

6th Study Conference on BALTEX



14 - 18 June 2010
Międzyzdroje, Island of Wolin, Poland

Conference Programme
List of Participants

Partners

BONUS
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HELCOM
Baltic Marine Environment
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NEESPI
Northern Eurasia Earth Science
Partnership Initiative



LOICZ
Land-Ocean Interactions
in the Coastal Zone



BALTEX is a Regional Hydroclimate Project in the context of the Coordinated Energy and Water Cycle Observations Project (CEOP) within GEWEX (Global Water and Energy Cycle Experiment) and WCRP (World Climate Research Programme).



Sponsors

**Institute of Oceanology
Polish Academy of Science
Sopot, Poland**



**Swedish Meteorological and
Hydrological Institute
Norrköping, Sweden**



**NEESPI
Northern Eurasia Earth Science
Partnership Initiative**



**Gesellschaft zur Förderung des
GKSS Forschungszentrums e.V.
Geesthacht, Germany**



**GKSS Research Centre Geesthacht
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Organisers

**Institute of Oceanology
Polish Academy of Science
Sopot, Poland**



University of Szczecin, Poland



**Polish Academy of Sciences
Research Centre of Agriculture
and Forest Environment
Poznań, Poland**



**West Pomeranian University of Technology
Szczecin, Poland**



**GKSS Research Centre Geesthacht
Germany**



6th Study Conference on BALTEX, 14-18 June 2010, Międzyzdroje, Island of Wolin, Poland Conference Programme - Overview

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
	Registration 8:00 to 10:00	Topic 1	Topic 4	Topic 2b	Topic 3
	Opening Ceremony and Opening Session	Break: 10:40-11:10	Break: 10:50-11:20	Break: 10:20-10:50	Break: 10:20-10:50
	Lunch: 13:00-14:00	Topic 1	Topic 4	Topic 2b	Topic 3
	Topic 1	Lunch: 13:00-14:00	Lunch: 12:40-14:00	Lunch: 12:40-14:00	Closing
Registration 16:00 to 18:00	Topic 1	Poster Session I	Topic 2a	Topic 2b	
	Break: 15:30-16:00	End of day: 15:30	Break: 15:50-16:20	Break: 15:20-15:50	
End: 18:00	Topic 1		Topic 2a	Topic 2b	
	End: 18:10	End: 15:30	Break: 18:10-18:20	Topic 3	
	Casual Ice-Breaker at Amber Baltic, Chopin Restaurant 19:00	Sightseeing Tour 16:00 - 21:00	Workshop on the EU strategy for the Baltic Sea Region and projects on regional adaptation to climate change in the Baltic Sea area	Conference Dinner, Barbeque at Amber Baltic 19:00	
<p>Topics</p> <ol style="list-style-type: none"> 1 Climate variability and change in the past and future 2 Water, energy and biogeochemical cycles in the regional Earth system <ol style="list-style-type: none"> 2a Water and energy cycles 2b Biogeochemical cycles 3 Hydrological modelling, water management and extreme hydrological events 4 Regional adaptation to climate change 					

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Island of Wolin, Poland

Conference Programme

Sunday, 13 June 2010

16:00 – 18:00 Registration

Monday, 14 June 2010

8:00 – 10:00 Registration

Opening Ceremony

10:00

Janusz Pempkowiak, Director of the Institute of Oceanology,
Polish Academy of Science, Sopot, Poland
Member of the BALTEX Science Steering Group

Olgierd Geblewicz Chair of the West Pomeranian Regional Assembly
(Sejmik of West Pomeranian Voivodship), Poland
Board member of Baltic Sea States Subregional Co-operation

Andrzej Borowiec, Director of the Maritime Office in Szczecin, Poland

Leszek Tomasz Dorosz, Major of Międzyzdroje, Wolin, Poland

Małgorzata Gutry-Korycka, University of Warsaw, Poland
Chair of the National Committee Poland of the International
Geosphere-Biosphere Programme

Joakim Langner, Swedish Meteorological and Hydrological Institute,
Norrköping, Sweden
Chairman of the BALTEX Science Steering Group

11:00

Break

Opening Session

Chair: Hans-Jörg Isemer

11:30

Poland, a Baltic country: Climate, waters, people

Zbigniew Kundzewicz, Polish Academy of Sciences,
Research Centre of Agriculture and Forest Environment, Poznan, Poland, and
Rajmund Przybylak, Department of Climatology,
Nicolaus Copernicus University, Torun, Poland

- 12:00 **BONUS-169: Future perspectives for environmental research for the Baltic Sea region**
Kaisa Kononen and Andris Andrusaitis, BONUS EEIG, Helsinki, Finland
- 12:30 **NEESPI current status and its objectives within north-western Eurasia**
Pavel Groisman, NOAA National Climatic Data Center, Asheville, North Carolina, USA
- 13:00 *Lunch*

