WORLD CLIMATE RESEARCH PROGRAMME

REPORT OF THE ACSYS FINAL SCIENCE CONFERENCE

"Progress in Understanding the Arctic Climate System: The ACSYS Decade and Beyond"

(St. Petersburg, Russia, 11-14 November 2003)

WCRP-120
WMO/TD No. 1249
September 2004

ICSU **IOC** **WMO**

The World Climate Programme launched by the World Meteorological Organization (WMO) includes four components:

The World Climate Data and Monitoring Programme
The World Climate Applications and Services Programme
The World Climate Impact Assessment and Response Strategies Programme
The World Climate Research Programme

The World Climate Research Programme is jointly sponsored by the WMO, the International Council for Science, and the Intergovernmental Oceanographic Commission of UNESCO.

NOTE

International Council for Science | World Meteorological Organization | International Oceanographic Commission

THE WORLD CLIMATE RESEARCH PROGRAMME

PROCEEDINGS OF THE ACSYS FINAL SCIENCE CONFERENCE

"Progress in Understanding the Arctic Climate System: The ACSYS Decade and Beyond"

(St. Petersburg, Russia, 11-14 November 2003)

September 2004

WCRP-120
WMO/TD No. 1249

Table of Contents

Foreword

As the World Climate Research Programme's (WCRP) Arctic Climate System Study (ACSYS) drew to a close, nearly 250 scientists attended the project's final conference at the Arctic and Antarctic Research Institute (AARI) of the Russian Federal Service for Hydrometeorology and Monitoring of the Environment (Roshydromet) in St Petersburg from 11-14 November 2003. This CD is the proceedings of that conference. It is part of a pair of CDs that mark the end of the ACSYS project by recording all its activities throughout the decade (reports, newsletters, and other publications), and by demonstrating the state of scientific knowledge on the Arctic climate system as presented at the conference.

This 'Proceedings' CD presents the brief formal report of the conference, including the programme and the list of participants. Also included is an electronic version of the 'Book of Abstracts', which was given to participants at the conference. In addition, as many as possible of the conference presentations – both oral and poster – were collected and are available on the CD for viewing and printing. Unfortunately, the large volume of material made it impossible to store high quality versions of all figures and posters. If higher quality versions are sought, the first approach should be to the author of the presentation, and if that fails, the International Project Office for ACSYS (now the CliC International Project Office (CIPO)) may be contacted at clic@npolar.no.

In addition to oral and poster presentations, the CD contains 'Extended Abstracts' of material presented at the conference. Due to the large number of submissions, these have not been refereed, and were subject to only a minimal amount of editing limited to the use of English language. The primary responsibility for content lies with the authors. That said, the lively discussions that took place at the conference provided an opportunity for authors to place their results in context and to take the views of other scientists into account when preparing their extended abstracts. The result is that there is a large amount of very good science in these abstracts (and the proceedings in general) and we hope that we have provided a useful service in bringing all these items together in one electronic publication.

The pair of CDs is provided free of charge to all conference participants and to other interested parties in the Arctic climate research and policy community. The content of both CDs is also accessible through the ACSYS web site at http://acsys.npolar.no, which will be maintained as a service under the WCRP's *Climate and Cryosphere (CliC)* project. This new project addresses the links between climate and the cryosphere globally, and will continue to focus attention on the Arctic as a vitally important part of the global climate system.

Chad Dick
Thierry Fichefet
Bernard Miville
Tordis Villinger

Progress in Understanding the Arctic Climate System

Introduction

The Arctic region is where numerical climate models generally predict the largest warming under the influence of increased greenhouse gas concentrations. It is also the area where discrepancies between predictions are greatest. Arctic processes seem crucial for maintaining the oceanic meridional overturning circulation (MOC), and some models suggest that global warming might freshen the Arctic Ocean and peripheral seas to the extent that this circulation collapses. If that happens, parts of the North Atlantic region might cool rather than warm over the next 100 years.

So, what are the global consequences of natural or human-induced changes in the Arctic climate system? Is the Arctic climate system really as sensitive to enhanced greenhouse gas concentrations as climate models suggest?

For the past 10 years, the World Climate Research Programme (WCRP) Arctic Climate System Study (ACSYS) worked to answer these questions through the development and coordination of national and international research activities on Arctic climate.

ACSYS consisted of five related programs. Four covered the main elements of the Arctic climate system: sea ice, ocean circulation, the atmosphere, and the hydrological cycle. The fifth program, numerical modelling, was aimed at simulating these components and their interactions to improve understanding of the Arctic influence on, and response to, changing climate.

When the decade-long project drew to a close at the end of 2003, nearly 250 scientists met to assess progress in understanding the Arctic climate system. The *Final ACSYS Science Conference* was held in St. Petersburg, Russia, at the Arctic and Antarctic Research Institute of the Russian Federal Service for Hydrometeorology and Monitoring of the Environment (Roshydromet) from 11-14 November 2003.

Meeting Summary

Aims and Themes

The conference aim was to summarize improvements in knowledge of the Arctic climate system during the ACSYS decade, drawing together advances in understanding of each of the elements of the Arctic climate system, and more particularly, of the interactions among them. The conference also sought to examine future research challenges for the Arctic climate system. To do this, it brought together observational scientists and modelers to provide a common forum for presenting results.

The conference was divided into four sessions addressing the following:

1) *The state of the Arctic climate system:* Improvements in knowledge of the Arctic climate system and its variability through historical data, ongoing measurements, and process studies.
2) *Observing the Arctic climate system:* Improvements in our ability to measure and observe aspects of the Arctic climate system and its processes across a range of spatial and temporal scales.
3) *Process studies and modelling:* Improvements in representation of atmospheric, cryospheric, oceanic, and terrestrial processes in models, including assimilation of observations into models.

4) *Interactions with the global climate system:* Improvements in understanding of the Arctic's role in the global climate system, its response to large-scale climate variations, and the processes involved.

Each session included keynote lectures and selected presentations from submitted abstracts.

In a final session, the chairmen of the four ACSYS panels made presentations on numerical modelling, observation products, data management and information, and polar products from re-analysis. This was followed by a panel discussion examining the question: What are the important gaps in our knowledge and what opportunities and initiatives exist to fill them?

More than 160 posters, displayed throughout the four-day meeting, complemented about 40 oral presentations.

Scientific Highlights

Talks and posters provided many scientific highlights, both in the presentation of new results and in synthesizing improved knowledge during the ACSYS decade.

In concert with the global trend, the Arctic experienced very strong warming during the last three decades. However, examining the entire last century period, variations in Arctic climate do not simply match global variations, suggesting a more complex relationship to global climate. This relationship remains the focus of ongoing study and debate.

No convincing evidence of significant slowdown of the Atlantic MOC has yet been found, but some evidence suggests that recent freshening of the sub-Arctic seas might not be a localized Atlantic event, but rather the strong local expression of a change in the global water cycle. Freshening has been observed in high latitudes of both the Atlantic and Pacific Oceans, while low latitude oceans seem to become more saline.

Satellite passive microwave data reveal that the Arctic sea ice extent has decreased approximately by 0.30×10^6 km^2 (that is, 2.5%) per decade since 1972. All months have negative trends, with September, the month of minimum ice extent, showing the largest decrease. The lowest levels were reached in September 2002 and 2003.

Arctic sea ice is reported to have thinned substantially over the last 20-40 years in most of the deep-water areas, especially during summertime. However, sea ice exhibits a pronounced interannual variability in thickness, making it difficult to interpret the spatially and temporally sparse record. This variability is reasonably well captured by current high-resolution sea ice-ocean models forced by the re-analysis of atmospheric data, but much work remains to fully understand the Arctic sea-ice mass balance and its influence on atmospheric and oceanic circulations. Recently launched, or impending, satellite systems offer the prospect of more comprehensive estimates of future ice thickness variability and change.

In 2002, the Greenland Ice Sheet experienced the most extensive melt since satellite observations began in 1980. A model study suggests that, by the end of this century, the greenhouse gas-induced increase in freshwater flux from this ice sheet might be sufficient to induce an abrupt weakening of the Atlantic MOC, with subsequent cooling over eastern Greenland and the northern North Atlantic.

River runoff into the Arctic Ocean has increased significantly during recent decades, and the length of the river ice season has diminished noticeably.

Proxy data point to a northward movement of the Arctic tree line since the late 1950s, particularly in northwestern Canada and eastern and coastal Siberia, while satellite-derived vegetation indices indicate a coincident "greening" of Alaska.

Taken together, these changes seem to indicate warming in the Arctic region during the last decades of the 20th century that perhaps was induced by increased greenhouse gas concentrations in the atmosphere. However, during the last decade, a picture also emerged of a climate system that is highly variable over a number of time scales – making it difficult to draw conclusions about the causes of climate changes within the Arctic system.

Gaps in Knowledge and Opportunities to Fill Them

Despite considerable progress in understanding during the ACSYS decade, there are still many gaps, but there are also many opportunities to address them. The conference discussion covered the areas of processes, observations, data, modelling, and, ultimately, prediction and predictability. Some highlights include:

The Arctic climate feedback mechanisms remain relatively poorly known particularly for the negative feedbacks. The associated spatial and temporal scales are connected with the feedback "carriers"; for example, sea ice, snow, clouds, etc., giving a complex range of possible climate cycles. Important issues are the extent and fidelity of model representation of these feedbacks.

The existing Arctic observing systems were generally established to help guide weather forecasting and water resource management rather than to monitor climate and environmental changes. Although satellite observing systems have made remarkable advances, many aspects of the Arctic climate system remain inaccessible to space-borne instruments. Hence there is still a strong need for coordinated and dedicated international efforts to improve the Arctic climate observing system, using both in-situ and remote-sensing techniques. Current examples include developing under-ice technology to supplement the 'Argo' float ocean observations, and the long-term support ice camps such as the North Pole Environmental Observatory. The Earth Observation Summit (31 July 2003, Washington, DC, USA) and subsequent formation of the Group on Earth Observations provide opportunities to start the development of enhanced observing systems.

The ACSYS project provided a valuable legacy of data sets vital to the study of Arctic climate and processes. The challenge is to foster future international collaboration, using tools such as the World Wide Web to facilitate data sharing through international archives and networks.

Despite improvements in the ability of climate models to reproduce many features of the observed climate and its variability, numerous uncertainties remain. Simple models may be used to provide fundamental insight into climate processes, but these must be utilized with caution to avoid misleading oversimplifications. The use of objective analysis of observations, data assimilation in models and reanalysis efforts have been very successful in improving the data sets for atmospheric climate research, and this should now be pursued more vigorously for both the ocean and the cryosphere. In addition, models should be used to assist in the development and deployment of observing systems or design of field campaigns.

Arctic climate predictability is still not well characterized and should be given elevated importance as part of the developing WCRP Coordinated Observations and Prediction of the Earth System initiative.

WCRP has established a new core project to address the ongoing issues that concerned ACSYS. The Climate and Cryosphere (CliC) project will study the climate system in all cryospheric regions (i.e., where "water exists on the Earth's surface in solid form"). This includes the Arctic, Antarctic, and other cold regions worldwide. As CliC develops, one of its major challenges is to ensure good

communication among the international cryospheric science community. We must learn to share our data and to apply understanding from one region to the problems of another, and to balance this with investigations that continue to improve our knowledge of the unique Arctic environment

Acknowledgments

The conference was supported by the Arctic and Antarctic Research Institute of Roshydromet, the European Science Foundation - Standing Committee on Life and Environmental Sciences, the International ACSYS/CliC Project Office, the Norwegian Polar Institute, and WCRP.

Authors

Thierry Fichefet, Université Catholique de Louvain, Belgium; Chad Dick, Polar Environmental Centre, Tromsø, Norway; Greg Flato, Canadian Centre for Climate Modelling and Analysis, Victoria, BC, Canada; Douglas Kane, University of Alaska, Fairbanks, USA; and Jim Moore, University Corporation for Atmospheric Research, Joint Office for Science Support, Boulder Colorado, USA.

