Russia's rivers in autumn and spring, program support for predicting water tributaries, and also the completion of system support for monitoring snow cover in the mountainous parts of the basins for the Ob and Yenisei rivers and river flow parameters for the Arctic Basin, which is extremely important for researching the climate-forming role of the Arctic Ocean.



Unveiling of a memorial at Verkhoyansk  
(where the absolute lowest temperature  
for the Northern Hemisphere was recorded)

The State Hydrological Institute (SHI) develops systems for long term predictions for floods in the North and North-West regions of European Russia, taking into account the spring flooding which occurs occasionally, and systems for determining the duration of the high waters and the flood zone should rivers be blocked with ice. The institute also carries out research to evaluate the role of the ice cover on rivers and atmospheric pressure with the interaction of river and ground waters.

Research aimed at developing better ways of providing meteorological safety while studying, developing and using the oil and gas potential of Russia's continental shelf in the Arctic Basin is carried out by the State Oceanographic Institute (SOI), AARI, All-Russian Research Institute of Hydrometeorological Information – World Data Center (RIHMI-WDC), Far-Eastern Regional

# SCIENTIFIC RESEARCH

Hydrometeorological Research Institute (FERHRI), Hydrometeorological Research Center of the Russian Federation and the Scientific production organization (PSA) Typhoon.

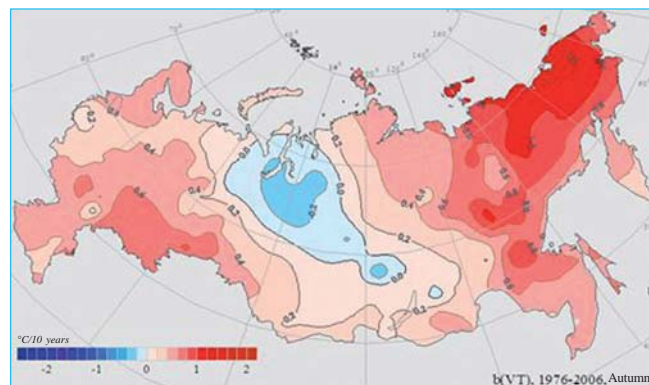
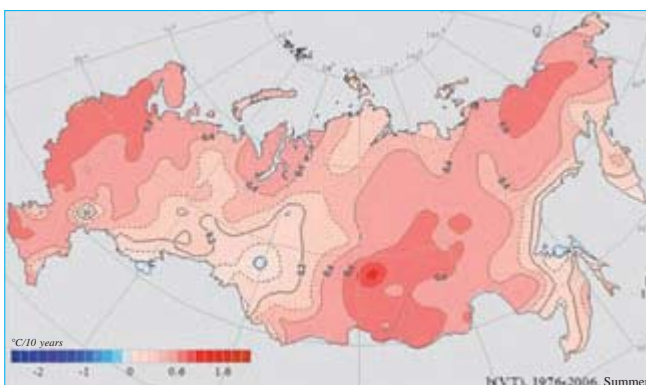
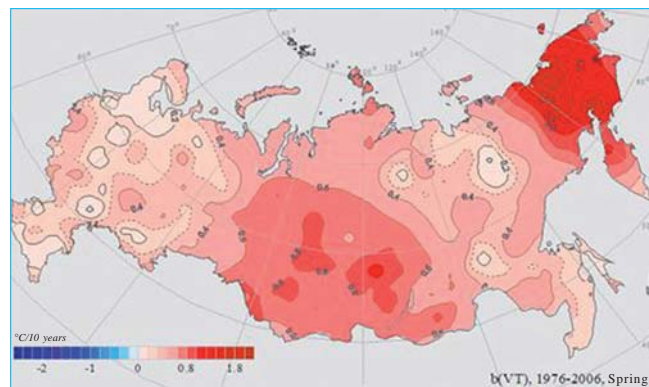
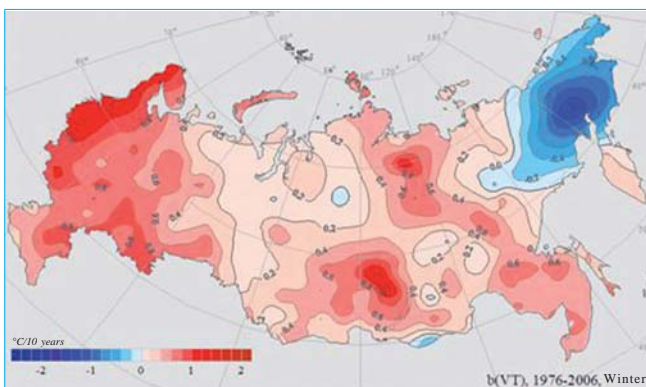
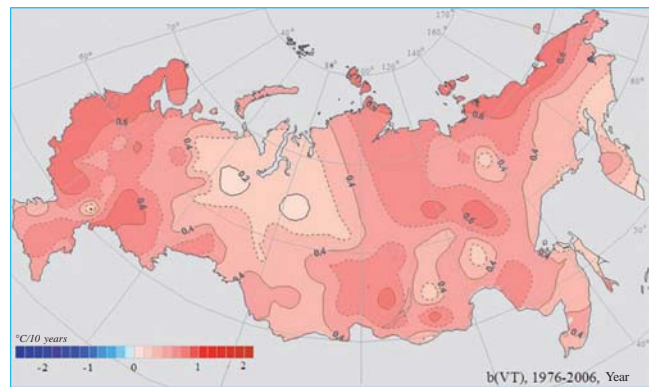
Special attention is placed, during research work conducted by the scientific organization institute, on climatic changes taking place in the Arctic and their possible consequences.

On the basis of analysis of existing data at the Voeikov Main Geophysics Observatory (MGO), AARI, RIHMI-WDC, SHI, Institute of Global Climate and Ecology (Roshydromet) (IGCE), All-Russian Research Institute of Agricultural Meteorology (ARRIAM), FERHRI and SOI the first and second volumes of a summarized scientific paper are be prepared called *Climate Change on the Territory of the Russian Federation in the 20<sup>th</sup> and 21<sup>st</sup> Centuries and Consequences of Climate Change for the Russian Federation in the 20<sup>th</sup> and 21<sup>st</sup> Centuries* respectively. A significant part of the summarized paper will involve analytical material and quantitative evaluations of climatic change in the Arctic, especially its influence on pack ice, water resources in the north of the Russian Federation, changes in the recurrence of extreme meteorological behavior, and also the consequences of climate change for economic activities, existing marine ecosystems and wildlife.

At MGO specialists carried out computer modeling for the 20<sup>th</sup> and 21<sup>st</sup> centuries on data gathered from around the globe as part of the Fourth Assessment Report for the Intergovernmental Panel on Climate Change), evaluating climate change in the middle of the 21<sup>st</sup> century in various administrative regions in the Russian Federation, including the north of the country.

At IGCE, AARI, RIHMI-WDC, MGO, SOI, FERHRI, Typhoon PSA and the Central Aerologic Observatory (CAO) anthropogenic influence on climate change is studied, including the build up of greenhouse gases in the atmosphere taking into account the processes involved in their emission and also oceanographic and biosphere absorption. In particular, AARI analyses the concentrations of greenhouse gases above the Arctic Ocean in order to study the role of sea ice in the exchange of gases between the atmosphere and ocean during the wide scale IPY monitoring program aimed at studying

The average speed of temperature change at ground level on the territory of the Russian Federation according to current observations for 1976-2006. °C/10 years.



the role of the Arctic Ocean as either a source or sink for atmospheric carbon dioxide.

