

Summer School Grant

1. GENERAL INFORMATION

1.1 **TITLE:**
The First International Summer School on High Northern Latitude Climate

1.2 **Keyword 1: Climate & Climate Change**
Keyword 2: Oceanography
Keyword 3: Glacial & Cryospheric Systems

1.3 **Free word 1: Ocean-atmosphere interactions**
Free word 2: Satellite remote sensing

1.4 **Intended Starting Date: 19 Aug 2006**

1.5 **Duration: 7 Days**

1.6 **Total Cost: € 15,000.00**

1.7 Contact Details

Title	Prof.
Position	Research Director
Sex	Male
Date Of Birth	31/08/1942
First Name	Dmitry
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Organisation / University / Institute	Nansen International Environmental and Remote Sensing Centre
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2 Location

The University of St. Petersburg campus in Peterhoff, the famous resort in the suburbs of St. Petersburg, Russia. There are spacious premises of the Physical Department of the University of St. Petersburg there with an ample number of lecturing rooms, a comfortable student dormitory and university canteen. All these facilities are within a walking distance. This university complex is within a 45-min driving distance from St. Petersburg by electric train with intervals less than 30 minutes

3 Organising Institution and committees

Organizing Institution:

Scientific Foundation "Nansen International Environmental and Remote Sensing Centre" (NIERSC), St. Petersburg, Russia jointly with:
University of St. Petersburg (USPb), Russia,
University of Bergen, Norway,
Nansen Environmental and Remote Sensing Centre (NERSC), Bergen, Norway
and
Max-Planck Institute for Meteorology (MPI-M), Hamburg, Germany

Internet webpage: www.niersc.spb.ru

Committees:

Advisory Committee:

Co-Presidents:

Prof. Ola M. Johannessen, Director, NERSC,
Prof. Jean-Pierre Contzen, Chairman, Institute of Advanced Studies of UN
University, Tokyo, Japan/Technical University of Lisbon, Portugal

Members:

Prof. Harmut Grassl, MPI-M,
Prof. Lennart Begtsson, MPI-M,
Mr. Lasse Pettersson, Director International Relations, NERSC,
Prof. Sigmund Gronmo, Rector, University of Bergen,
Prof. Vladimir Troyan, Vice-Rector, USPb,
Dr. Leonid Bobylev, Director, NIERSC

Organizing Committee:

Co-chairmen:

Prof. Hartmut Grassl, MPI-M,
Dr. Leonid Bobylev, Director, NIERSC

Members:

Prof. Ola M. Johannessen, Director, NERSC,
Prof. Dmitry Pozdnyakov, Research Director, NIERSC,
Mr. Lasse Pettersson, Director International Relations, NERSC,
Prof. Vladimir Troyan, Vice-Rector, USPb,

4 **Description - Programme (see infopack for details)**

Description-Programme

Scope and Programme:

This school is supposed to be the first session which opens the regular International Summer School on High Northern Latitude Climate. It is organized by the Scientific Foundation “Nansen International Environmental and Remote Sensing Centre”, St. Petersburg, Russia jointly with the University of St. Petersburg, Nansen Environmental and Remote Sensing Centre, Bergen, Norway, University of Bergen and Max Planck Institute for Meteorology, Hamburg, Germany.

A consensus from coupled atmosphere-ocean modelling studies of increasing greenhouse-gas (GHGs) scenarios is that anthropogenic global warming will be enhanced in the northern high latitudes, due to complex feedback mechanisms in the atmosphere-ocean-ice system. The predicted warming in the Arctic over the next 50 years is $\sim 3-4^{\circ}\text{C}$ or more than twice the global average. This suggests that the Arctic may be where the most rapid and dramatic changes (e.g., a shrinking sea ice cover) may take place during the 21st century. Reviews of fragmentary observational evidence taken together provide a reasonably coherent portrait of the Arctic and subarctic change, indicating that the last 2-3 decades have experienced unusual warming over northern Eurasia and North America, reduced Arctic sea ice, marked changes in the Arctic Ocean hydrography, reduced glaciers and snow cover, increased runoff into the Arctic, increased tree growth in northern Eurasia, reduced tundra areas and thawing permafrost.

Taking into account the extreme importance of these processes for the future of Europe, Russia and the whole world and understanding the necessity of education of young generation of scientist for continuation of research in this area, the above mentioned institutions decided to establish a regular international summer school devoted to such a “hot” topic. The summer school will cover a broad spectrum of the Arctic and subarctic climate change issues including the following scientific questions, thereby drawing from latest research results:

- What has caused rapid climate shifts in recent glacials?
- Will the Arctic Ocean be ice-free in late summer in decades from now?
- What will be the impact of freshwater budget change on the global thermohaline (THC) circulation?
- Will North Atlantic deep water formation be reduced or even been halted when the greenhouse effect of the atmosphere continues to increase?
- When and where will permafrost melt occur and will it feed back positively into global warming?
- Will the Greenland ice sheet start to disappear after a mean global warming of $\sim 3^{\circ}\text{C}$?