Appendices

Final Programme		
ACSYS Final Science Conference - The ACSYS Decade and Beyond		
St. Petersburg, Russia, 11-14 November 2003		
Day 1 - Tuesday, 11 November 2003		
08:00-09:00	**Registration**	
09:00-09:20	Welcome, introduction and local arrangements	Frolov (Rus), Fichefet (Bel), Priamikov (Rus)
	Introduction	**Chair: Timokhov (Rus)**
09:20-09:40	The Origins of ACSYS	Savtchenko (WCRP, Ret.)
09:40-10:15	ACSYS, the Cryosphere, and the WCRP	Lemke (Ger)
Session 1	**Theme: The State of the Arctic Climate System**	
10:15-10:50	A decade of change in our perspectives on Arctic sea Ice	Rothrock (USA)
		Chair: Colony (USA)
11:20-11:40	Historical variability of sea ice in the Nordic Seas	Divine (Nor)
11:40-12:15	The Arctic Ocean in the 1990s - advective challenges and internal response	Rudels (Fin)
12:15-12:35	Multi-year and seasonal variability of the Arctic Ocean freshwater budget	Timokhov (Rus)
		Chair: Oelke (USA)
14:00-14:20	Arctic Ocean salinity anomalies in response to AO-like atmospheric forcing	Houssais (Fra)
14:20-14:55	Hydrology and water resources within the Arctic Ocean Drainage Area	Shiklomanov (Rus)
14:55-15:15	On the factors controlling the surface and air temperatures over the Arctic sea ice in winter	Pirazzini (Fin)
15:15-15:35	Detecting Arctic climate change using Köppen climate classification	Wang (USA)
16:05-17:30	**Poster introductions**	**Chair: Steffen (USA)**
17:30-18:30	**Poster session**	
18:30-20:00	**Buffet plus poster session continued**	
20:00	**Close**	

Appendix 1 - Agenda

Day 2 - Wednesday, 12 November 2003		
Session 2	**Theme: Observing the Arctic Climate System**	**Chair: Wilson (Can)**
09:00-09:35	Historical, Seasonal and Regional Arctic Temperature Change	Overland (USA)
09:35-09:55	Observations, simulations and scale interactions of the stable boundary layer over polar ice sheets	Heinemann (Ger)
09:55-10:30	The Arctic hydrological cycle	Rudolf (Ger)
		Chair: Ananicheva (Rus)
11:00-11:20	Snow pack variability from satellite passive microwave data	Grippa (Fra)
11:20-11:55	Arctic Ocean observations and their outcomes over the ACSYS-Decade	Takizawa (Jap)
11:55-12:30	Formation and circulation of waters in the Arctic Ocean evaluated by chemical tracers	Anderson (Swe)
		Chair: Dethloff (Ger)
14:00-14:20	The East-Siberian sea hydrography as an indication of atmospheric circulation over the Arctic Ocean	Dmitrenko (USA)
14:20-14:40	Distribution and pathways of Atlantic Water in the Greenland Sea	Walczowski (Pol)
14:40-15:15	The thickness of Arctic pack ice - advances and challenges	Melling (Can)
15:15-15:35	Refinement of the Seawinds/QuikScat sea ice edge	Haarpaintner (Nor)
		Chair: Anisimov (Rus)
17:00-17:35	Remote sensing observations of the Arctic climate system	Drinkwater (Neth)
17:35-17:55	Arctic Ocean sea ice cover from small-scale sea ice motion: Dispelled notions and new paradigms	Kwok (USA)
Session 1 contd.	**Theme: The State of the Arctic Climate System**	
17:55-18:30	Arctic Climate Change - observed and modelled temperature and sea-ice variability	Johannessen (Nor)
18:30	**Close**	

Day 3 - Thursday, 13 November 2003		
Session 3	**Theme: Process studies and modelling**	**Chair: Quadfasel (Ger)**
09:00-09:35	Ocean Convection in Arctic Shelf Polynyas	Schauer (Ger)
09:35-09:55	The Arctic inversion over sea ice and its representation in operational weather models	Bruemmer (Ger)
09:55-10:30	Modeling the Arctic climate with global coupled models	Bitz (USA)
		Chair: Bamber (UK)
11:00-11:35	High resolution modeling of the Arctic Ocean: A decade of progress	Maslowski (USA)
11:35-12:10	Data assimilation in coupled ice-ocean modelling	Lisæter (Nor)
12:10-12:30	Characteristics of snowmelt runoff in the Mogot experiment watershed, in the southern mountainous taiga of eastern Siberia	Suzuki (Jap)
		Chair: Khromova (Rus)
14:00-14:20	Application of the Canadian land surface scheme to modelling the Mackenzie river basin	Verseghy (Can)
14:20-14:40	Effects of surface heterogeneity on the atmosphere over polar oceans	Vihma (Fin)
14:40-15:00	Recent advances in our understanding of polar lows	Turner (UK)
Session 4	**Theme: Interactions with the Global Climate System**	
15:00-15:35	Arctic climate variability	Alekseev (Rus)
		Chair: Isaksson (Nor)
17:00-17:35	Processes of Arctic-global ocean interactions	McClimans (Nor)
17:35-17:55	The Iceland-Faroe inflow of Atlantic water to the Nordic Seas and Arctic Ocean	Østerhus (Nor)
17:55-18:30	Observational evidence for Arctic/global ocean interactions at large space-time scales	Dickson (UK)
18:30	**Close**	

Appendix 1 - Agenda

Day 4 - Friday, 14 November 2003		
Session 4 contd.	**Theme: Interactions with the Global Climate System**	**Chair: Boscolo (Spa)**
09:00-09:20	ENSO signature in North European time series of ice conditions detected by singular spectrum analysis and wavelet transformed	Grinsted (Fin)
09:20-09:40	Multi-decadal variability in a long integration with the MPI-OM1 ocean model	Schmith (Den)
09:40-10:00	Evaluation of snow cover and permafrost in Northern Eurasia for some climate change scenarios	Shmakin (Rus)
10:00-10:	Arctic climate in the 21st century	Cattle (UK)
Session 5	**ACSYS legacy**	**Chair: Fichefet (Bel)**
11:05-11:30	Improvements in Numerical Modelling During the ACSYS Decade	Flato (Can)
11:30-11:55	Improvements in Satellite and In-Situ Observations During the ACSYS Decade	Steffen (USA)
11:55-12:20	Data Management and Information Support for the Arctic Climate Systems Study	Moore (USA)
12:20-12:45	ACSYS Polar Products from Reanalysis	Serreze (USA)
Session 5 contd.	**Gaps in knowledge, opportunities and initiatives**	**Chair: Goodison (Can)**
14:00-16:00	Panel discussion	Members: Colony (USA) Gascard (Fra) Groisman (USA) Laxon (UK) Mauer (Ger) Ohmura (Swi) Yakovlev (Rus)
16:00	**Closing remarks**	
	Fichefet (Bel), Frolov (Rus)	

List of Participants

Adalgeirsdottir, Gudfinna
Science Institute
University of Iceland
Dunhaga 3I
S-107 Reykjavik
Iceland
Tel: +354 525 5863
Fax: +354 552 1347
tolly@raunvis.hi.is

Alduchov, Oleg
All Russian Research Institute of
Hydrometeorological
World Data Center
Korolev st. 6
Obninsk, Russia
Tel: +7 (08439) 74690
Fax: +7 (095) 2552225
aoa@meteo.ru

Alekseev, Genrikh
Arctic & Antarctic Research Institute
Bering str., 38
199397 St.Petersburg
Russia
Tel: +7 812 352 1911
Fax: +7 812 352 2688
alexgv@aari.nw.ru

Alexeev, Vladimir
International Arctic Research Center
930 Kouykuk dr.
PO Box 757340
University of Alaska Fairbanks
Fairbanks, AK 99775-7340
USA
Tel: +1(907)474-6430
Fax: +1(907)474-1578
valexeev@iarc.uaf.edu

Allison, Ian
Australian Antarctic Division
Private Bag 80
Hobart
Tasmania 7001
Australia
Tel: +61 3 6226 7648
Fax: +61 3 6226 7650
ian.allison@aad.gov.au

Alverson, Keith
IGBP-PAGES - Past Global Changes
PAGES IPO
Sulgeneckstr. 38
CH-3007 Bern, Switzerland
Tel: +41 31 312 3133
Fax: +41 31 312 3168
alverson@pages.unibe.ch

Ananicheva, Maria
Institute of geography
Russian Academy of Sciences
Staromonetny per. 29
Moscow 109017
Russia
Tel: +7 (095) 4150473
Fax: +7 (095) 9590033
cest@online.ru

Anderson, Leif
Chalmers University of Technology
Department of Chemistry
Analytical and Marine Chemistry
SE-412 96 Göteborg
Sweden
Tel: +46 31 772 27 74
Fax: +46 31 772 27 85
leif@amc.gu.se

Anisimov, Oleg
State Hydrological Institute
23, Second Line V.O.
199053 St.Petersburg
Russia
Tel: +7 812 323-35-17
Fax: +7 812 323-10-28
oleg@oa7661.spb.edu

Atkinson, David
Bedford Institute of Oceanography
1 Challenger Drive
Dartmouth NS B2Y 4A2
Canada
Tel: +1 902 426-0652
Fax: +1 902 426-4104
datkinso@nrcan.gc.ca

Bamber, Jonathan
Univesity Bristol
School of Geographical Sciences
University Rd
Bristol, BS8 1SS
United Kingdom
Tel: 44 117 928 9000
Fax: N/A
j.l.bamber@bristol.ac.uk

Barry, Roger G.
NSIDC/CIRES
University of Colorado
UCB 449
Boulder, CO 80309
USA
Tel: +1-303-492-5488
Fax: +1-303-492-2468
rbarry@kryos.colorado.edu

Bekryaev, Roman
St.-Petersburg State University
Arctic & Antarctic Research Institute
38 Bering Street
199397 St.-Petersburg, Russia
Russia
Tel: +7 812 352-33-52
Fax: +7 812 352-26-88
vivanv@aari.nw.ru

Bessonov, Vladimir
Arctic & Antarctic Research Institute
38, Bering Str.
199397 St. Petersburg
Russia
Tel: +7 812 352-2014
Fax: +7 812 352-2688
vladimirb@aari.nw.ru

Beszczynska-Möller, Agnieszka
Alfred Wegener Institute
Bussestrasse 24D-27570 Bremerhaven
Germany
Tel: +49(471)4831-1859
Fax: +49(471)4831-1149
abeszczynska@awi-bremerhaven.de

Bitz, Cecilia
Polar Science Center
University of Washington
Seattle, WA 98105
USA
Tel: +1 206-543-1339
Fax: +1 206-616-3142
bitz@apl.washington.edu

Bobylev, Leonid
Nansen International Environmental and Remote Sensing Center
Bolshaya Monetnaya str., 26/28
197101 St. Petersburg
Russia
Tel: +7 812-234-3924
Fax: +7 812-234-3865
leonid.bobylev@niersc.spb.ru

Bogdanova, Esfir
Voeikov Main Geophisical Observatory
7 Karbysheva st.
195021 St. Petersburg
Russia
Tel: +7 812 247-64-43
Fax: N/A
bilyin@main.mgo.rssi.ru

Bogorodsky, Peter
Arctic & Antarctic Research Institute
38 Bering Str.,
199397 St.Petersburg
Russia
Tel: +7 812 352-3352
Fax: +7 812 352-2688
bogorodsky@aari.nw.ru

Boscolo, Roberta
ASOF Project Office
Eduardo Cabello 636208 Vigo
Spain
Tel:
Fax:
rbos@iim.csic.es

Bozhkov, Alexey
Arctic & Antarctic Research Institute
38 Bering Street
199397 St. Petersburg
Russia
Tel: +7 8123521933
Fax: +7 8123522688
bat@aari.nw.ru

Bruemmer, Burghard
Meteorological Institute
University of Hamburg
Bundesstrasse 55
D-20146 Hamburg
Germany
Tel: +49-40-42838-5083
Fax: +49-40-42838-5452
bruemmer@dkrz.de

Calder, John
NOAA Arctic Research Office
1315 East West Highway
R/ARC Room 11362
Silver Spring, Maryland
20910
USA
Tel: +1-301-713-2518, ext. 146
Fax: +1-301-713-2519
John.Calder@noaa.gov