MGO, RIHMI-WDC, ASRIAM, IGCE, Siberian Scientific Research Hydrometeorological Institute (SibSRHI) are involved in perfected techniques and information technology for collating and simplifying reports, analysis and using climatic meteorological data in the area of applied climatology orientated towards consumers taking into account expected climatic change.

With the goal of developing recommendations for adapting to climate change and alleviating its consequences, including those for the Arctic, a database is being developed with evaluations of the consequences of climate change for social-economic structures and the natural environment (IGCE, AARI, SHI, MGO, SHChI, RIHMI-WDC, ARRIAM, Planeta).

In order to further develop climatic research, increase the education potential and more broadly distribute information throughout society about the ongoing and expected climatic effects, the scientific research organizations (MGO, AARI, SHI, IGCE, RIHMI-WDC, ARRIAM) are working on a project for a Russian Climate Doctrine – a fundamental governing document, enabling the application of domestic and international, economic and social policies for the further development of the country in this area.

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In order to improve weather forecasting, including those forecasts in the north of the Russian Federation, HMC (the Center for Medium-Range Weather) is developing and improving global models with great spatial variability, and also technology for medium range weather forecasts. FERHRI is developing a new version of the regional meteorological modeling process for forecasts in the Far East. HMC Russia and SibSRHI are working on a global model for atmospheric circulatory processes with variable spatial solutions, on the basis of meteorological modeling an efficient technology for forecasting dangerous convection phenomena (heavy rain, strong winds and hail) will be created, in particular, for the northern area of western Siberia. Basic models (mesogrid models) for regional short term weather forecasts (HMC Russia, SibSRHI, FERHRI) are being developed.

Questions concerning the improvement of effective weather forecasts for agricultural purposes in Russia's North have not been ignored. ARRIAM is developing forecasting techniques to determine when the meteorological conditions are suitable for supporting life

in the Northern Territorial Office of Hydrometeorology and Environmental Monitoring (including Arkhangelsk and Vologda regions, Komi Republic, Nenets Administrative District and part of the Yamalo-Nenets Administrative District). RIHMI-WDC is working on techniques to automate the processing and collation of agricultural meteorological information concerning the areas for northern reindeer breeding. SibSRHI is managing a series of organizations from the Urals and Siberia for estimating the crop capacity for agriculture in the regions.

It is necessary to observe that the scientific research being undertaken by a series of organizations associated with Roshydromet in 2007 is part of the special sub-program for regional research, which is directly aimed at resolving problems which are part of Russia's involvement in the International Polar Year.

Organizations and Centers of the Meteorological Service (HMS/CHEM) together with scientific research establishments carry out environmental monitoring of the Arctic, in particular, in the Northern and Far Eastern Administrations for Meteorological and Environmental Monitoring in collaboration with AARI. In 2007 it is intended to carry out tests and installations of several automatic meteorological stations and automated technology for measuring the thickness of sea ice.

The Yakutsk HMS together with AARI is developing a joint database for level sensitive observations in the Laptev Sea and the western part of the East Siberian Sea to improve weather forecasting for navigation and for planning and operating various facilities on the shelf and coastline. It is also planned to carry out an analysis of the extent and quality of observations of flows and water levels (on water ranges) in the mouths of river basins in the Laptev Sea.

Kamchatka HMS together with SHI are adopting the latest techniques in evaluating essential hydrological parameters using a program system for meteorological calculations.

Also with SHI, HMS plans to analyze the results of new technology for processing hydrological information for lakes and reservoirs with the State Water Cadastre, Ozero.

The successful conclusion in 2007 of research on the natural processes in the Arctic by organizations associated with Roshydromet and also the close cooperation with foreign participants of IPY-2007/08 while carrying out scientific programs and information exchanges will enable us to develop monitoring systems and broaden our knowledge of the hydrometeorological conditions of the Arctic, observed and hypothesized climatic changes and their impact on human activities and the preservation of wildlife and plants in the Russian North.

*P.N. VARGIN,  
D.A. GERSHINKOVA  
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## RESEARCH IN THE SVALBARD ARCHIPELAGO DURING IPY

In the last few years a phenomenon has been noted in the Arctic climatic system which has received the name Rapid Climate Change. Unusually warm water from the Atlantic enters the Arctic Ocean which in certain regions is significantly warmer than it has been throughout nearly 150 years of observation. Another trend which has also been observed is the reduction of the area of sea ice and glacial cover in the western sector of the Russian Arctic.

So important are the anomalies in the elements that determine the climate (atmosphere, ice and oceanographic processes) that it has become vital to more fully and accurately evaluate the state of the Arctic climatic system and environment and predict what this state will do.

The Svalbard Archipelago, in particular, the West Spitsbergen island, where Barentsburg is located, is representative territory which will be the base for carrying out a series of sophisticated hydrometeorological experiments to evaluate the scale and influence of climate change on the conditions for economic activity. It is important in this regard to monitor environmental processes and phenomena in connection with each other, for example: the departure of warmth from the ocean, atmospheric circulation, glaciers, snow cover fresh water inflow, soil and vegetative cover and human adaptation. This requires a complete range of field observations with the purpose of building up the necessary information and knowledge to evaluate climatic change and its impact on the environment in the Svalbard Archipelago. Such an evaluation, in its turn, is essential for the development of guidelines for rational environmental management, and also for a timely prediction and warning/minimization of undesirable consequences.

In these conditions it is sensible to unite the resources of organizations carrying out scientific research in the Svalbard Archipelago (based at Barentsburg) within the framework of the Russian Interdepartmental Svalbard Scientific Coordination Center (RISSCC), coordinating and integrating the activities of research teams from three agencies and ministries (Roshydromet, Russian Academy of Sciences and IPY), carrying out scientific work on Svalbard as part of studying several integral topics on the Svalbard theme.

For example, taking into consideration the significant interest in increased temperatures in the Arctic and the sensitive reaction of environmental systems in the Svalbard Archipelago to climate change, it is sensible to focus on researching the Arctic climate and the consequences of climate change for the environment and the conditions for economic activity in the archipelago, or more precisely, in the area of West Svalbard. As part of the subject it is sufficiently convenient to incorporate the type Russian research currently being carried out at Svalbard by different scientific teams: Paleoclimatic, glaciological, oceanographic, meteorological, hydrological, geophysical, ecological and others. These

scientific subjects are also more easily integrated into the already existing system of research overseas, for example in Ny-Ålesund. The activities of the center must include monitoring the existing research (PGI KOLASC, RAS – researching geophysics, Murmansk HMS of Roshydromet – researching meteorology, Typhoon PSA – researching pollution), geological mapping (PMGE), studying climatic change (AARI, IG RAS), archeological research (IA RAS) and others.

Research at Svalbard will in the near future receive an additional stimulus for its development thanks to IPY-2007/08, as part of the implementation of scientific programs for which the archipelago will play a significant role. In particular, it will be involved in the research headed by the Joint WMO/ICSU (World Meteorological Organization/International Council for Science) Committee for IPY with fifteen countries participating. The Russians are to complete three projects, but the total number of Russian scientists involved, including those working on projects for other countries (in event of financing), could be over a hundred people.

It is assumed that the majority of the research carried out during the IPY will be performed at the base in Ny-Ålesund, which is rapidly expanding as a scientific center for international research in the archipelago. At present seasonal and permanent bases are operating in the settlement and its outskirts: from Norway, Germany, France, Japan, Italy, China, Korea and England. As a rule they are housed in former buildings from the coal mines which have been repaired and protected by the state. In total twelve scientific organizations are conducting research in the area of Ny-Ålesund and a permanent basis. In total the annual number of scientific visitors to Ny-Ålesund comprises approximately 8,500 man-day. Scientific administration at Ny-Ålesund is organized by the Ny-Ålesund Science Managers Committee (NySMAC).