- Are we able to model cryospheric processes adequately in climate models or emerging Earth system models?
- Will we see a rapid recovery from spring-time ozone depletion in high northern latitudes?
- What will be general consequences of climate and environmental change in the Arctic on the THC, marine ecosystems and fisheries, transportation, offshore industry and oil and gas production, coastal infrastructures and on climate in Europe and Russia?

The Summer School has a multidisciplinary character and consists of keynote plenary lectures to be delivered by leading experts, panel discussions, and workshops with in-depth discussions on specific issues. All summer school participants will either present a poster or give an oral presentation describing their research at workshops. Participants will also be given the opportunity, at practical seminars, to evaluate latest model results and near real-time satellite data by being connected to the World Data Centre for Climate in Hamburg and having access to NASA's as well as ESA's environmental satellite sensors like MODIS, MERIS, SCIAMACHY, etc.

The Summer School is open to PhD-students and young researchers (up to 35 years) worldwide. Participation is on a competitive basis and will be limited (for the First session) up to 40 participants. A number of grants will be available pending on the budget of the school. This year session will be held in Russia in the campus of the University of St. Petersburg in Peterhoff in the famous historical place located near Saint-Petersburg.

Preliminary Programme of the First Session of the International Summer School on High Northern Latitude Climate

19 August, Saturday

Arrival of participants. Accommodation in the St. Petersburg University Campus Hotel, Peterhoff

20 August, Sunday

Arrival of participants. Accommodation in the St. Petersburg University Campus Hotel, Peterhoff

12:00-18:00 Registration

13:00-18:00 Sightseeing tour to downtown St. Petersburg

18:00-20:00 Icebreaker party

21 August, Monday

- 09:30-09:50** Summer School Opening
- 09:50-10:50** Climate and Environmental Change in the Arctic-an Overview
Prof Ola M. Johannessen, Nansen Centre, Bergen, Norway
- 10:50-11:20** Discussion
- 11:20-11:50** **Coffee break**
- 11:50-12:50** Causes of Rapid Climate Shifts in Resent Glacials
Prof Hartmut Grassl, Max Plank Institute for Meteorology, Hamburg, Germany
- 12:50-13:20** Discussion
- 13:20-14:30** **Lunch**
- 14:30-17:30** **Workshop 1** (including coffee break)

22 August, Tuesday

- 09:30-10:30** Performance of Current Coupled GCMs in Simulation of High Northern Latitude Climate and its Variability
Prof Valentine Meleshko, Voeikov Main Geophysical Observatory, St. Petersburg, Russia
- 10:30-11:00** Discussion
- 11:00-11:30** **Coffee break**
- 11:30-12:30** Satellite Remote Sensing as a Powerful Tool for the Arctic Climate Change Study
Dr Leonid Bobylev, Nansen Centre, St. Petersburg, Russia
- 12:30-13:00** Discussion
- 13:00-14:00** **Lunch**
- 14:00-17:00** **Workshop 2** (including a coffee break)

23 August, Wednesday

- 09:30-10:30** Criosphere Response to Climate Change
Prof Peter Lemke, Alfred Wegener Institute for Marine and Polar Research, Bremerhafeh, Germany
- 10:30-11:00** Discussion
- 11:00-11:30** **Coffee break**
- 11:30-12:30** Change of Freshwater Content in the Arctic Ocean and its Impact on Thermohaline Circulation

Prof Genrikh Alekseev, Arctic and Antarctic Research Institute, St. Petersburg, Russia

- 12:30-13:00** Discussion
13:00-14:00 **Lunch**
14:00-17:00 **Excursion to the Park and Palace in Petrodvorets**

24 August, Thursday

- 09:30-10:30** Extra-tropical and tropical storm tracks in the future climate
Prof Lennart Bengtsson, Max Plank Institute for Meteorology, Hamburg, Germany
- 10:30-11:00** Discussion
- 11:00-11:30** **Coffee break**
- 11:30-12:30** Total ozone measurements in 1973 - 2005 over the Northern Russia by the ground based stations. Analysis of processes forming the ozone spatial-temporal variations
Prof Igor Karol, Voeikov Main Geophysical Observatory, St. Petersburg, Russia
- 12:30-13:00** Discussion
- 13:00-14:00** **Lunch**
- 14:00-17:00** **Workshop 3** (including coffee break)