Carson, David
World Climate Research Programme
7bis, Avenue de la Paix, CP2300
CH-1211 Geneva 2
Switzerland
Tel: + 41 22 7308246
Fax: + 41 22 7308036
carson_d@gateway.wmo.ch

Cattle, Howard
International CLIVAR Project Office
Southampton Oceanography Centre
University of Southampton
Empress Dock
Southampton SO14 3ZH
United Kingdom
Tel: +44 02380 596208
Fax: +44 02380 596204
hyc@soc.soton.ac.uk

Chernykh, Irina
All Russian Research Institute of
Hydrometeorological
Word Data Center
Obninsk, Korolev st., 6
Russia
Tel: (08439) 74985
Fax: (095) 2552225
civ@meteo.ru

Chetyrbotsky, Alexander, N.
Russian Academy of Sciences
Far East geological institute DVO of the
Russian Academy of Sciences
Vladivostok, Baltyskaya , 960041
Russia
Tel: N/A
Fax: N/A
chetyrbotsky@fegi.ru

Chevnina, Elena
Arctic & Antarctic Research Institute
Bering str. 38
199397, St. Petersburg
Russia
Tel: (007) 812 352 19 33
Fax: (007) 812 352 26 86
aqua@aari.nw.ru

Colony, Roger
IARC/Frontier
University of Alaska Fairbanks
PO Box 757335
Fairbanks AK 99775
USA
Tel: (1) 907 474 5115
Fax: (1) 907 474 2643
rcolony@iarc.uaf.edu

Crane, Kathleen
NOAA
Arctic Research Office
1315 East West Highway
Silver Spring, MD 20910
USA
Tel: +1 301 713 2518 , Ext 147
Fax: +1 301 713 2159
kathy.crane@noaa.gov

Danilov, Alexander
Arctic & Antarctic Research Institute
38 Bering str.,
199397 St. Petersburg
Russia
Tel: (812) 352 1557
Fax: (812) 352 1557
aid@aari.nw.ru

Dethloff, Klaus
AWI Potsdam
Telegrafenberg A43
D-14473 Potsdam
Germany
Tel: ++49-331-288-2104
Fax: ++49-331-288-2178
dethloff@awi-potsdam.de

Demchenko, Pavel
A.M.Obukhov Institute of Atmospheric Physics RAS
3 Pyzhevsky
119017 Moscow
Russia
Tel: +7(095) 9515387
Fax: +7(095) 9531652
pasha@ifaran.ru

Devyatayev, Oleg
Arctic & Antarctic Research Institute
38, Bering str.
199397 St. Petersburg
Russia
Tel: +7 812 352-2014
Fax: +7 812 352-2688
osd@aari.nw.ru

Denisenko, Nina
Russian Academy of Science
Zoological Institute
University amb.,
1199034 St. Petersburg
Russia
Tel: +7 812 328 11 13
Fax: +7 812 114 04 44
denist@rol.ru

Dick, Chad
International ACSYS/CliC Project Office
Polar Environmental Centre
NO-9296 Tromso
Norway
Tel: +47 77 75 01 45
Fax: +47 77 75 05 01
chad@npolar.no

Denisenko, Stanislav
Zoological Institute of the Russian Academy of Science
University amb.
1199034 St. Petersburg
Russia
Tel: +7 812 328 13 11
Fax: +7 812 114 04 44
dest@zin.ru

Dickson, Robert
CEFAS
Pakefield Road
Lowestoft
Suffolk, NR33 0HT
United Kingdom
Tel: (44)-1502-524282
Fax: (44)-1502-513865
r.r.dickson@cefas.co.uk

Denisov, Dmitrii
Institute of North Industrial Ecologycal Problems, KSC RAN
14, Fersman str., Apatity, Murmansk reg.,
Russia, 184200
Russia
Tel: +7(81555)79776
Fax: +7(81555)76425
denisow@inep.ksc.ru

Divine, Dmitri
Norwegian Polar Institute
The Polar Environmental Centre
NO-9296 Tromsø, Norway
Tel: +47 77750558
Fax: +47 77750501
dmitry.divine@npolar.no

Dmitrenko, Igor
International Arctic Research Center, University of Alaska Fairbanks
930 Koyukuk Drive
P.O. Box 757335
Fairbanks, AK 99775-7335
USA
Tel: 1 (907) 474-1139
Fax: 1 (907) 474-2643
igordm@iarc.uaf.edu

Dmitriev, Victor
Arctic & Antarctic Research Institute
38 Bering str.,
199397 St. Petersburg
Russia
Tel: (812) 352 3021
Fax: (812) 352 1557
v_dmitriev@aari.nw.ru

Domanov, Mikhail
P.P.Shirshov Institute of Oceannology RAN
Nakhimovsky prospekt 36
Moscow 117997
Russia
Tel: 7 095 1245974
Fax: 7 095 1245983
domanov@sio.rssi.ru

Dorn, Wolfgang
Alfred Wegener Institute for Polar and Marine Research
Telegrafenberg A43
D-14473 Potsdam
Germany
Tel: +49-331-288-2164
Fax: +49-331-288-2178
wdorn@awi-potsdam.de

Drüe, Clemens
Meteorologisches Institut der Universität Bonn
Auf dem Hügel 20
D-53121 Bonn
Germany
Tel: +49-228-73-5107
Fax: +49-228-73-5188
clemens@uni-bonn.de

Dudarev, Oleg Viktorovich
Pacific Oceanological Institute of FEB RAS
43, Baltiyskaya str.
690041 Vladivostok
Russia
Tel: +7 4232 312599
Fax: +7 4232 312573
dudarev@poi.dvo.ru

Egorov, Alexander
Arctic & Antarctic Research Institute
38 Bering str.
St. Petersburg, 199397
Russia
Tel: (812) 352 2146
Fax:
ego@aari.nw.ru

Fahrbach, Eberhard
Alfred Wegener Institute for Polar and Marine Research
Columbusstrasse, 27568 Bremerhaven
Germany
Tel: 0049-471-4831-1820
Fax: 0049-471-4831-1797
efahrbach@awi-bremerhaven.de

Drinkwater, Mark
ESTEC Earth Science Division
(APP-FSO)
Keplerlaan 1, Postbus 299
NL-2201 AZ Nordwijk ZH
Netherlands
Tel: +31 71 565 4514
Fax: +31 71 565 5675
mark.drinkwater@esa.int

Fichefet, Thierry
Institut d`astronomie et de géophysique Georges Lemaître
Chemin du Cyclotron, 2
B-1348 Louvain-la-Neuve
Belgium
Tel: +32-10-473295
Fax: +32-10-474722
fichefet@astr.ucl.ac.be

Flato, Gregory M.
Canadian Centre for Climate
Modelling and Analysis
Meteorological Service of Canada
c/o University of Victoria
PO Box 1700
Victoria, BC, V8W 2Y2
Canada
Tel: 1-250-363-8233
Fax: 1-250-363-8247
greg.flato@ec.gc.ca

Forland, Eirik
Norwegian Meteorological Institute
P.O.Box 43 Blindern
N-0313 Oslo
Norway
Tel: (+47) 22963381
Fax: (+47) 22963050
e.forland@met.no

Farrell, Sinead
Centre for Polar Observation and
Modelling,
Pearson Building,
University College London,
Gower St., London.
WC1E 6BT
United Kingdom
Tel: 0044 20 76797378
Fax: 0044 20 76797883
s.farrell@ucl.ac.uk

Garmanov, Arkady
Arctic & Antarctic Research Institute
38 Bering Street
199397 St. Petersburg
Russia
Tel: +7 812 352-31-49
Fax:
lagg@yandex.ru

Gascard, Jean Claude
University P et M Curie/ LODYC
4 PLACE JUSSIEU
75252 Paris cedex 05
France
Tel: 33 1 44 27 7070
Fax: 33 1 44 27 3805
gascard@lodyc.jussieu.fr

Georgiadi, Alexander
Russian Academy of Sciences Institute of Geography
Staromonetny per., 291
19017 Moscow
Russia
Tel: (095) 1290474
Fax: (095) 9590033
galex@online.ru

Fransson, Agneta
National Institute for
Environmental Studies
Climate Change Research Project
16-2 Onogawa, Tsukuba,
Ibaraki 305-8506
Japan
Tel: +81-29-850-2678
Fax: +81-29-851-4732
agneta.fransson@nies.go.jp

Frolov, Ivan
Arctic & Antarctic Research Institute
38 Bering str.,
St. Petersburg, 199397
Russia
Tel: (812) 352 1520
Fax: (812) 352 2688
frolov@aari.nw.ru

Glazovsky, Andrey
Institute of Geography
Russian Academy of Sciences
Staromonetny, 29,
109017 Moscow, Russia
Russia
Tel: (095)125-90-11
Fax: (095)959-00-33
glazovsk@gol.ru

Golovanov, Oleg
Arctic & Antarctic Research Institute
38 Bering str.,
199397 St.Petersburg
Russia
Tel: (812) 352 1933
Fax: (812) 352 2688
hydrology2@aari.nw.ru

Gerasimova, Tatyana
Arctic & Antarctic Research Institute
38 Bering str.,
St. Petersburg, 199397
Russia
Tel: (812) 352 1673
Fax: (812) 352 2688
gtm@aari.nw.ru

Gerland, Sebastian
Norwegian Polar Institute
The Polar Environmental Centre
NO-9296 Tromsø
Norway
Tel: +47 77750500
Fax: +47 77750 501
s.gerland@npolar.no

Greenberg, Steven
Penn State University
503 Walker Building
University Park, PA 16802
USA
Tel: 8148659026
Fax:
stegreen@psu.edu

Grinsted, Aslak
Arctic Centre
Box 122
FI-96101 Rovaniemi
Finland
Tel: +358 16 341 2767
Fax: +358 16 341 2777
ag@glaciology.net

Golovin, Pavel
Arctic & Antarctic Research Institute
Bering str. 38
199397 St.-Petersburg
Russia
Tel: +7 812 3521911
Fax: +7 812 3522688
vivanv@aari.nw.ru

Goodison, Barry
Meteorological Service of Canada
Climate Research Branch
4905 Dufferin st.
Downsview, Ontario
M3H 5T4
Canada
Tel: +1(416) 739-4345
Fax: +1(416) 739-5700
barry.goodison@ec.gc.ca

Gorodetskaya, Irina
Lamont-Doherty Earth Observatory of Columbia University
106E Oceanography
61 Route 9W
Palisades, NY 10964-8000
USA
Tel: +1 (845) 365-8708
Fax: +1 (845) 365-8736
irina@ldeo.columbia.edu

Gusev, Alexey
EMEP/MSC-E
Ul. Arhitektor Vlasov, 51
117393, Moscow
Russia
Tel: +7 095 128 96 21
Fax: +7 095 125 24 09
alexey.gusev@msceast.org

Grippa, Manuela
CESBIO
18, Av. Edouard Belin
bpi 280131401
TOULOUSE Cedex 09
France
Tel: +33(0)561558584
Fax: +33(0)561558500
manuela.grippa@cesbio.cnes.fr

Groisman, Pavel
U.S. National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, NC 28801
USA
Tel: +1 828-271-4347
Fax: +1 828-271-4328
Pasha.Groisman@noaa.gov

Gudkovich, Zalman
Arctic & Antarctic Research Institute
38 Bering Street
199397 St. Petersburg
Russia
Tel: +7 (812) 352-21-46
Fax: +7 812 3521911
aaricoop@aari.nw.ru

Hanssen-Bauer, Inger
Norwegian Meteorological Institute
P.O.Box 43 Blindern
NO-0313 Oslo
Norway
Norway
Tel: +47 22 96 33 82
Fax: +47 22 96 30 50
i.hanssen-bauer@met.no

Haarpaintner, Joerg
Norwegian Meteorological Institute
Vervarslinga for Nord Norge
Postboks 6314
N-9293 Tromsoe
Norway
Tel: +47 776 84 044
Fax: +47 776 89 003
j.haarpaintner@web.de

Haas, Christian
Alfred Wegener Institute
Bussestrasse 24
DE-27570 Bremerhaven
Germany
Tel: +49-471-4831-1128
Fax: +49-471-4831-1797
chaas@awi-bremerhaven.de