Until now Russia has not been represented in the research activities in Ny-Ålesund although it is of considerable scientific potential and interest.

Simultaneously, providing for the presence of Russian scientific organizations in Ny-Ålesund, especially for IPY, is hugely important, both scientifically and politically, since it is the most frequently visited polar arctic scientific research base – visited by politicians, scientific societies and tourists. Here modern, scientific complexes test new research equipment and carry out a wide range of scientific research. In this way, the presence of Russian science (and the Russian flag) in Ny-Ålesund in the form of a scientific base – a branch of RISSCC carrying out research and other work being conducted at the Barentsburg base, enables a substantial advance not only in the scientific sense, especially during the International Polar Year, but also provides for a large step forward in securing Russia's interests in the Svalbard Archipelago.

## ACTIVITIES IN THE ARCTIC



School building offered for the Russian scientific base in Ny-Ålesund



Small scale expeditionary vessel for the scientific base in Ny-Ålesund

Furthermore, the development of cooperation and integration carrying out national and international programs will help Russia broaden and deepen its research in the Barentsburg region by attracting funding, logistical support and instrumentation support from foreign partners.

The first step in providing for the Russian presence in Ny-Ålesund has already been made. AARI of Roshydromet received funding from Interdepartmental Commission for Svalbard in 2007 which is sufficient for establishing a Russian scientific base capable of functioning for three months (July-September). All other organizations have been invited to carry out their operations in the new base with financing being organized as part of the activities of the Interdepartmental Commission for Svalbard.

The government management company Kings Bay, responsible for providing the vital functions at Ny-Ålesund, has offered a former school building to be used as the Russian scientific base. It has a prestigious location in the center of the settlement. The building will have ten sleeping locations, offices, laboratories and storage facilities.

Furthermore, in 2007 a small vessel will arrive and be permanently based in Ny-Ålesund which will enable marine research in a wide range of disciplines for the organizations based in Ny-Ålesund. A similar vessel will also

be bought by the University Center in Svalbard (UNIS) for work in ice-fjords.

Consequently for the IPY-2007/08 in Svalbard the logistical support will be significantly increased for carrying out marine research, which the Russian groups will be carrying out to a limited degree.

In the summer of 2007 AARI Roshydromet intends to carry out research into the following areas (including joint research):

- riverbed processes and river sedimentation;
- dynamics of chemical drainage on the Baielva River (the very latest water sampling technology has been set up on this river which enables monitoring of changes to the chemical composition of the river water of any degree);
- engineering features for river drainage stations in polar regions (the Beielva River has a unique hydrometric station with water overflow equipment. The system is unique since it operates in pack ice conditions and on a restrained river course leading to meandering);
- study of glacial rocks in the outskirts of Ny-Ålesund;
- study of internal and surface drainage systems for the Bregger and Loven glaciers.
- study of the influence and variability of inflowing warm currents from the Atlantic Ocean occurring the fjords of West Svalbard.

*S.M. PRYAMIKOV (AARI)*

### FUTURE HYDROMETEOROLOGICAL OBSERVATORY IN TIXI

The setting up of a hydrometeorological observatory in Tixi for the International Polar Year 2007/08 is an element in the plan to organize an international network of polar stations for measuring long term climate change in the Arctic. It is intended to include in the established network polar observatories located in Alaska (Barrow), the Canadian Arctic Archipelago (Alert, Eureka), Svalbard Archipelago (Ny-Ålesund), Greenland (Summit) and in Scandinavia (Pallas and Abisko). The establishment of this network of observatories, to carry out long term meteorological observations as part of the agreed upon program, using identical measuring equipment, intensified on the one hand by the importance of understanding the

phenomenon of polar equation which leads to the greatest climate change occurring specifically in polar regions. The Arctic ecosystems are particularly vulnerable as a consequence of natural and anthropogenic influences.

The establishment of a hydrometeorological observatory by Roshydromet with the participation of American scientific organizations in Tixi has been under discussion since 2004. In August 2005 a delegation with representatives from Roshydromet, the National Oceanic and Atmospheric Administration (NOAA) from the United States of America Ministry of Trade, the Polar Foundation, the US National Scientific Foundation and the Finnish Meteorological Institute visited Roshydromet's

## ACTIVITIES IN THE ARCTIC

Administration for the Yakutsk HMS and the Polyarka Station.

As part of the visit the delegation were shown the latest technical monitoring equipment at the station. Recommendations for improvements and for broadening the monitoring programs and intended location for the new buildings of the hydrometeorological observatory were developed.

In the same year AARI prepared proposals for participation in IPY-2007/08 under the conditional title of *Establishment of an Endoatmospheric Observatory for Monitoring Climate at Tixi* which was later incorporated into the IPY proposals No. 196 *International Arctic Systems for Observing the Atmosphere*.

The final decision on establishing a new meteorological observatory at Tixi was taken as part of a resolution of minutes at the first official meeting of a delegation of National Oceanic and Atmospheric Administration of the Ministry of Trade of the United States of America and the Federal Service for Meteorology and Environmental Monitoring of the Russian Federation (Roshydromet), which took place in Moscow on 27 February – 3 March 2006 as part of a memorandum on partnership in the area of meteorology, hydrology and oceanography (project N 4.1 "Establishment of a new state of the art hydrometeorological station and observatory in Tixi, Russia").

According to the resolution the main goal of the project was:

- to establish a hydrometeorological research station in Tixi, equipped with the latest monitoring and communications equipment, power supply system, laboratory and office space, where collation of quality data concerning atmospheric processes and appropriate oceanic and land based parameters can be collated with the goal of studying the weather and climate;

- integration of data connected with observations and measurements taken in the future observatory into the international monitoring networks such as: Global Atmosphere Watch, Baseline Surface Radiation Network, Climate Reference Network, Global Terrestrial Network for Permafrost and Micropulse Lidar Network.



The first visit by Russian, American and Finnish representatives and scientists at the future location of the hydrometeorological observatory in Tixi (August 2005)

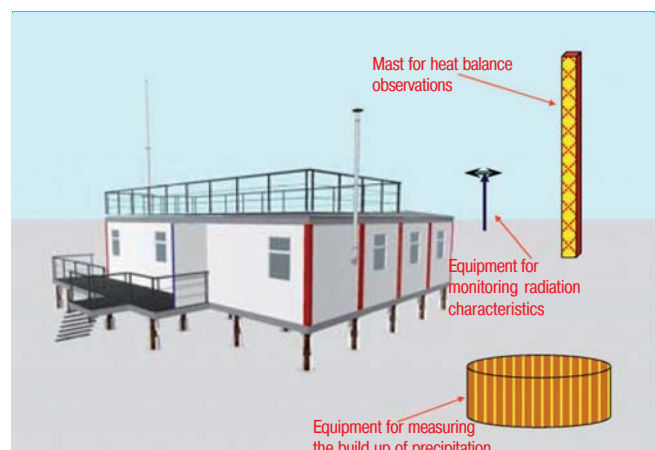
The project will be implemented under the supervision of the Polar Foundation and the National Scientific Foundation with construction complete for an official opening of the main building in November 2006 by a special representative of the President of the Russian Federation for matters concerning IPY, the Vice-Speaker of the State Duma, A.N. Chilingarov, and President of the Sakha Republic, V.A. Shtyrov.