25 August, Friday

- 09:30-10:30** Polar Atmosphere Parameters Retrieval from Satellites
Prof Yuri Timofeev, St. Petersburg University, Russia
- 10:30-11:00** Discussion
- 11:00-11:30** **Coffee break**
- 11:30-12:30** Climate Forcing and Marine Ecosystems: a Contemporary Study Approach
Prof Dmitry Pozdnyakov, Nansen Centre, St. Petersburg, Russia
- 12:30-13:00** Discussion
- 13:00-14:00** **Lunch**
- 14:00-17:00** **Practical seminars** (including coffee break): *Evaluation of latest model results and near real-time satellite data by being connected to the Word Data Centre for Climate in Hamburg and having access to NASA's and ESA's environmental satellite sensors like MODIS, MERIS, SCIAMACHY, etc.*
- 17:15** **Adjourn**

Reputation of the School:

The establishment and holding of the suggested summer school have obtained support from the Committee of Science and Higher Education of the Administration of St. Petersburg, Ministry of Science and Education of the Russian Federation, and the European Climate Forum. Corresponding letters of support are obtained and can be mailed to INTAS, if required.

Also, it is noteworthy that the Nansen Centres in Bergen and St. Petersburg as well as the Max-Planck Institute for Meteorology in Hamburg, which are among the organizers of the Summer School, are the 2005 EU Descartes laureates, panel "Earth Science".

Organization:

The logistics of the Summer School organization will include a suite of activities such as a timely conclusion of agreements with the respective administrations for ensuring the participants board and lodging. Also agreements will be concluded with the ground transportation and tourist bureaus to properly arrange, respectively, ground transportation and two excursions for the participants. The implementation of these tasks will be assured by the organizing committee.

All the necessary technical support (computers, multi-media projectors, INTERNET connection, poster stands, etc) will be assured and the room for delivering lectures, seminars and workshops will be duly prepared. Coffee break catering service will equally be provided.

It is foreseen that the school results will be published on CDROMs and will be made available to all participants during the summer school session.

The International Advisory Committee will be convoked to discuss the session definitive programme, and formulate the guidelines for the lecturers to better focus on the school goals as well as to select the admitted participants and categorize their abstracts for oral and poster presentations. The selected participants will be informed in a timely fashion.

The Summer School announcement will be disseminated in time via e-mail using the large address database collected by the organizing institutions. The announcement will specify the summer school goals and programme as well as the major requirements to participants (forms to be filled in, formats of abstracts, offer of travel support for NIS and INTAS young scientists), a brief description of the Summer school location, board and housing conditions, etc.

The experience gained by NIERSC as the organizer of the 31st ISRSE and concomitant INTAS Strategic Workshop (Ref. nr. 04-86-821) in 2005 will significantly facilitate the organization and holding of the Summer School.

5 **Participants**

40 participating students and young scientists including 20 persons from all NIS countries, 17 persons from all INTAS member states and 3 persons from other countries.

The participants will be undergraduate students and young PhD scientists majoring in: a) high northern latitude climate studies, based on numerical modelling and satellite remote sensing, b) glaciology, c) oceanography, d) meteorology, e) marine ecosystems, and f) data processing and assimilation.

The expected number of NIS lecturers is 6.

The INTAS support is pivotal for realization of the project because without such a support it is hardly that any NIS participants (other than from St. Petersburg) will be able to cover the travel and accommodation costs.

The expected number of NIS and INTAS young students to be supported by the INTAS grant is 23 (20+3)

6 **Cost Information - Overall Budget**

Resources	Sum, Euro
Registration fee (100 Euro x 40 persons)	4 000
Own resources of organizers	6 800
Total:	10 800

Expenditures	Sum, Euro
Direct Costs	
Personnel incl. social tax	3 000
Transport	2 000
Excursions	1 800
Equipment*	-
Premises renting*	-
Consumables	600
Summer School materials on CD	400
Communications	700
Visa support	200
Translation	100
Indirect Costs	
Overheads	2 000
Total:	10 800

* Equipment and premises are provided by USPb

7 **Cost Information - INTAS supported costs**

Item	Costs, Euro
Registration fee -100 Euro x 23 persons	2300
Accommodation (for 23 students)	2000
Meals (3 times per day)	2500
Travel costs for NIS students (20 students)	4900
Travel cost for INTAS students (3 students)	1800
Overheads	1500
Total	15000

Note: From 15 000 Euro solicited from INTAS 3800 Euro cover the expenditures of organizers and 11200 Euro are the expenditures of participants