Hagenbrock, Reinhard
University of Bonn
Auf dem Huegel 20
53121 Bonn
Germany
Tel: +49-228-735195
Fax: +49-228-735188
r.hagenbrock@uni-bonn.de

Hansen, Edmond
Norwegian Polar Institute
Polar Environmental Center
9296 Tromso
Norway
Tel: +47 75 05 36
Fax: +47 77 75 01
edmond.hansen@npolar.no

Houssais, Marie-Noelle
LODYC-Universite Paris 6
Tour 15
Boite 1004 place Jussieu
FR-75252 paris cedex 05
France
Tel: 33 1 44 27 61 02
Fax: 33 1 44 27 38 05
mnh@lodyc.jussieu.fr

Heinemann, Günther
Meteorologisches Institut
Universität Bonn
Auf dem Hügel 20
DE-53121 Bonn
Germany
Tel: +49-228-735102
Fax: +49-228-735188
gheinemann@uni-bonn.de

Heino, Raino
Finnish Meteorological Institute
P.O.Box 503
FIN-00101 Helsinki
Finland
Tel: +358-9-1929 4120
Fax: +358-9-1929 4129
raino.heino@fmi.fi

Herbaut, Christophe
LODYC- Universite Paris 6
Tour 15
Boite 1004, place Jussieu
FR-75252 Paris Cedex 05
France
Tel: 33 1 44 27 41 59
Fax: 33 1 44 27 38 05
ch@lodyc.jussieu.fr

Hirashima, Hiroyuki
Institute of Low Temperature Science,
Hokkaido University
North 19 West 8, Kita-Ku
Sapporo-Shi, Hokkaido
Japan
Tel: +81-11-706-7442
Fax: +81-11-706-7142
hirashi@hucc.hokudai.ac.jp

Ivanov, Vladimir
Arctic & Antarctic Research Institute
Bering street, 38
199397 Saint Petersburg
Russia
Tel: +7 (812) 352-03-31
Fax: +7 (812) 352-33-89
ivanov@aari.nw.ru

Ilyashuk, Elena
Institute of North Industrial Ecology Problems
14 Fersman St.
Apatity, Murmansk region
184200
Russia
Tel: +7 (81555) 79774
Fax: +7 (81555) 74964
Elena.ilyashuk@inep.ksc.ru

Ilyin, Boris
Voeikov Main Geophisical Observatory
7 Karbysheva st.,
St. Petersburg, 195021
Russia
Tel: +7 812 247-64-43
Fax: N/A
bilyin@main.mgo.rssi.ru

Isaksson, Elisabeth
Norwegian Polar Institute
Polar Environmental Centre
N-9296 Tromsø
Norway
Tel: +47 77750515
Fax: +47 77750501
elli@npolar.no

Itoh, Motoyo
Japan Marine Science and Technology Center (JAMSTEC)
2-15 Natsushima
Yokosuka 237-0061
Japan
Tel: +81-468-67-9488
Fax: +81-428-67-9455
motoyo@jamstec.go.jp

Jumpei, Kubota
Research Institute for Humanity and Nature
335, Takashima-cho, Kamigyou-ku, Kyoto 602-0878
Japan
Tel: +81-75-229-6171
Fax: +81-75-229-6150
jkubota@chikyu.ac.jp

Ivanov, Vladimir
Institute of Marine Studies, University of Plymouth
Drake Circus
Plymouth
Devon PL4 8AA
United Kingdom
Tel: +44-(0)1752-232459
Fax: +44-(0)1752-232406
vivanov@plymouth.ac.uk

Johannessen, Ola Mathias
Nansen Environmental and Remote Sensing Center
Edvard Griegesvei 3a
NO-5059 Bergen
Norway
Tel: +47 55 20 58 00
Fax: +47 55 20 58 01
ola.johannessen@nersc.no

Johnston, Merrick
Dartmouth College
3431 HB
Hanover, NH 03755
USA
Tel: +907-346-1087
Fax: +907-346-1356
merrick@dartmouth.edu

Jones, Edward Peter
Ocean Sciences Division
Department of Fisheries and Oceans
Bedford Institute of Oceanography
PO Box 1006
Dartmouth NS B2Y 4A2
Canada
Tel: +1 902 426 3869
Fax: +1 902 426 7827
jonesp@mar.dfo-mpo.gc.ca

Keskitalo, E. Carina H.
Department of Social Studies, University of Lapland
P O Box 122
FIN-961 01 Rovaniemi
Finland
Tel: +358-16-3412 901
Fax: +358-16-3412 600
Carina.Keskitalo@urova.fi

Kaltin, Staffan
Göteborg University
Kemivägen 10412
96 Göteborg
Sweden
Tel: 46-31-7722288
Fax:
kaltin@amc.gu.se

Kane, Douglas
University of Alaska Fairbanks
Institute of Northern Engineering
537 Duckering Building
Fairbanks, AK 99775
USA
Tel: 907-474-7808
Fax: 907-474-6686
ffdlk@uaf.edu

Kang, Jiancheng
Polar Research Institute of China
451 Jin-Qiao Road, Pudong
Shanghai 200129
China
Tel: +86-21-58713264
Fax: +86-21-58711663 kangjc@sh163.net

Karpiy, Valery
Arctic & Antarctic Research Institute
38, Bering str.
199397 St. Petersburg
Russia
Tel: +7 812 352-3159
Fax: +7 812 352-2688
svt@aari.nw.ru

Kochetov, Sergey
Arctic & Antarctic Research Institute
38 Bering Street
199397 St. Petersburg
Russia
Tel: +7 812 352-31-49
Fax: N/A

Khromova, Tatiana
Institute of Geography Russian Academy of Sciences
Staromonetny, 29
Moscow, Russia
Tel: (095) 9590032
Fax: (095) 9590033
tkhromova@hotmail.com

Khvorostovsky, Kirill
Scientific Foundation "Nansen International Environmental and Remote Sensing Centre"
Bolshaya Monetnaya str. 26/28
St. Petersburg, 197101
Russia
Tel: + +7 812 234 39 24
Fax: +7 812 234 38 65
Kirill.Khvorostovsky@niersc.spb.ru

Kikuchi, Takashi
Japan Marine Science and Technology Center
2-15, Natsushima-cho, Yokosuka,
Kanagawa, 237-0061
Japan
Tel: +81-46-867-9486
Fax: +81-46-867-9455
takashik@jamstec.go.jp

Kitaev, Lev
Institute of Geography, Russian Academy of Sciences
Staromonetniy per.29
109017 Moscow
Russia
Tel: +7(095)4133678
Fax: +7(095)9590033
lkitaev@online.ru

Korablev, Alexander
Arctic & Antarctic Research Institute
38 Bering str.
199397 St. Petersburg
Russia
Tel: +7 812 3523352
Fax: +7 812 3522688
aakor@aari.nw.ru

Koltyshev, Alexey
Arctic & Antarctic Research Institute
38 Bering Street
199397 St. Petersburg
Russia
Tel: +7 812 352-31-49
Fax: N/A
alkolt@yandex.ru

Korneev, Oleg
Regional Geoecologic Monitoring Center
36, Rosenstein Str.
St. Petersburg, 198095
Russia
Tel: +7 812-252-21-12
Fax: + 812-252-44-16
korneev@sevmorgeo.com

Komchatov, Vladimir
State Oceanographic Institute
Kropotkinckiy per. 6
119034, Moscow
Russia
Tel: +7(095)2467288
Fax: +7(095)2467288
adm@soi.msk.ru

Kotlyakov, Vladimir
Institute of Geography Russian Academy of Sciences
Staromonetny, 29
Moscow
Russia
Tel: +7(095) 9590032
Fax: +7(095) 9590033
igras@igras.geonet.ru

Kondratyev, Kirill Ya.
Research Centre for Ecological Safety
Russian Academy of Sciences
Korpusnaya St. 18
197110 St. Petersburg
Russia
Tel: +7 812 230 7837
Fax: +7 812 322-2967
kondratyev@KK5486.spb.edu

Kouraev, Alexei
CESBIO/SOI/NIERSC
CESBIO, BPI 2801
18, avenue Ed. Belin,
FR-31401 Toulouse CEDEX 9
France
Tel: +33 (0)5 61 55 85 17
Fax: N/A
kouraev@cesbio.cnes.fr

Kononova, Nina
Russian Academy of Science
29 Staromonetny per
109017 Moscow
Russia
Tel: +7-095 9590033
Fax: +7-095 9590033
yurbor@yandex.ru

Krenke, Alexander N.
Institute of Geography
Russian Academy of Sciences
29 Staromonetny per
Moscow 109017
Russia
Tel: +7 095 129 0474
Fax: +7 095 959 0033
climate@igras.geonet.ru

Krishfield, Richard
Woods Hole Oceanographic Institution
Clark 128, MS 23
Woods Hole, MA 02543-1541
USA
Tel: +1 508-289-2849
Fax: +1 508-457-2175
rkrishfield@whoi.edu

Lagovkina, Svetlana
Main Geophysical Observatory
7 Karbyshev street
Saint-Petersburg 194021
Russia
Tel: +7 8122478668
Fax: +7 8122478661
svetlana@main.mgo.rssi.ru

Krivolutsky, Alexei
Central Aerological Observatory
Pervomayskaya Str. 3
Dolgoprudny
141700, Moscow Region
Russia
Tel: +7-095-433-6656
Fax: +7-095-576-3327
alkriv@netclub.ru

Kryjov, Vladimir
Hydrometeorological Research Centre of the Russian Federation
11-13 B.Predtechensky Per.
Moscow, 123242
Russia
Tel: +7-095-2552326
Fax: +7-095-2551667
kryjov@rhmc.mecom.ru

Kuzmina, Svetlana
Nansen International Environmental and Remote Sensing Centre (NIERSC)
Bolshaya Monetnaya str., 26/28
St-Petersburg, 197101
Russia
Tel: +7 812-234-3924
Fax: +7 812-234-3865
Svetlana.Kuzmina@niersc.spb.ru

Kwok, Ron
Jet Propulsion Laboratory
MS 300-2354800 Oak Grove Drive
Pasadena, CA 91109
USA
Tel: 0-818-354-5614
Fax: 0-818-393-3077
ron.kwok@jpl.nasa.gov

Lagun, Victor
Arctic & Antarctic Research Institute
38, Bering street
St. Petersburg, 199397
Russia
Tel: +7 8123522950
Fax: +&(812)3522688
lagun@aari.nw.ru

Laxon, Seymour
Centre for Polar Observation and Modelling
University College London
Pearson Building
Gower St.,
London WC1E 6BT
United Kingdom
Tel: +(44)2076793932
Fax: +(44)2076797883
swl@cpom.ucl.ac.uk

Lebedev, Nikolay
Arctic & Antarctic Research Institute
38, Bering str.
St. Petersburg
Russia
Tel: +7 812 352-31-59
Fax: +7 812 352-26-88
svt@aari.nw.ru

Lemke, Peter
Alfred Wegener Institute
PO Box 120161
DE-27515 Bremerhaven
Germany
Tel: +49 (0)471 - 4831 - 1751/1750
Fax: +49 (0)471 - 4831 - 1797
plemke@awi-bremerhaven.de

Lennon-Smith, Margaret
World Meteorological Organization
7bis Avenue de la Paix, Geneva
Switzerland
Tel: 0041 22 730 8234
Fax: 0041 22 730 8036
Lennon-Smith_M@gateway.wmo.ch

Marnela, Marika
Finnish Institute of Marine Research
PO Box 33
FIN-00931 Helsinki
Finland
Tel: + 358 9 61394483
Fax: + 358 9 3231025
marnela@fimr.fi

Lisæter, Knut Arild
Nansen Environmental and Remote Sensing Center
Edvard Griegs vei 3a
NO-5059 Bergen
Norway
Tel: +47 55 29 72 88
Fax: +47 55 20 00 50
knutal@nersc.no

Lüpkes, Christof
Alfred Wegener Institute
Columbus str.
27568 Bremerhaven
Germany
Tel: ++49 (0)471 4831 1786
Fax: ++49 (0)471 4831 1797
cluepkes@awi-bremerhaven.de