At present the plans have been drawn up and construction work has begun on the second building of the hydrometeorological observatory, designed for measuring chemicals in the atmosphere, and the establishment of test area for studying energy-mass exchange processes for underlying surface and the atmosphere.

In March 2007 in Boulder (USA) a meeting was held to plan the organization of the hydrometeorological observatory in Tixi, in which the participation of the Roshydromet delegation was essential. The meeting had the following goals:

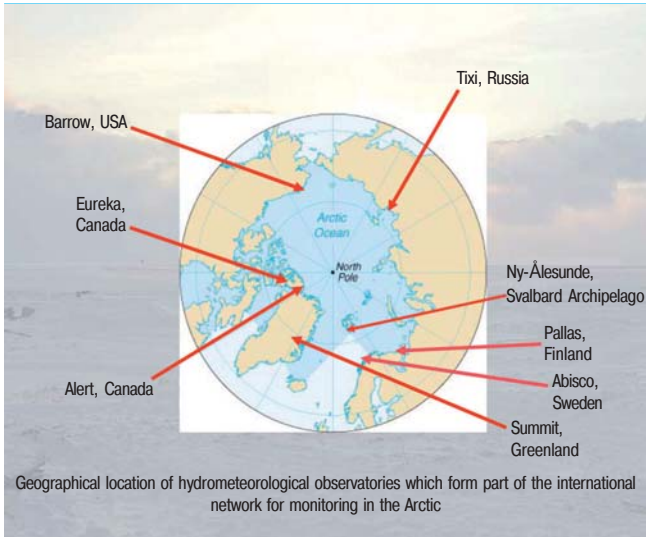
- to summarize experience gained in monitoring programs carried out in the Arctic;

- to determine what are the key parameters for the atmosphere, cryosphere and hydrosphere in forming the climate of the polar regions;



The main building of the future hydrometeorological observatory at Tixi (photo left) and the planned pavilion for researching the chemical composition of the atmosphere with equipment for studying energy-mass transfer processes between the underlying terrain and the atmosphere (picture right).

# ACTIVITIES IN THE ARCTIC



Geographical location of hydrometeorological observatories which form part of the international network for monitoring in the Arctic

International network of hydrometeorological observatories which are planned to be located in the Arctic

- to examine the possibility of using new technology in full scale tests;
- to strengthen cooperation between groups and institutions involved in the project to build a new hydrometeorological observatory in Tixi;
- to discuss the implementation of the current project as part of IPY-2007/08 and put it in perspective.

The meeting demonstrated the great interest of scientists and the administrations of a series of scientific establishments in the USA and Finland for the organization of a fully functioning hydrometeorological observatory in Tixi, equipped with the very latest technology, and modern systems for vital services, with highly qualified service personnel.

The importance of implementing the current project for the Russian Federation – intended to begin in August 2007 – is conditional on the organization of the observatory leading to Russia's integration into the international monitoring network. Such integration will enable Russia to receive a large volume of data which was formerly unavailable concerning the main characteristics of the atmosphere in the polar regions.

A.P. MAKSHITAS (AARI)

## A SEA EXPEDITION ON THE ARKTIKA NUCLEAR POWERED ICEBREAKER

As a continuation of studying the Russian Arctic ecosystems in February-March 2007 the Murmansk Marine Biological Institute carried out observations onboard the *Arktika* nuclear powered icebreaker belonging to the Murmansk Sea Line on the Barents, White and Kara seas.

Hydrological and hydrometeorological research and observations were continued into the pack ice covering the current seas. Samples were taken of sea water for pollutants and also for continuing research into phytoplankton and zooplankton communities. As part of the expedition, observations were made of specific distribution and numbers of marine mammals, birds and polar bears.

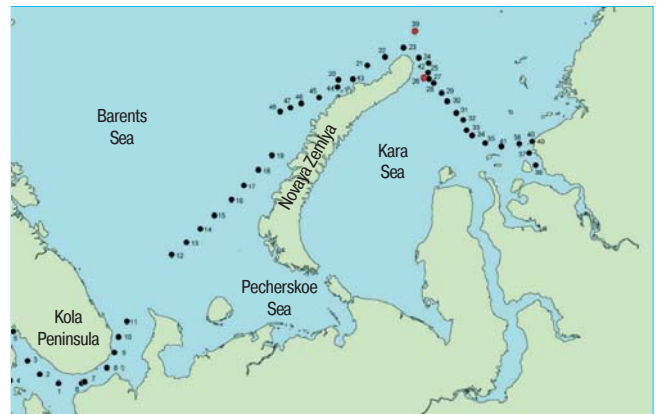
At present preparations are underway for another expedition on a nuclear powered icebreaker belonging to the Murmansk Sea Line. Research will be continued

into the state of the ecosystems in Russia's arctic seas, in particular the Barents and Kara seas.

Yu. IVAKINA (MMBI)



*Arktika* nuclear powered icebreaker



Expedition route of the *Arktika* (above) and the location of hydrological and plankton stations

## ACTIVITIES IN THE ANTARCTIC

### THE FIRST STAGE OF RESEARCH HAS BEEN COMPLETED FOR THE IPY-2007/08 ANTARCTIC PROGRAM

On 2 May 2007 the scientific-research vessel, *Akademik Fedorov*, docked at the wharf of St. Petersburg's Kanonersky Ship-repair Plant having returned from the 52<sup>nd</sup> Russian Antarctic Expedition (RAE) and IPY-2007/08 as part of the Arctic and Antarctic Research Institute for the Russian Federal Service on Hydrometeorology and Environmental Monitoring (Roshydromet).

The vessel's 66 member crew was led by Captain Valery Alexandrovich Viktorov. Together with the crew onboard *Akademik Fedorov* 61 members of the 51<sup>st</sup> Russian Antarctic Wintering Expedition (headed by Viktor Mikhailovich Venderovich), and also 52 members of the 52<sup>nd</sup> RAE (headed by Vladimir Vasilevich Kiselev) the vessel arrived in St. Petersburg.

The vessel departed St. Petersburg 3 November 2006 for a 180 day trip. The ship entered the German port of Bremerhaven twice and entered Cape Town in South Africa three times. Two approaches to the *Mirny* Antarctic station were made, three to the Progress station and the seasonal field-bases *Druzhnaya-4* and *Molodezhnaya*. One approach was made to the *Novolazarevskaya* Station.

During this trip *Akademik Fedorov* traveled 34,090 nautical miles, of which 11,090 nautical miles – were in

Antarctic waters and 2540 sea miles in drifting and coastal ice.

Out of 180 days, 160 days were at sea, of which 93 days were spent in Antarctic waters. The vessel spent twenty days in ports, and 50 days carrying out loading operations at Antarctic stations maneuvering in ice.

Twenty scientific, educational and manufacturing organizations, representing departments and ministries of the Russian Federation participated in the work of the 52<sup>nd</sup> RAE, including Roshydromet (three people), Ministry of Natural Resources (two people), Ministry of Education and Science (two people), Ministry of Transport (three people), Ministry of Defense (one person), Ministry of Agriculture (one person), Russian Academy of Sciences (eight people).

The 51<sup>st</sup> Russian Antarctic Expedition carried out its programs at the Russian stations of *Mirny*, *Vostok*, *Novolazarevskaya*, *Progress* and *Bellingshausen*. The main area of its work was performing holistic monitoring of the Antarctic environment from near space to the interior of the Earth's crust.

While continuing the construction of a new service-residential wintering complex and airstrip for *Progress* station, conservation measures were carried out for the use and preparation of waste from created at the station and on expeditions and its transportation out of Antarctica. New information was collated on the tendency for current climate change in different areas of Antarctica, determined by the peculiarities of the evolution of the hole in the ozone layer, above which anomalies have been picked up in the ice cover of Antarctic seas.

Aviation support for RAE are provided by inter-continental flights on an IL-76TD plane from Cape Town to *Novolazarevskaya* Station (7 flights) and internal flights on AN-2 aircraft (airborne geophysical observations in the area of Prince Charles Mountains) and BT-67 (flights between stations, including providing support to the *Vostok* station), and also MI-8 (from onboard the scientific research vessel to bases in the mountainous regions of Antarctica). Pilots from the famous St. Petersburg company, SPARK PLUS, carry out helicopter flight support, which is lead by the Honored Pilot of the Russian Federation Vadim Valerevich Bazykin.

The work of the 52<sup>nd</sup> RAE took place in coordination with the programs organized for the IPY-2007/08. The most interesting results of this Russian Antarctic Expedition were received on the following projects:

- studying the characteristics of the *Vostok* subglacial lake using radar technology and seismic probing;
- boring deep ice holes at the *Vostok* station into the ice to a depth deeper than 3650 metres;
- highly precise definition profile of the ice crown in the region of *Mirny* station using geodesic techniques;



Director of AARI I.E. Frolov congratulates the ship's crew and members of the expedition with successful completion of their work.

Photo I. Snopchenko

# ACTIVITIES IN THE ANTARCTIC

- thorough geological and geophysical research in the area of Prince Charles Mountains and in the marine area of the Mawson Sea and Collaboration Sea;

- organization of hydrobiological research into the diversity of plankton communities and benthos in coastal areas of Prydz Bay.

1 March 2007 the IPY-2007/08 program was officially begun. Members of the 52<sup>nd</sup> Russian Antarctic Expedition, including those who have just returned to St. Petersburg onboard *Akademik Fedorov*, participated directly in this unique worldwide scientific and political event. Work on IPY projects continue at this moment at five Russian Antarctic bases.

For services performed researching and developing Antarctica, by orders Nos. 109, 264 and 444 from 31 January, 1 March and 5 April 2007 of the President of the Russian Federation eleven members of the 51<sup>st</sup> and 52<sup>nd</sup> Russian Antarctic Expeditions, currently onboard *Akademik Fedorov* are awarded state prizes. Among those awarded prizes are famous polar explorers: Arnold Budretsky, awarded the Order for Naval Merit and Lev



*Akademik Fedorov* moored at Kanonersky Plant

Savatugin, awarded the Order of Honor, Captain of the *Akademik Fedorov* Valery Viktorov and other participants of the expedition and members of the ship's crew.

S.B. BALYASNIKOV (AARI)

## OCEANOGRAPHIC RESEARCH IN THE COLLABORATION SEA AS PART OF IPY-2007/08

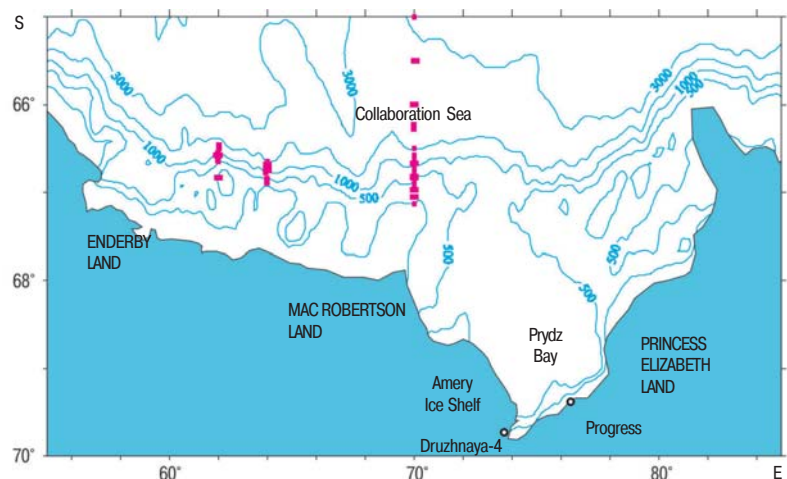
Russian oceanographic research in the Southern Ocean according to the program of the International Polar Year began within the framework of the 52<sup>nd</sup> Russian Antarctic Expedition long before the official start of IPY-2007/08. On 17-21 January 2007 the flagship of the polar fleet *Akademik Fedorov* carried out three meridional crossings of the ocean (along 62, 64 and 70° east) in the eastern part of the Collaboration Sea and performed 29 soundings from the surface to sea floor using a SeaBird 911+.

These crossings were carried out as part of the Russian project for IPY for oceanographic research in the Antarctic zone of the Southern Ocean and became a contribution to the work for the subprogram for study and research in Antarctica for the Global Ocean program.

The region being researched in the current program plays an important role in shaping the system for water and ice not only in the Southern Ocean but all other oceans around the globe. Extremely cold, dense Antarctic Bottom Water forms in depths comparable to those of abysses on the Antarctic shelf and continental slope, which have a substantial impact on the oceans' currents. This water, taking up the

lowest layer of the ocean, spreads along the bottom of the seabed north as far as the northern hemisphere. The changeability of the speed of the Antarctic Bottom Water influences the intensity of ocean currents, and in the end, influences the intensity of climate change.

The main region for the formation of bottom water is the Weddell Sea. However, it is known that bottom water is formed to a much lesser degree in other areas near the coast of Antarctica. One of them is the Collaboration Sea which is largely occupied by the shelf from Prydz



Location of ocean crossings

## ACTIVITIES IN THE ANTARCTIC

Bay. Receiving experimental confirmation of the formation of bottom water, confirming its characteristics and properties of their variability were some of the tasks of the expedition.

One of the main elements to the structure of the water of this region is the Antarctic Polar Front – a reasonably narrow region of elevated current speeds and strong horizontal gradients in density, temperature, salinity, and other oceanographic properties. This front separated cold water from the relatively fresh water from the upper sections of the continental slope and observable deeper, warmer and saltier water, which are carried there from the periphery of the Antarctic Circumpolar Current. The processes in the area of the Polar Front play an important role in the formation and transformation of the Antarctic water mass, and receiving information about its regional features, structure and properties is one of the most topical missions for the expedition's research in the Southern Ocean.

The relatively small scale of the objects connected with the formation of cold, dense water, and its sliding down the slope requires a sufficient close distance between the stations on the cross-sections. From this point of view the cross-sections carried out in 2007 are unique primarily because it rarely occurs with research on the Antarctic Shelf and continental slope that the proximity of the stations (sounding points) for the cross-sections (depending on the steepness of the continental slope the distance between soundings was reduced to less than two kilometers).

As a result sufficiently precise information was received about the horizontal size and structure of the Polar Front and about the currents in the pre-bottom layers, possessing limited horizontal scale. Sufficiently precise determination of the vertical boundaries between the water masses has been provided by high resolution and highly precise measuring equipment used for the soundings.