Ma, Xieyao
Fronthier Research System for Global Change
3173-25 Showamachi, Kanazawa-ku
Yokohama
Japan
Tel: 081-45-778-5546
Fax: 081-45-778-5706
xyma@jamstec.go.jp

Makshtas, Alexander
International Arctic Research Center
University of Alaska Fairbanks
930 Koyukuk Dr.,
P.O. Box 757335
Fairbanks, AK 99775-7335
USA
Tel: 1-907-474-2678
Fax: 1-907-474-2643
makshtas@iarc.uaf.edu

McClimans, Thomas
SINTEF Fisheries and Aquaculture
NO-7465 Trondheim
Norway
Tel: +47 73592417
Fax: +47 73595660
thomas.mcclimans@sintef.no

Maslowski, Wieslaw
Naval Postgraduate School
Oceanography Department
833 Dyer Rd.
Monterey, CA 93943
USA
Tel: 831 656-3162
Fax: 831 656-2712
maslowsk@nps.navy.mil

Masterton, Joan
Environment Canada
4905 Dufferin Street
Downsview, Ontario
M3H 5T4
Canada
Tel: +01 416-739-4321
Fax: +01 416-739-4882
Joan.Masterton@ec.gc.ca

Maurer, Thomas
Global Runoff Data Centre (GRDC)
c/o Federal Institute of Hydrology (BfG)P.O. Box 20 02 53,
D-56002 Koblenz
Germany
Tel: +49-261-1306-5224
Fax: +49-261-1306-5280
thomas.maurer@bafg.de

Mavlyudov, Bulat
Institute of geography RAS
Staromonetny per. 29
Moscow 109017
Russia
Tel: 007-095-959-00-35
Fax: 007-095-959-00-33
bulatrm@bk.ru

Mokhov, Igor
A.M.Obukhov Institute of Atmospheric Physics RAS
3 Pyzhevsky
119017 Moscow, Russia
Tel: +7-095-951-64-53
Fax: +7-095-953-16-52
mokhov@ifaran.ru

Melling, Humfrey
Fisheries and Oceans Canada
Institute of Ocean Sciences
P.O. Box 6000
Sidney, B.C. V8L 4B2
Canada
Tel: 250-363-6552
Fax: 250-363-6746
MellingH@dfo-mpo.gc.ca

Melnikov, Igor
P.P.Shirshov Institute of Oceanology
Nakhimovsky pr., 36
Moscow 117997
Russia
Tel: 7 095 124 5996
Fax: 7 095 124 5983
migor@online.ru

Mironov, Yevgeni
Arctic & Antarctic Research Institute
Bering Street 38
St.Petersburg
Russia
Tel: +7 (812) 352-1021
Fax: +7 812 352-2688
mir@aari.nw.ru

Miville, Bernard
Environment Canada/CCCMA/
CIS/IACPO
Meteorological Service of Canada
c/o University of Victoria
PO Box 1700
Victoria, BC V8W 2Y2
Canada
Tel: 1-250-363-3347
Fax: 1-250-363-8247
bernard.miville@ec.gc.ca

Mächel, Hermann
GPCC
Deutscher Wetterdienst
P.O. Box 10 04 65
DE-63004 Offenbach am Main
Germany
Tel: +49 69 8062-2875
Fax: +49 69 8062 3759
hermann.maechel@dwd.de

Moore, James
UCAR Joint Office for Science Support
P.O. Box 3000
Boulder, CO 80307-3000
USA
Tel: 303-497-8635
Fax: 303-407-8158
jmoore@ucar.edu

Morozova, Olga
Arctic & Antarctic Research Institute
38 Bering Street,
199397 St. Petersburg
Russia
Tel: +7 812 3522321
Fax:
olga_morozova@nwgsm.ru

Mueller, Gerd
Meteorological Institute
University of Hamburg
Bundesstrasse 55
D-20146 Hamburg
Germany
Tel: +49-40-42838-5086
Fax: +49-40-42838-5452
gerd.mueller@dkrz.de

Muktepavel, Larisa
Pacific Research Fisheries Centre
(TINRO-centre)
4, Shevchenko Alley
690600 Vladivostok
Russia
Tel: +7 (4232) 400-934
Fax: +7 (4232) 400-783
Larisamk@tinro.ru

Novikhin, Andrey
Arctic & Antarctic Research Institute
38 Bering Street,
199397 St. Petersburg
Russia
Tel: +7 (812) 3522321.
Fax: +7 (812) 352 28 83
asghard@rambler.ru

Narkevsky, Egor
Arctic & Antarctic Research Institute 38
Bering Street
19397 St. Petersburg
Russia
Tel: +7 (812) 352 24 19
Fax: +7 (812) 352 28 83
egor_narkevsky@mail.ru

Nikiforov, Evgeny
Arctic & Antarctic Research Institute
38, Bering str.
St.Petersburg, 199397
Russia
Tel: + 7 (812) 352-15-20
Fax: + 7 (812) 352-26-88
Arctic & Antarctic Research
Institutecoop@aari.nw.ru

Nishino, Shigeto
JAMSTEC
2-15 Natsushima Yokosuka
237-0061 Japan
Tel: +81-468-67-9487
Fax: +81-468-67-9455
nishinos@jamstec.go.jp

Nitishinsky, Miroslav
Arctic & Antarctic Research Institute
38 Bering Street,
199397 St. Petersburg
Russia
Tel: +7 (812) 9875051
Fax:
miroslav@otto.nw.ru

Panteleev, Gleb
Frontier Research System for Global Change
3173-25 Showamachi
Kanazawa-ku Yokohama City
Kanagawa 236-0001
Japan
Tel: +81-45-778-5746
Fax: 81-45-778-5497
gleb@iarc.uaf.edu

Oelke, Christoph
Institute for Geophysics
University of Muenster
Corrensstrasse 24
DE-48149 Muenster
Germany
Tel: +49 (251) 83-34730
Fax: +49 (251) 83-36100
e-mail: coelke@uni-muenster.de

Ohata, Tetsuo
Inst. Low Temperature Science, Hokkaido
Univ./ Frontier Obs. Res. Sys. Global Change
Kita-19, Nishi-8, Kita-ku
Sapporo 060-0819
Japan
Tel: +81-11-706-5488
Fax: +81-11-706-5488
ohata@pop.lowtem.hokudai.ac.jp

Ohmura, Atsumu
Institute for Atmospheric and Climate Science
ETH
Winterthurerstrasse 190
CH-8057 Zurich
Switzerland
Tel: +41 1 635 5220
Fax: +41 1 361 5197
ohmura@geo.umnw.ethz.ch

Overland, James
Pacific Marine Environmental
Laboratory/NOAA
7600 Sand Point Way NE
Seattle Wa 98115
USA
Tel: 1.206.526.6795
Fax: 1.206.526.6485
James.E.Overland@noaa.gov

Pivovarov, Sergey
Arctic & Antarctic Research Institute 38
Bering Street
199397 St.Petersburg
Russia
Tel: +7 812-352-23-21
Fax: +7 812-352-26-88
pivovarov@mail.lanck.net

Pavlov, Vladimir
Norwegian Polar Institute
Polar Environmental Centre
NO-9296 Tromsø
Norway
Tel: +47 77 75 05 16
Fax: +47 77 75 05 01
vladimir.pavlov@npolar.no

Pedersen, Christina Alsvik
Norwegian Polar Institute
Polar Environmental Centre
9295 TROMSØ
Norway
Tel: +47 777 50551
Fax: +47 777 50501
xtina@npolar.no

Pipko, Irina
Pacific Oceanological Institute
FEB RAS
Baltic Street, 43
690041 Vladivostok
Russia
Tel: +7(4232) 31 23 42
Fax: +7(4232) 31 23 42
irina@pio.dvo.ru

Pirazzini, Roberta
Finnish Institute of Marine Research
Lyypekinkuja 3A, P.O. Box 33
FIN-00931 Helsinki
Finland
Tel: +358 (0)9 61394434
Fax: + 358 (0)9 3231025
pirazzini@fimr.fi

Rothrock, David Andrew
University of Washington
1013 NE 40th St.
Seattle WA 98105
USA
Tel: 206-685-2262
Fax: 206-6163142
rothrock@apl.washington.edu

Pnyushkov, Andrey
Arctic & Antarctic Research Institute
38 Bering Str.
199397 St.Petersburg
Russia
Tel: +7 812 352-3352
Fax:
vivanv@aari.nw.ru

Popova, Valeria V.
Russian Academy of Science
Institute of Geography
29 Staromonetny per
Moscow 109017
Russia
Tel: +7 095 129 0474
Fax: +7 095 959 0033
climate@igras.geonet.ru

Priamikov, Sergey
Arctic & Antarctic Research Institute
38 Bering Str.
199397 St.Petersburg
Russia
Tel: +7 812 352 0096
Fax: +7 812 352 2685
priamiks@aari.nw.ru

Prinsenberg, Simon
Fisheries and Oceans Canada
Bedford Institute of Oceanography
P.O. Box 1006
Datrmouth, N.S. B2Y 4A2
Canada
Tel: +1-902-426 5928
Fax: +1-902-426 6927
prinsenbergs@dfo-mpo.gc.ca

Ryabinin, Vladimir
WCRP
7 bis, WMO Secretariat,
Avenue de la Paix, CP2300,
CH-1211 Geneva
Switzerland
Tel: + 41 22 7308486
Fax: + 41 22 7308036
vryabinin@ wmo.int

Rubinstein, Irene
York University
Ross Bldg N410
4700 Keele Street
Toronto
Canada
Tel: +1 416-736-22431
Fax: N/A
rubin@yorku.ca

Rudels, Bert
Finnish Institute of Marine Research
Box 33
FIN-00931 Helsinki
Finland
Tel: + 358 9 61394428
Fax: + 358 9 3231025
rudels@fimr.fi

Rudolf, Bruno
Deutscher Wetterdienst
Global Precipitation Climatology Centre
P.O. Box 100465
63004 Offenbach
Germany
Tel: +49-69-8062 2765
Fax: +49-69-8062 3759
bruno.rudolf@dwd.de

Ryabchenko, Vladimir
St.Petersburg Branch
P.P.Shirshov Institute of Oceanology
Russian Academy of Sciences
30, Pervaya Liniya,
199053 St.Petersburg
Russia
Tel: +7 812 3282729
Fax: +7 812 3285759
Vladimir_Ryabchenko@VR5841.spb.edu

Savtchenko, Victor (Ret.)
462, Bd. des Epinettes
F-01220 Divonne-les-Bains
France
Tel: +33/450200692
Fax: N/A
vic.savt@wanadoo.fr

Schauer, Ursula
Alfred-Wegener-Institut für Polar- and Meeresforschung
Postfach 120161
D-27515 Bremerhaven
Germany
Tel: +49 471 48311817
Fax: +49 471 48311797
uschauer@awi-bremerhaven.de

Schlichtholz, Pawel
Institute of Oceanology
Polish Academy of Sciences
Powstañców Warszawy 55
PL 81-712 Sopot
Poland
Tel: +48 58 5517281
Fax: +48 58 5512130
schlicht@iopan.gda.pl

Schmith, Torben
Danish Meteorological Institute
Lyngbyvej 100
DK-2100 Copenhagen OE
Denmark
Tel: +45 39 15 74 44
Fax: +45 39 15 74 60
ts@dmi.dk

Schroeder, David
Meteorological Institute
University of Hamburg
Bundesstrasse 55
D-20146 Hamburg
Germany
Tel: +49-40-42838-4920
Fax: +49-40-42838-5452
david.schroeder@dkrz.de

Semenov, Vladimir
Max Planck Institute for Meteorology
Bundesstr., 55
DE-20146 Hamburg
Germany
Tel: +49 40 41173108
Fax: +49 40 41173366
semenov@dkrz.de

Serreze, Mark
CIRES
Campus Box 449
University of Colorado
Boulder, CO 80309-0449
USA
Tel: +1 303-492-2963
Fax: +1 303-492-2468
serreze@kryos.colorado.edu