It is necessary to note the complexity of the hydro-meteorological conditions in which the observations were

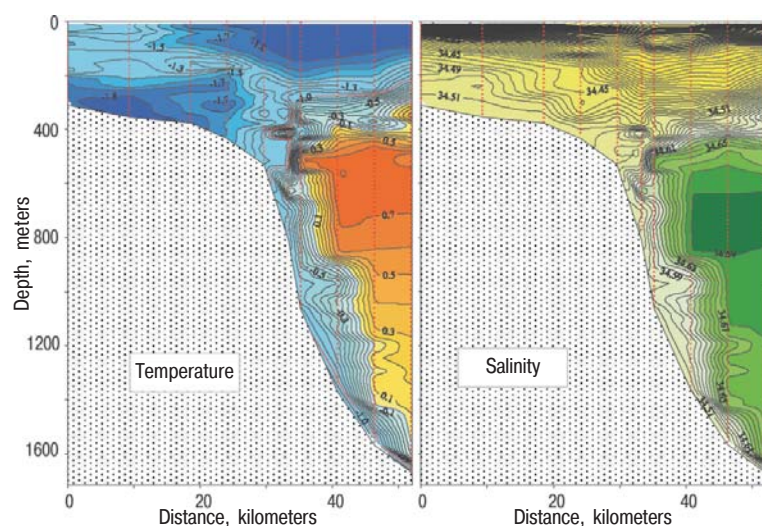
carried out. A large number of the observations were taken in drift ice with a concentration of up to 9-10 and a concentration of icebergs of up to 8. Such difficult ice conditions can be found most of the year in the areas around the shelf and continental slope which is why such oceanographic work is rarely carried out here.

As a result of the observation it has been possible to receive a detailed picture of temperature distribution and salinity, which will serve as a basis for defining the water mass and properties. Experimental confirmation that Antarctic bottom water forms in this region has also been received. Such water appears in low temperatures and salinity of the pre-bottom layers above the continental slope at a crossing at longitude 70° east. It has also been established that the observed bottom water is the result of mixing occurring between modified circumpolar deep water with cold waters from the shelf forming mainly in the south of Prydz Bay near the Amery Ice Shelf.

The precise structure on the vertical profiles for temperature and salinity in the area of the Polar Front reflects the active role of sinking dense water in the ventilation (oxygen enrichment) of the deep water at moderate depths and in the replenishment of the deep water later, being redistributed at this stage from the Weddell Sea. The comparison of temperature distribution and salinity between the crossings at longitude 70, 64 and 62° East demonstrates that the rate the forming Antarctic deep water lowers along the continental slope increases in the western direction, along the narrowing of the shelf and the increasing declination of the bottom towards sea. The Antarctic Slope Front on the cross-sections carried out is expressed in anomalously high horizontal graduations of hydrological parameters at the layer of 400-800 meters as compared with other regions in Antarctica. The breadth of the front is estimated at 10 km, according to the amount of offset to the west the graduation of temperature and salinity grows noticeably.

The research was carried out by the Russian part of the project for IPY-2007/08 N 8 *Synoptic Antarctic Shelf Slope Interaction Study* (SASSI). As a result of this project in which Australia, Brazil, Great Britain, Germany, Italy, Spain, China, Norway, the United States of America, France and Japan participated, as well as Russia, the area around the Antarctic continental slope around the entire continent will be covered by a system of cross-sections. The Russian contribution in this project is one of the largest, since other similar cross-sections in various sectors of the Southern Ocean by us are planned in the seasons of 2007/08 and 2008/09.

N.N. ANTIPOV, A.V. KLEPIKOV  
(AARI)



Distribution of temperature and salinity at the cross-section at longitude 70° East

## Chairmanship of the International Arctic Council Moves to Norway for 2006-08



26 October 2006 Norway has accepted the baton from Russia to become head of the Arctic Council until 2008.

Furthermore a decision has been taken to establish in Tromsø around the Polar Center a Permanent Secretariat for the Arctic Council. Previously each country has established its own temporary secretariat for the period of its Chairmanship of the Arctic Council.

The Arctic Council is an agency for cooperation and coordination of member governments and organizations.



The procedure for opening a secretariat of the Arctic Council

During its chairmanship Norway has come up with key criteria in relation to questions concerning climate change in the Arctic for determining territories under threat from the active development of oil and mining industries.

"With the opening of the Secretariat, the status of Tromsø will be raised to that of the Arctic capital", commented Jan-Gunnar Winther, director of the Norwegian Polar Institute.

Members of the Arctic Council include Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden and USA.

SOURCES: <http://www.arctic-council.org/>  
<http://portal.sdwg.org/content.php?doc=11>

## First Results from the KV SVALBARD Expedition as Part of iAOOS-Norway)

The project iAOOS-Norway (an integrated monitoring system for the Arctic Ocean – Norwegian component) is an integrated scientific research project aimed at multidisciplinary study of various parameters and processes occurring in the Arctic Ocean and being carried out as part of the framework for the International Polar Year 2007/08.

As a result of the expedition to the Fram Strait on the *KV Svalbard*, a Norwegian coastal protection vessel, in April 2007 new data was collated relating to oceanography, research on sea ice and marine biology. The first results of the expedition's research work were in the areas of oceanography, physics of sea ice and marine biology.

**Oceanography.** In several locations salinity, temperature and water density were measured from *KV Svalbard* and by helicopter. Regardless of the fact that the analysis of scientific data will be carried out later, several results are already known. In the internal area of the

East Greenland Current samples were taken for measuring the properties of water from the Atlantic Ocean carried from Arctic Ocean having completed a full cycle of circum-arctic circulation. This water is warmer than it has been in previous years which demonstrates the ongoing nature of warming in the Arctic Ocean of the past twenty years.

In the East Greenland Current the percentage of fresh water has reduced to the south along the current and the shelf. It was formerly hypothesized that the reason for this was fresh water being carried into the Greenland Sea. Nonetheless, it was still observed that local processes do cool the water and release salt. These processes take place only in winter which makes winter work especially important.

**Physics of sea ice.** Scientists have collated data from eighteen different locations, two of which come from drift stations (seven day drift). All stations were located within the region of 80-76° North and 2-12° West.

Standardised ice observations were carried out also from the height of the captain's bridge. This data will provide information about the energy balance of snow and sea ice. The data can also be used for calibrating and explaining the results of remote sounding and for the development of climate models.

The information gained as part of integrated research will enable joint research, for example, on the influence of biomass, ice and snow on the



Cecilia Marizen  
and Edmund Hansen  
during sampling.  
Photo R. Kayers



Boel Kuipers measures the thickness of sea ice.  
Photo R. Kayers

penetration of light through ice and water. The results attained should agree with data from remote sounding in the central part of the Arctic Ocean.

**Marine Biology.** For many years observations have been carried out on water mass and ice conditions in Fram Strait. This data is a worthy



Taking plankton samples from various depths.  
Photo R. Kayers

foundation for observations on how the natural environment reacts to climate change. Nonetheless, the biological processes and changes to the ecosystems demand additional study.

This is particularly important in the winter period. One of the main tasks of the current expedition was to map the biological processes of the Arctic Ocean.

The initial results demonstrate that although algae under sea ice is still in hibernation, crustacean have already begun the process of reproduction. It strengthens with the growth of algae which begins as soon as the thawing of sea ice enables

light to penetrate the water. The quantity of winter nutrition determines the potential growth of the next generation and in such a way the presence of nutrients for all ocean dwellers. This is important information for climate modeling.

The ice is an important habitation for several types of animal and plant communities. Multiyear ice accumulates many more plants and animals than seasonal ice. In Fram Strait these habitations usually are destroyed with thawing of the ice and sink to the ocean floor. For animals of the benthos, living on the ocean's floor, these are vital forms of nutrition. In this way, the prevalence of seasonal ice observed during the *Svalbard* cruise can lead to the impoverishment of nutritional resources for the benthos.

SOURCE:

<http://www.ssf.npolar.no/pages/news076.htm>

## Scientific Program at Tara Camp

During the spring expedition season a series of experiments were carried out in the proximity of the Tara ice station.

Thanks to two types of instruments (laser profilograph and electromagnetic current meter) the topography of the surface ice was mapped from onboard the *Twin-Otter* airplane along a precise line between

Tara, Greenland and Canada.