Shalina, Elena
Korpusnaya18
St.Petersburg
Russia
Tel: N/A
Fax: N/A

Shevchenko, Vladimir
P.P. Shirshov Institute of Oceanology RAS
Nakhymovsky Prospekt, 36
Moscow 117997
Russia
Tel: 7-095-1247737
Fax: 7-095-1245983
vshevch@geo.sio.rssi.ru

Shiklomanov, Alexander
University of New Hampshire
Water Systems Analysis Group
Morse Hall, Room 208
Durham, NH 03824
USA
Tel: N/A
Fax: +1(603) 862-0587
alex.shiklomanov@unh.edu

Shiklomanov, Igor
State Hydrological Institute
23, Second Line
199053, St. Petersburg
Russia
Tel: +7 812 323 35 17
Fax: +7 812 323 10 28
ggi2@mailbox.alkor.ru

Shimada, Koji
JAMSTEC
2-15 Natsushima
Yokosuka 237-0061
Japan
Tel: +81-46-867-9485
Fax: +81-46-867-9455
shimadak@jamstec.go.jp

Shmakin, Andrey
Institute of Geography
Russian Academy of Sciences
Staromonetny St., 29
Moscow 119017
Russia
Tel: +7 (095)129-0474
Fax: +7 (095)959-0033
climate@igras.geonet.ru

Smagin, Vitaly
Arctic & Antarctic Research Institute
38 Bering str.
St.Petersburg 199397
Russia
Tel: +7 812 352-2321
Fax: +7 812 352-2688
smagin@aari.nw.ru

Smolyanitsky, Vasily
Arctic & Antarctic Research Institute of Roshydromet
38 Bering str.,
199397 St.Petersburg, Russia
Tel: +7 8123522152
Fax: +7 8123522688
vms@aari.nw.ru

Solovyanova, Irina
Arctic & Antarctic Research Institute of Roshydromet
38 Bering str.,
199397 St.Petersburg, Russia
Tel: 00+7 812-352-19-33
Fax:
solir22@mail.ru

Sokolikhina, Elena
Moscow State University
Faculty of Geography
Meteorological Dept., MSU
Vorobiovy Gory
119899 Moscow
Russia
Tel: + 7 095 9392942
Fax: + 7 095 9328836
nsokol@geogr.msu.su

Somova, Svetlana
RIHMI - WDC
Korolev St. 6
249020 Obninsk
Kaluga Reg., Russia
Tel: +7 (08439)7-46-02, (08439)7-41-08,
Fax: +7 095)255-22-25
marine@meteo.ru

Sokolikhina, Natalia
Moscow State University
Faculty of Geography
Meteorological Dept., MSU, Vorobiovy Gory,
119899 Moscow
Russia
Tel: + 7 095 9392942
Fax: + 7 095 9328836
nsokol@geogr.msu.su

Steffen, Konrad
University of Colorado
CIRES, CB 216
Boulder CO 80309
USA
Tel: +1 303 492 4524
Fax: +1 303 492 1149
konrad.steffen@colorado.edu

Sokolov, Vladimir
Arctic & Antarctic Research Institute
38, Bering str.
St. Petersburg,
Russia
Tel: +7 812 352-3159
Fax: +7 812 352-2688
svt@aari.nw.ru

Sterin, Alexander
RIHMI-WDCB
6, Korolyov str.
249020 Obninsk Kaluga region
Russia
Tel: +7 (095)2552467
Fax: +7 (095)2552225
sterin@meteo.ru

Soldatenko, Sergei
Institute for Information Technologies Russian Academy of Sciences
39, 14th Line
St.Petersburg 199178
Russia
Tel: N/A
Fax: N/A
sergei.soldatenko@sympatico.ca

Stone, Robert
NOAA Climate Monitoring and Diagnostics Laboratory -CIRES
NOAA/CMDLDSRC 3D-106325 Broadway
Boulder, CO 80305
USA
Tel: 303 497 6056
Fax: N/A
robert.stone@noaa.gov

Sugiura, Konosuke
Frontier Observational Research System
for Global Change
Institute for Global Change Research
3173-25, Showamachi, Kanazawa-ku,
Yokohama 236-0001, Japan
Tel: N/A
Fax: N/A
sugiura@jamstec.go.jp

Sumata, Hiroshi
JAMSTEC
2-15 Natsushima-cho
Yokosuka, Japan
Tel: +81-046-867-9489
Fax: +81-046-867-9455
sumatah@jamstec.go.jp

Suzuki, Kazuyoshi
Frontier Observational Research system for
Global Change
JAMSTEC Yokohama Institute
3173-25 Showa-machi,
Kanazawa-ku Yokohama-city
Kanagawa 236-0001
Japan
Tel: +81-45-778-5647
Fax: +81-45-778-5706
skazu@jamstec.go.jp

Svyaschennikov, Pavel
Arctic & Antarctic Research Institute
38, Bering str.
St. Petersburg 199397
Russia
Tel: +7 (812) 352 19 51
Fax: +7 (812) 352 26 88
alexmet@aari.nw.ru

Swift, James H.
USCD
Scripps Institution of Oceanography, 0214
9500 Gilman Dr.
La Jolla, CA 92093-0214
USA
Tel: +1 619 534 3387
Fax: +1 619 534 7383
jswift@ucsd.edu

Söderkvist, Johan
Swedish Meterological and Hydrological Institute
(SMHI)
SMHI Oceanografiska Laboratoriet
Byggnad 31 Nya Varbet
SE 42671 V. Frölunda
Sweden
Tel: +46 790984
Fax: +46 317518980
johan.soderkvist@smhi.se

Takizawa, Takatoshi
JAMSTEC
2-15 Natsushima, Yokosuka
Japan
Tel: +81-46-867-9450
Fax: +81-46-867-9455
takizawat@jamstec.go.jp

Tatusko, Renee
NOAA/NESDIS/NODC
Ocean Climate Laboratory
1315 East West Highway,
Mail Code E/OC5, Room 4147
Silver Spring, MD 20910
USA
Tel: +1-301-713-3295 x206
Fax: +1-301-713-3303
Renee.Tatusko@noaa.gov

Terziev, Fedor Semenovich
State Oceanographic Institute
Kropotkinskiy per. 6
119034, Moscow
Russia
Tel: +7 (095)2467288
Fax: +7 (095)2467288
adm@mail.ru

Timofeev, Arseni
RIHMI-WDC / OIATE
Korolyev st. 6
249035 Obninsk
Kaluga region
Russia
Tel: +7(08439)74680
Fax: +7(095)2552225
arseni@okclub.org

Timokhov, Leonid
Arctic & Antarctic Research Institute
38 Bering Street
199397 St. Petersburg
Russia
Tel: +7 812 352-31-79
Fax: +7 812 352-26-88
ltim@aari.nw.ru

Titkova, Tatiana B.
Institute of Geography
Russian Academy of Sciences
29 Staromonetny per
Moscow 109017
Russia
Tel: +7 095 129 0474
Fax: +7 095 959 0033
climate@igras.geonet.ru

Toropov, Pavel
Moscow State Univercity
Faculty of Geography
Dep.of Meteorology
Novopeschanaya st., 23/7,154
Moscow, 125252
Russia
Tel: (095)939-29-42
Fax: (095)939-21-23
toropovpavel@rambler.ru

Tsukernik, Maria
CU BOULDER
1300 30th street, Apt b2-27
Boulder, CO 80303
USA
Tel: 303-786-1865
Fax: N/A
maria.tsukernik@colorado.edu

Turner, John
British Antarctic Survey
High Cross
Madingley Road
Cambridge CB3 0ET
United Kingdom
Tel: +44 1223 221485
Fax: +44 1223 221279
J.Turner@bas.ac.uk

Uotila, Petteri
Courant Institute of Mathematical Sciences
New York University, Warren Weaver Hall
251 Mercer Street
New York, NY, 10012
USA
Tel: +1-212-998-3234
Fax: +1-212-995-4121
uotila@cims.nyu.edu

Vancoppenolle, Martin
Institut d`Astronomie et de Géophysique
Georges Lemaître
Université Catholique de Louvain
Chemin du cyclotron
B-21348 Louvain-La-Neuve
Belgium
Tel: +32-10-473365
Fax: +32-10-474722
vancop@astr.ucl.ac.be

Vasilevskaya, Lubov
Far Eastern State University
Octyabrskaya St. 27, 223
690600 Vladivostok
Russia
Tel: 515-327, 465-371
Fax: -
lubavass@yandex.ru

Vavulin, Stanislav
Voeikov Main Geophysical Observatory
7, Karbyshev str.
St. Petersburg, 194021
Russia
Tel: +7 8122478668
Fax: +7 8122478661
vavulin@main.mgo.rssi.ru

Verlinde, Johannes
The Pennsylvania State University
502 Walker Building
University Park, PA 16802
USA
Tel: +1 (814) 863-9711
Fax: +1 (814) 865-3663
jxv7@psu.edu

Verseghy, Diana
Climate Research Branch
Meteorological Service of Canada
4905 Dufferin St.
Downsview, ON M3H 5T4
Canada
Tel: +1 416-739-4422
Fax: +1 416-739-5700
diana.verseghy@ec.gc.ca

Vihma, Timo
Finnish Institute of Marine Research
P.O. Box 33
FIN-00931 Helsinki
Finland
Tel: +358 9 6139 4431
Fax: +358 9 3231 025
vihma@fimr.fi

Villinger, Tordis
CliC International Project Office
Norwegian Polar Institute
The Polar Environmental Centre
N-9296 Tromsø
Norway
Tel: +47 77680167
Fax: +47 77 75 05 01
tordis.villinger@npolar.no

Vinje, Torgny
Norwegian Polar Institute
Postboks 5156 Majorstua
N- 0302 Oslo
Norway
Tel: + 47 22 95 99 03
Fax: + 47 22 95 99 01
torgny.vinje@npolar.no

Vinogradova, Anna
Obukhov Institute of Atmospheric Physics, RAS
Pyzhevsky Per., 3
Moscow 119017
Russia
Tel: +7 (095) 9511262
Fax: +7 (095) 9531652
anvinograd@yandex.ru;
vinograd@omega.ifaran.ru

Vuglinsky, Valery
State Hydrological Institute
2nd Line 23
St.Petersburg 199053
Russia
Tel: +7 812-323 34 58
Fax: +7 812-323 10 28
vvuglins@vv4218.spb.edu

Walczowski, Waldemar
Institute of Oceanology
Polish Academy of Sciences
Powstancow Warszawy 55
PL-81-712 Sopot
Poland
Tel: +48 58 551 72 81
Fax: +48 58 551 21 30
walczows@iopan.gda.pl

Walsh, John
International Arctic Research Center
University of Alaska
930 Koyukuk Drive
Fairbanks, AK 99775
USA
Tel: +1 907-474-2677
Fax: +1 907-474-2643
jwalsh@iarc.uaf.edu

Wang, Jia
LASG Institute of Atmospheric Physics
Institute of Atmospheric Physics
Chinese Academy of Sciences
P.O. Box 9804
Beijing 100029, China
Tel: (86-10) 6204-3430 Ext 208
Fax: (86-10) 6204-3526
shen1mu2@21cn.com

Wang, Muyin
JISAO/PMEL
University of Washington,
Box 357941,
Seattle, WA 98195
USA
Tel: 206-526-4532
Fax: 206-526-6485
muyin.wang@noaa.gov

Watts, Robert
Tulane University
400 Lindy Boggs Building
Tulane University
New Orleans, LA 70118
USA
Tel: +1 504-865-5151
Fax: +1 504-865-5345
rwatts@tulane.edu

Wilson, Katherine
Canadian Ice Service
E3-373 Sussex Drive
Ottawa,ON K1A 0H3
Canada
Tel: +1 613-995-5020
Fax: +1 613-996-4218
katherine.wilson@ec.gc.ca

Winther, Jan-Gunnar
Norwegian Polar Institute
The Polar Environmental Centre
N-9296 Tromsø
Norway
Tel: +47 77750500
Fax: +47 77750501
winther@npolar.no

Wood, Kevin
NOAA/PMEL
7600 Sand Point Way NE
Seattle, WA 98115
USA
Tel: +1 (206) 526-6862
Fax: +1 (206) 526-6815
Kevin.R.Wood@noaa.gov

Yakovlev, Nikolai
Institute of Numerical Mathematics RAS
Gubkina str., 8, GSP-1
Moscow, 119991
Russia
Tel: +7 (095)9383900
Fax: +7 (095)9381821
iakovlev@inm.ras.ru

Yakovleva, Tat'yana
State Hydrological Institute
Second Line, V.O. 23, Saint Petersburg,
Russia 199053
Russia
Tel: +7 812-231-9402
Fax: +7 812-323-1028
group@baltiets.ru

Yang, Daqing
Univ. of Alaska Fairbanks
306 Tanana Dr.
Fairbanks, AK 99775
USA
Tel: +1 907-474-2468
Fax: +1 907-474-7979
ffdy@uaf.edu

Zernova, Viktoriya
P.P. Shirshov Institute of Oceanology
Nakhimovsky Prospekt, 36
Moscow 117997
Russia
Tel: +7 (095)124-77-37
Fax: +7 (095)124-59-83
vshevch@geo.sio.rssi.ru

Zhang, Xiangdong
FRSGC/IARC, University of Alaska
Fairbanks
930 Koyukuk Dr.
Fairbanks, AK 99775
USA
Tel: +1 907-474-2675
Fax: +1 907-474-2643
xdz@iarc.uaf.edu

Zwally, Jay
NASA, Code 971
Goddard SFC
Greenbelt, MD 20771
USA
Tel: +1 301-614-5643
jay.zwally@gsfc.nasa.gov

Zyryanov, Denis
Institute of Water Problems of RAS
GSP-1, Gubkina st. 3
119991, Moscow
Russia
Tel: +7 095 135 4735
Fax: +7 095 135 5415
Denis.Zyryanov@npolar.no

Wood, Kevin
NOAA/PMEL
7600 Sand Point Way NE
Seattle, WA 98115
USA
Tel: +1 (206) 526-6862
Fax: +1 206) 526-6815
Kevin.R.Wood@noaa.gov

Yakovlev, Nikolai
Institute of Numerical Mathematics RAS
Gubkina str., 8, GSP-1
Moscow, 119991
Russia
Tel: +7(095)9383900
Fax: +7(095)9381821
iakovlev@inm.ras.ru

Yakovleva, Tat'yana
State Hydrological Institute
Second Line, V.O. 23
St. Petersburg 199053
Russia
Tel: +7 812-231-9402
Fax: +7 812-323-1028
group@baltiets.ru

Yang, Daqing
Univ. of Alaska Fairbanks
306 Tanana Dr.
Fairbanks, AK 99775
USA
Tel: +1 907-474-2468
Fax: +1 907-474-7979
ffdy@uaf.edu

Zernova, Viktoriya
P.P. Shirshov Institute of Oceanology
Nakhimovsky Prospekt, 36
Moscow 117997
Russia
Tel: +7(095)124-77-37
Fax: +7(095)124-59-83
vshevch@geo.sio.rssi.ru

Zhang, Xiangdong
FRSGC/IARC
University of Alaska Fairbanks
930 Koyukuk Dr.
Fairbanks, AK 99775
USA
Tel: +1 907-474-2675
Fax: +1 907-474-2643
xdz@iarc.uaf.edu

Østerhus, Svein
Bjerknes Centre for Climate Research
University of Bergen
Allegt. 70
Bergen, Norway
Tel: +47 55 58 26 07
Fax: N/A
ngfso@uib.no

Abstract Titles

NOTE: To search for and view individual abstracts, please return to the CD and look for the *Book of Abstracts (Searchable Abstracts, Presentations, and Posters).*

Session 1 – The State of the Arctic Climate System (E.P. Jones, Chair)

Ananicheva, M.D. and Yu. M. Kononov. Dynamics of the Polar Ural Glaciers in the Twentieth Century under Climate Change

Bulygina, O. N., V.N. Razuvaev, R.A. Martuganov and N.N. Korshunova. Variations in Snow-Cover Characteristics over the Russian Territory in Recent Decades

Chernyckh Irina V., and Oleg A. Alduchov. About Climatic Changes of Cloud Layers Vertical Structure and Some Upper-Air Parameters in the Arctic Region

Denisov, Dmitrii. Regularities of Change in Diatom Assemblages Structure under the Long-term Climatic Changes in the Central Kola Peninsula

Divine, Dimitri and C. Dick. Historical Variability of Sea-Ice Extent in the Nordic Seas

Fransson, Agneta, M. Chierici, Y. Nojiri. Seasonal and Inter-Annual Variability in the Surface Water pCO2 in the Southern Bering Sea during a Period of Contrasting Years: 1995-2000

Groisman, Pavel Ya., Esfir G. Bogdanova, Boris M. Ilyin, Paul Whitfield, Eirik Førland, Vyacheslav N. Razuvaev, Bomin Sun, and Russell Vose. Contemporary Climate Changes in High Latitudes of the Northern Hemisphere: Bias-Corrected Precipitation and Variables of Economic, Social and Ecological Interest Based upon Daily Temperatures and Precipitation

*Hanssen-Bauer, Inger and E. J. Førland.*Climate Variation in the European Arctic during the Last 100 years

Ilyashuk, E.A., B. P. Ilyashuk, A.A. Andreev, K.D. Bennett, D. Hammarlund, and H-W Hubberten. Chironomid-Inferred Holocene Mean July Air Temperatures for the Lena River Delta Area, East Siberia, and the Kola Peninsula, Northwestern Russia

Johannessen, Ola M., L. Bengtsson, M. W. Miles, S. I. Kuzmina, V. A. Semenov, G. V. Alekseev, A. P. Nagurnyi, V. F. Zakharov, L. Bobylev, L. H. Pettersson, K. Hasselmann, and H. P. Cattle. Arctic Climate Change - Observed and Modelled Temperature and Sea Ice Variability

Kitaev, Lev, V. Radionov, E. Forland,, V. Razuvaev, R. Martuganov. Terms of a Period with Snow Cover in the Northern Eurasia Under Current Climate Change

Oleg Korneev. Structure of Surface Level Pressure (SLP) variability over Arctic for 1948-2001 and Nearest Future

Lebedev, A. A., E. U. Mironov. Variability of Regional Climate in Connection with Ice and Macro-Synoptic Conditions in the Seas of the Atlantic Sector of the Arctic

Pirazzini, Roberta and T. Vihma. On the Factors Controlling the Surface Temperature and 2-M Air Temperature over the Arctic Sea Ice in Winter

Popova, Valeria. Winter Snow Depth Anomalies over the North Eurasia in Relation to the Recent Atmospheric Circulation Changes

Radionov, V.F. , E. I. Aleksandrov, and P. N. Maschennikov. Characteristics of Multiannual Variability of Temperature And Precipitation in Different Arctic Areas

Rudels, Bert. The Arctic Ocean in the 1990s – Advective Challenges and Internal Response

Rudels, Bert, M. Marnela, P. Eriksson, and U. Schauer Variability of Volume, Heat and Freshwater Transports through Fram Strait

Savtchenko, Victor. The Origins of ACSYS

Tatusko,Reneee, I. Smolyar, S. Levitus, G. Matishov, A. Zuyev, V. Denisov, A. Sarkisyan, N. Yakovlev. Integrating a Long-Term Record of Observations in the Arctic Seas since the 19th Century

Wang, Muyin Wang and J. E. Overland. Detecting Arctic Climate Change using Köppen Climate Classification

Session 2 – Observing the Arctic Climate System (K. Steffen, Chair)

Anderson, Leif G., Sara Jutterström, Staffan Kaltin, E. Peter Jones, Göran Björk. Variability in river runoff distribution in the Eurasian Basin of the Arctic Ocean

O.Anisimov. Permafrost, Climate, and Change: Predictive Modelling Approach

Bogdanova1, Esfir G., Pavel Ya.Groisman , Boris M.Ilyin. Methods for Correcting Solid Precipitation Measurements in the Polar Regions of Russia, Alaska and Canada

Alexey Bozhkov. Status and Prospects of Research Concerning the State Water Register (SWR) on the Seas and River Mouths of the Russian Arctic Region

Irina V. Chernykh, Alduchov, Oleg A. Study of the Vertical Macrostructure of Cloudiness before, during, and after Precipitation on Base Aerological and Surface observations in Arctic

Farrell, Sinead. L., S.W. Laxon, D.C. McAdoo, H.J. Zwally, C. Brenner, and D. Yi. Sea Ice Elevation Determination Using Laser Altimetry

Garmanov, A.L. and V.T. Sokolov. Climatic Variability of Thermohaline Characteristics in the Near-pole Area of the Arctic Ocean

Greenberg, Steven D., Johannes Verlinde, and Jerry Y. Harrington. Evaluation of NCEP ETA Analyses of Arctic Cloud Cover

Grippa,Manuela, Thuy LeToan, Nelly M. Mognard, Nicolas Delbart, Julien L'Hermitte, Alexei V. Kouraev and Muriel Aubin-Lecomte. Relationship between Satellite-Derived Snow and Vegetation Parameters in Siberia

Gudkovich Z.M., A.Y. Proshutinsky, L.A. Timokhov, A.E. Koltyshev, A.L. Garmanov. Climatic Changes of the Upper Layer Salinity of the Arctic Ocean

Hagenbrock, Reinhard and A. Hense. The Observed Hydrological Cycle in the Arctic Atmosphere

Hansen,Edmond, Terje Brinck Løyning, Sebastian Gerland and Harvey Goodwin. Arctic Sea Ice Thickness Variability Observed over a Decade in the Fram Strait

Heinemann, Günther. Observations, Simulations and Scale Interactions of the Stable Boundary Layer over Polar Ice Sheets

Haarpaintner, Jürgen, R.T. Tonboe, D.G. Long, M.L. VanWoert, K.R. Dedrick. Refinement of the QuikScat/SeaWinds sea ice edge

Haas, Christian. Arctic Sea Ice Thickness Variability in the 1990s Retrieved From EM Sounding

Itoh, Motoyo, Koji Shimada, Shigeto Nishino, Fiona McLaughlin, Eddy Carmack. Varieties of Temperature Minimum Waters in the Canada Basin

Jones,E. Peter, B. Rudels, A. J. Eert, L. G. Anderson, and K. Azetsu-Scott. Waters of Nares Strait in the Canadian Arctic Archipelago

Khokhlova, Anna V., Arseni A. Timofeev. On the Main Temporal Scales of Variability of Brightness Temperatures in the Arctic and Antarctic Regions on the DMSP SSM/I data

Kikuchi, Takashi, K. Hatakeyama and J.H. Morison. Observational Research on Water Mass Characteristics and its Variability in the Eastern Arctic Ocean

Alexander Korablev. Long-Term Coordinated Changes in the Nordic Seas Water Mass Properties in Respect to Deep- Water Formation and Spreading

Korneev, Oleg. New Modification of the Objective Analysis Method (OAM) for SLP above the Arctic Ocean

Kouraev, Alexei V., Fabrice Papa, Nelly M. Mognard, Petr I. Buharizin, Anny Cazenave, Jean-Francois Cretaux, Julia Dozortseva, Frederique Remy. Sea Ice in the Caspian and Aral Seas from Multi-Satellite Active and Passive Microwave Data

Krishfield, Richard A., Andrey Proshutinsky and John M. Toole. An Ice-Tethered Profiling Instrument for Sustained Observation of the Arctic Ocean

Mächel, Hermann, Bruno Rudolf. Available Data at the Arctic Precipitation Data Archive - APDA

Mächel, Hermann, Bruno Rudolf. The Arctic Precipitation Data Archive APDA - status quo and outlook

Mavlyudov, Bulat, Irina Solovyanova. Hydrological System of a Polar Glacier in Conditions of Climate Change

Mognard, Nelly M., Manuela Grippa, Thuy LeToan, Alexei V. Kouraev and Edward G. Josberger. Snow pack variability in Siberia from satellite passive microwave data

Morozova, O. Nutrient budgets in the gulf of the Laptev Sea

Nishino, Shigeto, Koji Shimada, Motoyo Itoh, Fiona A. McLaughlin, Eddy C. Carmack. Circulation of the Chukchi Shelf Bottom Water into the Canada Basin and its Contribution to the Arctic Cold Halocline