In the outskirts of the Tara station the following apparatus have been set up:

- two ice platforms, including an ITP (Ice Tethered Platforms) drift buoy, which record the meteorological



Ice camp Tara

parameters of weather conditions on the surface and can automatically measure the oceanographic profile to a depth of 800 meters;

- two buoys for measuring the IMB (Ice Mass Balance), which will determine the changes in the force of the sea ice), and also a drift indicator (an instrument measuring the directed spectrum of wave refraction);

- radiometers, measuring direct and reflected solar radiation above/below the ice surface for additional information from long and short wave radiometers installed in September 2006;

- six seismometers in a radius of one kilometer from Tara.

Apart from the installation of equipment carrying out atmospheric balloon sounding was carried out with the aid of helium balloon equipped with sensors for measuring air temperature, pressure, humidity and wind direction in the lower strata of the atmosphere to a height of two kilometers.

Crossings have been made for information on the sea ice thickness, received by using electromagnetic instruments, which were installed on MI-8 helicopters based at the Barneo Ice Station.

The meteorological mast has been replaced, having been damaged in the first phase of drifting.

SOURCE:

[http://www.taraexpeditions.org/en/newsletter-jdb.php?id\\_page=204](http://www.taraexpeditions.org/en/newsletter-jdb.php?id_page=204)

## Cooling in North-West Europe?

Leading climatologists fear that global warming may have a paradoxical effect by cooling North-West Europe and even sinking into a brief ice age.

The idea which has held climatologists for years in an "icy gauntlet" is that the North Atlantic Current, a continuation of the Gulf-stream, which washes the shores of Europe with warm equatorial water may cease to exist.

Without this warm current, even Americans on the east coast will feel a slight drop in temperature, but the majority of the suffering will fall to the part of Europe where there are large cities in the north. Citizens of the United Kingdom, the north of France, territories in the European lowlands (Belgium, Netherlands and others), Denmark and Norway may theoretically get natural conditions which would be pleasant for Greenland's population while the rest of the world will suffer from oppressive heat.

None of this features in any of the forecasts for the moment. Warming is taking place not only in Northern Europe but is also demonstrated in all of the main climate models and demonstrates that warming is most likely going to continue.

SOURCE:

[http://www.nytimes.com/2007/05/15/science/earth/15cold.html?\\_r=2&ref=science&oref=slogin&oref=slogin](http://www.nytimes.com/2007/05/15/science/earth/15cold.html?_r=2&ref=science&oref=slogin&oref=slogin)



Current in the Atlantic

## THE NEVA 2007 INTERNATIONAL MARINE EXHIBITION AND CONFERENCE

Dear Colleagues!

On 24-27 September 2007 at the Lenexpo exposition hall (St. Petersburg) the traditional exhibition and conference for commercial shipbuilding, navigation, port functions and development of oceans and shelves will be held.

The Neva exhibition at present takes the fourth place in the world as a commercial marine forum, with the program including events with the Naval College attached to the Government of the Russian Federation for 2007. The exhibition will take place with the support of the Federal Service for Hydrometeorology and Environmental Monitoring, Administration for Shipbuilding, the Federal Agency for Industry of the Russian Federation, Oil and Gas Equipment Producers Association, Union of Russian Ship Owners, Association of Sea Commercial Ports, Russian Association for Marine and River Bunker Suppliers.

On 1 March 2007 the International Polar Year (IPY-2007/08) was opened. For this large scale scientific-research program to study the polar regions of the Earth the governments, scientific-research organizations and independent scientists from over 50 countries have joined forces.

With the aim of demonstrating Russia's scientific and technical priorities and advantages in developing the Arctic and research in the Antarctic, the economic mastery of marine areas with permanent or seasonal ice, and the possibilities of international cooperation in developing the polar regions, the Neva-2007 exhibition and conference has been included as part of the Russian program for IPY-2007/08.

In order to show the priorities of the national fleet and ports within the framework of the International register of Vessels created in Russia for the implementation of transport systems on the North Sea Route, the steady export of energy carriers extracted from the shelf, and also to promote scientific and technical exchanges to

Regards,

**A.I. BEDRITSKY,**

*Director of the Federal Service for Hydrometeorology and Environmental Monitoring, Co-chairman of the Organizing Committee for Russia's preparation and participation in the International Polar Year (2007/08).*



develop ocean resources and to improve ecology of the Arctic Sea regions with growing demands being placed on the environment owing to economic development of Arctic regions, the Euro-Asian Transport Union has made the decision to carry out as part of the framework for Neva-2007 and IPY-2007/08 Conference *International Euroasian cooperation on development of an economic activities and transport in Arctic regions and regions with constant and seasonal ice conditions.*

We consider that this event, the first to be held in Russia, will enable us to further strengthen Russia's international image as a leading naval power in the areas of developing the Arctic and Antarctic.

The exhibition will attract the attention of business, manufacturing organizations and investors to the development of polar science and the economic development of the Arctic, as well as Antarctic research. Furthermore, it will cooperate in the establishment of state-private partnerships in providing Eurasian marine transport, publicize marine activities and knowledge among the broader public about Russian research which is being undertaken in the Arctic and Antarctic as well as future research.

We ask you, dear colleagues, to support the exhibition and conference and delegate your representatives to participate in these events.

**A.N. CHILINGAROV,**

*Deputy Chairman of the Russian State Duma, Co-chairman of the Organizing Committee for Russia's preparation and participation in the International Polar Year (2007/08), Chairman of the Supervisory Board of the Euro-Asian Transport Union.*

• NEVA-2007 9TH INTERNATIONAL EXHIBITION FOR SHIP CONSTRUCTION, NAVIGATION,  
PORT FUNCTIONS AND DEVELOPMENT OF OCEANS AND SHELVES •

**LenExpo, St. Petersburg, Russia, 24-27 September 2007**

Administration: Tel. +7(812) 321-26-76, Fax: +7(812) 321-26-77, e-mail: transtec-neva@setcrop.ru

# EXHIBITIONS, CONFERENCES

## 2<sup>ND</sup> INTERNATIONAL OCEAN EXHIBITION



**Organizer: OOO Mir-Expo**



**With the participation  
of ZAO Expocentr**

**With support of  
the Commission for Maritime Policy  
of the Council of the Federal Assembly**

On 23-26 April 2007 at the Expocenter in Moscow the Second International Ocean Exhibition was held, which demonstrated mankind's achievements in exploring the World's Ocean, manufacture, new technologies and services for organizations and enterprises in the marine field.

Approximately 30 organizations were represented with specialty in a variety of fields, including:

- underwater technology and equipment;
- oceanography and ocean resources;
- meteorology;
- oil and gas extraction on the sea shelf;
- maritime transport and navigation;
- fishing and ocean bioresources;
- the Arctic and Antarctica.

Roshydromet's stand introduced four subdivisions: the State Oceanographic Institute (Moscow), Arctic and Antarctic Research Institute (St. Petersburg), All-Russian Research Institute of Hydrometeorological Information – World Data Center and Typhoon PSA (Obninsk).

Information was presented at the stand about IPY-2007/08. The State Oceanographic Institute and Typhoon PSA demonstrated new technical developments for chemical analysis of water and measuring hydrometeorological elements. The All-Russian Research Institute for Hydrometeorological Information – World Data Center showed the results of their latest development for a unified information system about the ocean.

The Arctic and Antarctic Research Institute presented an adaptable system for monitoring the predicting the atmospheric and hydrospheric conditions to support marine activities in the Arctic Ocean and other frozen Russian seas, known as AKMON and a specialized automatic system "Ship Terminal".