Session 2 - Observing the Arctic Climate System (cont'd)

Nitishinsky, M., S. Pivovarov1, J. Hölemann. Water Column Structure and Interannual Variability of Hydrochemical Parameters at a Transect Along 75° 30'N Across the Laptev Sea in Summer

Novikhin A. Water Column Structure and Nutrients Variability in the Troughs of the Kara Sea

Overland, J.E., and M.C. Spillane. Regional, Seasonal, and Historic Arctic Temperature Change

Pivovarov, S., O. Morozova, E. Narkevsky, M. Nitishinsky, A. Novikhin. Location and Origin of the Bottom Waters Having Extremely Low Oxygen Concentrations in the Siberian Shelf Seas

Prinsenberg, S.J. and J. Hamilton. Volume, Freshwater and Heat Fluxes through Lancaster Sound in the Canadian Arctic Archipelago

Shimada, Koji, Eddy Carmack, Fiona McLaughlin, Shigeto Nishino and Motoyo Itoh. Hydrographic Changes in the Canadian Basin

Smagin, V.M., L.A. Timohov and R. Colony. Interannual Variability of Hydrochemical Elements in the Arctic Ocean

Steffen, Konrad, Nicolas Cullen, and Russell Huff. Radiation Climatology at the Swiss Camp on the Western Slope of the Greenland Ice Sheet

Suzuki, Kazuyoshi, Y. Nakai and T. Ohata. Seasonal Variations in Intercepted Snow, and Water and Energy Balance above a Cool-Temperate Coniferous Forest in the Histujigaoka Experimental Forest, Japan

Vinje, Torgny. Ice Extent in the Nordic Seas During the Last Centuries

Walczowski, Waldemar, Jan Piechura and Robert Osiński. Distribution and Pathways of Atlantic Water in the Greenland Sea

Session 3 – Process Studies and Modelling (T. Fichefet, Chair)

Aðalgeirsdóttir, Guðfinna, H. Guðmundson, J. Björnsson. Importance of Surges on the Stability and Size of Vatnajökull Ice Cap, Iceland

Bengtsson, Lennart, Vladimir A. Semenov and Ola M. Johannessen. The early 20th Century Warming in the Arctic – a Possible Mechanism

Bogorodsky, P.V. and A.V. Pnyushkov. Heat and Mass Transport during Crystallization of Aqueous Salt Solution

Bogorodsky. P.V., and V. Pnyushkov. On Natural Convection in the Stratified Snow Cover of Sea Ice

Brümmer, Burghard, Gerd Müller, Christian Kreutzmann, and Jouko Launiainen. The Arctic Inversion and its Representation in Operational Weather Models

Denisenko, Stanislav G., and N.V. Denisenko. The Long-Term Changes of Zoobenthos Biomass in the Pechora Sea as Indicator of Climate Variability

Denisenko, Stanislav G. Distribution of Ice and Zoobenthos in the Arctic Seas

Dmitriev, Victor. About an Approach to Probabilistic Interpretation for One Sort of Ice Forecast

Dorn, Wolfgang, Klaus Dethloff, Annette Rinke, Dörthe Handorf, Subodh Saha. Modeled Climate Variability of the Arctic Atmosphere, the impact of Greenland, Vertical Resolution, and Different Land Surface Schemes

Drüe, Clemens, and G. Heinemann. Aircraft-Based Investigations of Arctic Boundary-Layer Fronts

Fichefet, Thierry, Hugues Goosse, and Miguel Angel Morales Maqueda. Arctic and Antarctic Sea Ice Variability during 1955-2001: A Model Study

Gorodetskaya, I., M. A. Cane, L.-B. Tremblay, and A. Kaplan. Sensitivity of the Planetary Albedo to Changes in Sea Ice and Land Snow Concentrations: A Satellite Data Study

Gusev, Alexey, and Oleg Travnikov. Hemispheric Modelling of Arctic Pollution by Mercury

Hartmann, J., C. Lüpkes, G. Birnbaum, M. Yelland , R. Pascal2, T. Spiess and M. Buschmann. Ship based and Airborne Measurements over Arctic Leads

Jakobsen, Philip Kruse, and Torben Schmith. Multidecadal variability in a long integration with the MPI-OM1 ocean model

Keskitalo, E. Carina H. Organising for Sustainability: A Baseline and Scenarios for Human Dimensions of Climate Change in Northern Norway, Sweden and Finland

Krenke, A.N., V.V.Popova, L.M.Kitaev, and A.B.Titkova. Role of Snow Cover in the Average Winter Water Cycle over Northern Eurasia

Kubota, Jumpei, Kazuyoshi Suzuki1, Tetsuo Ohata and Valery Vuglinsky. Water and Energy Budget in the Southern Mountainous Region of Eastern Siberia

Lüpkes, C., T. Garbrecht, J. Hartmann, G. Birnbaum, T.Vihma. Influence of Sea Ice Ridges and Floe Edges on the Polar Atmospheric Boundary-Layer

Müller, Gerd, Burghard Brümmer, Björn Affeld, David Schröder, and Jouko Launiainen. Fram Strait Cyclones and their Impact on Sea Ice

Oelke, Christoph, T. Zhang, and M. C. Serreze. Modeling Evidence for Recent Warming of the Arctic Soil Thermal Regime as Derived with a Finite-Difference Heat-Conduction Model

Radionov, V.F., E.I. Aleksandrov, P.N. Svyaschennikov. Characteristics of Multi-annual Variability of Temperature and Precipitation in Different Arctic Areas

Repina, Irina. Heat and Momentum Transport above Inhomogeneous Surfaces in Polar Regions

Ryabchenko, Vladimir A.., Anton Yu. Dvornikov, Genrich V. Alekseev, Ivan A. Neelov. Modeling Recent Climate Variability in the Arctic Ocean without Climatic Surface Salinity Restoring

Savatyugin, Lev M. and E.V. Chevnina. The GIS-Technology Based Modelling of Comsomolets Island Glaciation (Severnaya Zemlya Archipelago)

Schauer, Ursula, B. Rudels, M. Karcher, I. Fer, I. Harms, S. Pisarev, R. Skogseth, G. Björk, P. Winsor, P. Haugan. Ocean Convection in Arctic Shelf Polynyas

Paweł Schlichtholz. Baroclinic Influences over a Sloping Ocean Bottom: Quasi-Synoptic and Climatological Examples from the Fram Strait

Session 3 - Process Studies and Modelling (cont'd)

Semenov, Vladimir A. and Lennart Bengtsson. Arctic Climate Response to the Sea Ice Changes: Atmospheric GCM Simulations

Sumata, Hiroshi and Koji Shimada. Interpretation of Baroclinic Structure over Northwind Ridge

Suzuki, Kazuyoshi, J. Kabota, T. Ohata, N. Vasilenko, S. Zhuravin, and V. Vuglinsky. Characteristics of Snowmelt Runoff in the Mogot Experimental Watershed, in the Southern Mountainous Taiga of Eastern Siberia

Toropov, P. A. , A. V. Kislov, and S. N. Moschonkin. Transient Simulation of Abrupt Climate Change Induced by Freshwater Input from the Laurentian Ice Sheet to the North Atlantic Ocean

John Turner. Recent Advances in our Understanding of Polar Lows

Uotila, Petteri, D. M. Holland, S. Häkkinen, G. Holloway, N. Steiner, M. Karcher, F. Kauker, M. Steele, J. Zhang, N. Yakovlev, and A. Proshutinsky. An Energy-Diagnostics Intercomparison of Coupled Ice-Ocean Arctic Models

Vancoppenolle, Martin and Thierry Fichefet. An Empirical One-Dimensional Parameterization of the Sea Ice Salinity Time Evolution

Verseghy D., P. Bartlett, M, Mackay and E.D. Soulis. Application of the Canadian Land Surface Scheme (CLASS) to Modelling the Mackenzie River Basin

Vihma, Timo. Effects of Surface Heterogeneity on the Atmosphere over Polar Oceans

Vinogradova, Anna, and Tatiana Ponomareva. Long-term variations in sources and sinks of anthropogenic pollutants in the Arctic atmosphere

Vinogradova, Anna A. The Global Warming and the Processes Forming Air Pollution in the Arctic

Xieyao Ma, Tetsuzo Yasunari, Tetsuo Ohata, and Yoshihiro Fukushima. An Investigation of the Relationship between Climate Change and Flood in the Lena River

Yakovlev, Nikolai G. INM RAS Finite-Element Coupled Ice-Ocean Model: Results, Problems and Perspectives

Zernova V.V., V. P. Shevchenko., and N.V. Politova. The level of phytoplankton development during the autumn period in the Barents Sea

Zyryanov, Denis and Reinert Korsnes. Role of the Ice Rheology in Geoscale Models

Session 4 – Interactions with the Global Climate System (J. Walsh, Chair)

Alekseev, G.V. Arctic Climate Variability

Boscolo, Roberta and Robert R. Dickson. The Arctic-Subarctic Ocean Flux Study (ASOF): Understanding the Arctic Role on Decadal Climate Variability

Fichefet, Thierry, Chantal Poncin, Hugues Goosse, Philippe Huybrechts, Ives Janssens, and Hervé Le Treut. Modeling the Interactions between the Greenland Ice Sheet and the Climate of the 21st Century

Golovanov O, Ph, and A. A. Ivanova. The Pechora River Runoff, Atmospheric Circulation and Solar Activity in the Pechora Basin

Grinsted, Aslak, Svetlana Jevrejeva and, John C. Moore. ENSO Signature in North European Time Series of Ice Conditions Detected by Singular Spectrum Analysis and Wavelet Transform.

Gushchina D.Yu., and E.V. Sokolihina. Variability of Global Zonal Atmospheric Circulation: Inter-Annual and Decadal Time-Scale

Hanssen-Bauer, I., J.E. Haugen, R.E. Benestad, and E.J. Førland. Downscaled Climate Scenarios for Svalbard

Keskitalo, E. Carina H. Organising For Sustainability: a Baseline and Scenarios for Human Dimensions of Climate Change in Northern Norway, Sweden and Finland

Kononova, Nina K. The Northern Hemisphere Atmospheric Circulation: How Its Changes Manifest in the Arctic

Kryjov, Vladimir. Response of the Summer and Autumn Circulation to the Wintertime Arctic Oscillation

Kryjov, Vladimir. Regional Peculiarities of two 20th Century Abrupt Warmings in North-Western Eurasia: Empirical Evidences of Distinction in Causes

Mächel, Hermann and Bruno Rudolf. Available data at the Arctic Precipitation Data Archive - APDA

Mächel, Hermann and Bruno Rudolf. The Arctic Precipitation Data Archive APDA - Status Quo and Outlook

Mokhov, I.I., P.F. Demchenko, A.V. Eliseev, A.A. Karpenko, V.Ch. Khon, V.A. Semenov, and D.A. Zverev. Projections of climate Changes in High Latitudes from Simulations of IAP RAS Global Model of Intermediate Complexity in Comparison with GCMs

Romanovsky, V. E. , J. H. Christensen, T. S. Sazonova1, M. Stendel, J. E. Walsh, S. Kiilsholm, D. O. Sergueev. The Use of GCMs and a Regional Climate Model in Circumpolar Modelling of Permafrost Dynamics

Shmakin, Andrey B. Evaluation of Snow Cover and Permafrost Features in Northern Eurasia for Some Climate Change Scenarios

Sokolikhina, N., and E. Volodin. Low-Frequency Variability of the Atmospheric Circulation during the North Winter

Somova, S. M., V. N. Popova, and E. M. Krakanovskaya. Climatic Studies of Low-level Clouds over the Barents Sea on the Basis of Ship Observations

Tsukernik, Maria A., T.N. Chase, M.C. Serreze, R.G. Barry., R. Pielke Sr., B. Herman, and X. Zeng. On the Regulation of Minimum Mid-Tropospheric Temperatures in the Arctic

Wang, Jia and Guo Yufu. Possible Impacts of Barents Sea Ice on the Eurasian Atmospheric Circulation and East China Rainfall in the beginning of Summer.