The system is designed to collate, process and analyze raw data about the environment, develop current reports and predictions and provide hydrometeorological reports to consumers at their locations (vessel bridges, boring platforms, dispatcher posts). Developed hydrometeorological reports are adapted for regional, physical conditions and to the specific demands of consumers by choosing the optimal configuration from the set of modules.

Automatic system is designed for presenting hydrometeorological reports (current situations and predictions) and work with them directly on the location of the consumer. Hydrometeorological reports can be added as additional layers to electronic, navigation charts, which enables the user to choose the most appropriate route taking into account weather forecasts and ice.

For their active involvement in the Ocean exhibition Roshydromet, the State Oceanographic Institute, Arctic and Antarctic Research Institute, All-Russian Research Institute of Hydrometeorological Information – World Data Center and Typhoon PSA were awarded with honorary certificates.

## 3<sup>RD</sup> INTERNATIONAL CONFERENCE ARCTIC SHIPPING 2007

On 17-19 April at Evropa Hotel in St. Petersburg the Third International Arctic Shipping Conference was held. The leading organizer of the conference was Lloyd's List, but sponsors included companies with interests in Arctic shipping.

The conference examined the following questions:

- economic development and construction of ports in the Arctic;
- development of transport systems for the interests of energy and natural resource companies;
- preparation of the Arctic Marine Shipping Assessment (AMSA);
- navigation in ice and risks;

- technical aspects of operations in ice;
- planned gas lines for the Arctic.

Representatives from the Ministry of Transport of the Russian Federation, the Federal Agency for Marine and Regional Transport, the Maritime Register, Arctic Research Commission (USA), University of Calgary (Canada), World Wildlife Found (Norway), AARI, BP, Sovkomflot, AKER, Samsung, CNIIMF, Krylovsk State Scientific Center, Lloyd's Register, DNV, maritime shipping companies, ports and others.

There was also a seminar on pollution in the Arctic seas. For more information see [www.arcticshipping2007.com](http://www.arcticshipping2007.com).

## THE DRIFT OF THE *VARNA* AND *DIMFNA* IN THE ICE OF THE KARA SEA DURING THE FIRST IPY

In accordance with the program of the first International Polar Year Russia was to establish two polar stations – one on Novaya Zemlya (*Malye Karmakuly*) and at the mouth of the Lena River (Sagastyr). These stations were clearly insufficient for so large a territory as the polar region of Russia. Dutch scientists decided to participate in the endeavor to gain more information on the region. The Dutch suggested an expedition to Dixon Island and establish a station on the island, to carry out observations as part of the first IPY. However, the fate of this expedition emerged to be quite different.

On 5 July 1882 a small Norwegian vessel, the *Varna*, left Amsterdam. The *Varna* was to deliver members of the Dutch expedition who had chartered the vessel to Dixon Island with all of their provisions and equipment.

The vessel was to return the same year and so the task did not strike the Norwegian crew as being particularly complicated – they didn't even bring warm clothes with them. However, problems developed already in August after the *Varna* had approached Novaya Zemlya. The vessel tried to enter the Kara Sea through the Matochkin Strait (between the northern and southern



The scientific station onboard the *Varna*. 23 March 1883.

islands of the archipelago), however, it was iced over and presented the little *Varna* with an insurmountable obstacle. Neither was the attempt to pass through by the *Yugorsky Strait* (the strait separating Vaygach Island from the continent) any more successful.

The Kara Strait was also blocked with ice. The decision to wait for the ice to break up proved disastrous: on 30 August the *Varna* was trapped in ice. Already by the following day the *Varna* had achieved its goal, trapped in the fast current the vessel was carried through the Kara Strait into the Kara Sea. However the sea turned out to be entirely covered with ice and surrounded by it, the vessel was forced simply to drift passively.

On 17 September among the ice, the Dutch crew saw another vessel. A Danish steamer, the *Dimfna*, that had been bound for Cape Chelyuskin, and just like the *Varna* had found itself a prisoner of the ice.

In 1882 the ice in the Kara Sea was exceptionally thick. This year three other vessels had tried to go through the Kara Sea but all these attempts had failed. There was no hope that such a small vessel as the *Varna* could withstand the ice and reach its destination. After a little



The *Varna* and the *Dimfna* in the Kara Sea. 6 November 1882.



Members of the Dutch expedition on the sailing-motored vessel *Varna*

while both vessels, the *Varna* and the *Dimfna* were completely trapped in ice.

On 27 September scientific observations began on the drifting ice station, established on the *Varna* by members of the expedition.

Soon the ice began to build up and the leader of the expedition, Dr. Snellen had to take measures should the vessel sink. Rations and equipment were taken to the lifeboats, some of the rations were unloaded onto the ice near the vessel. A thermometer shelter was set up on the ice. A small plank building was constructed and some of the expedition members relocated to this. However, the pressure of ice continued to grow, and the speed with which the *Varna* was drifting increased. In December it became impossible to live on the vessel.

Having drifted into the proximity of the *Dimfna* the Danes offered the Dutch to join their vessel, and Dr. Snellen decided to abandon the *Varna*. All reserves, equipment, lifeboats were carried over to the *Dimfna*. The crew of the *Dimfna* commanded by Lieutenant Howgard hospitably met the members of the Norwegian crew and the Dutch expedition. The observations which had been briefly interrupted were renewed.

The vessels drifted with the ice in one direction to the other but were drawn towards the north: on 18 September 1882 the vessels were located at 69° 55' N, 64° 13' E, and on 18 April 1883 – were already at 71° 45' N. However at the end of April the wind swung round and the ships started to quickly drift south.

With summer the ice began to break up rapidly. The ice clinging to the *Varna* slowly broke up and on the morning of 24 July 1883 the vessel sunk.

After the vessel sunk the leader of the expedition, Dr. Snellen gathered the members of his expedition and the Norwegian crew to discuss a plan for further action. He suggested that they stay onboard the *Dimfna* and wait until it should be released from the ice or to attempt to

reach the continent by traveling along the ice. It was decided to try to make the shore of Vaygach Island.

On 3 August all 21 members of the expedition said farewell to the Danes and took to the ice. The expedition had three sleighs and four boats. It was necessary to sail through ice free areas and then drag the boats. Slowly the areas free of ice increased and finally they managed to reach Vaygach Island by boat.

Having relaxed, the expedition took to the south for Khabarovo. Here they took a steamer *Nordensheld* to Norway.

The Danish vessel *Dimfna* was only freed of ice in September and reached Norway on 10 October.

Russian scientists were united in their estimation of the results achieved by the Dutch and Danish expeditions: and the fact that neither expeditions achieved their goal was irrelevant, science came out the winner rather than the loser.

Despite the extremely difficult conditions, members of the expeditions maintained their moral and throughout the entire year actively maintained their observations. Furthermore the data they took was of particular importance since in the process of the scientific, mainly meteorological, observations, they used precise, reliable equipment designed for use at stations.

During the drift of the vessels it was possible to carry out observations along the shores for the first time. It was especially important to have information about the drift of the vessels, which enabled us to have an understanding of the currents and movement of the ice. The experience organizing work on drift ice was used for planning the expedition onboard the *Fram* and for Soviet expeditions to the North Pole.

The results of the research conducted on the *Varna* and *Dimfna* made a significant contribution to the implementation of the programs for the first International Polar Year.

O.V. LAPINA

(Russian State Museum for the Arctic and Antarctic)

*Dear Colleagues!*

*If you have information about IPY-2007/08 events in your organizations and regions,  
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