TOPIC 1: Climate variability and change in the past and future

Observations and Impacts

Chair: Hans von Storch

- 14:00 **Detailed assessment of climate variability of the Baltic Sea area for the period 1958-2009 (solicited)**
Andreas Lehmann, K. Getzlaff and J. Harlass
- 14:30 **The response of the Baltic Sea to climate variability**
Klaus Getzlaff, A. Lehmann and J. Harlaß
- 14:50 **Changes in snow cover characteristics over northwestern Russia**
Olga Bulygina, P. Groisman and V. Razuvaev
- 15:10 **Changes in wind directions in Estonia during 1966-2008 and their relationship with large-scale atmospheric circulation**
Jaak Jaagus
- 15:30 *Break*
- Chair: Sirje Keevallik*
- 16:00 **What do we know about sea-level change in the Baltic Sea? (solicited)**
Birgit Hünicke
- 16:30 **Is the Baltic sea-level change accelerating?**
Eduardo Zorita and B. Hünicke
- 16:50 **Climate variability and change detected from Baltic Sea level data since 1774: An overview**
Martin Ekman
- 17:10 **Environmental changes in the Pomeranian Bay in the Holocene, based of diatomological and geochemical studies**
Robert Kostecki and B. Janczak-Kostecka

- 17:30 **Holocene coastal morphogenesis at the southern Baltic Sea: An interplay of climate forcing and the geological environment – A case study of the Darss-Zingst Peninsula**
Wenyan Zhang, J. Harff, R. Schneider and E. Zorita
- 17:50 **Interference of climate change, geosphere and anthroposphere – A new focus of the Szczecin science community**
Andrzej Witkowski, J. Batóg, R. K. Borówka, K. Furmańczyk, J. Harff, M. Kowalewski, P. Krajewski, R. Marks, S. Musielak, M. Rębkowski and H. von Storch
- 18:10 *End of the Day*
- 19:00 *Icebreaker*

Tuesday, 15 June 2010

TOPIC 1: Climate variability and change in the past and future (continued)

Models and Impacts

Chair: Anders Omstedt

- 8:30 **Climate change in the Baltic Sea area in an ensemble of regional climate model simulations (solicited)**
Erik Kjellström, G. Nikulin and L. Bärring
- 9:00 **Long term trend and decadal variability of the hydrological cycle in the Baltic Sea region as modelled by the ENSEMBLES regional climate models**
Philip Lorenz, K. Meraner and D. Jacob
- 9:20 **Analysis of the water balance and wind climate over the Baltic Sea drainage basin using dynamically downscaled climate simulations**
Björn Carlsson, I. Sjöström, A. Rutgersson and A. Omstedt
- 9:40 **Uncertainties in the projected climate changes of wind extremes over the Baltic region**
Grigory Nikulin, E. Kjellström and C. Jones
- 10:00 **Detection and attribution of an anthropogenic effect on temperature and precipitation changes in the Baltic Sea catchment**
Jonas Bhend and H. von Storch
- 10:20 **Categorical temperature data as indicators of warming in Poland**
Zbigniew Kundzewicz and H. Lorenc
- 10:40 *Break*

Chair: Andreas Lehmann

- 11:10 **Transient scenario simulations for the Baltic Sea for 1961-2099 (solicited)**
HE Markus Meier and ECOSUPPORT collaborators
- 11:40 **Estimating the impact of potential climate change in the 21st century on the Baltic Sea ecosystem**
Vladimir Rybachenko, L. Karlin, I. Neelov, T. Eremina, O. Savchuk, R. Vankevich and A. Isaev
- 12:00 **Impact of climate change on biogeochemical fluxes of nitrogen and phosphorus in the Gulf of Riga**
Bärbel Müller-Karulis, J. Sennikovs, A. Valainis and J. Aigars
- 12:20 **Impact of climate change on the water balance of a mesoscale catchment of the Western Bug**
Thomas Pluntke, K. Barfus, K. Schwärzel, C. Burmeister and C. Bernhofer
- 12:40 **Evaluating the combined effects of nutrient load reduction and climate scenarios for the Baltic Sea catchment**
Chantal Donnelly, J. Strömqvist, J. Dahné and B. Arheimer
- 13.00 *Lunch*
- 14.00 – 15:30 **Poster Session**
- 16.00 *Excursion*

Wednesday, 16 June 2010

TOPIC 4: Regional adaptation to climate change

Chair: Andrzej Witkowski

- 8:30 **Climate services – Concepts and examples (solicited)**
Hans von Storch and I. Meinke
- 9:00 **Design practice for urban drainage, incorporating climate change impacts (solicited)**
Qianqian Zhou, K. Arnbjerg-Nielsen, P.-S. Mikkelsen, K. Halsnæs and S. Balslev Nielsen
- 9:30 **“Ecohydrological dams” for compensation of climate change and reduction of fluxes nutrients and pollutants from the river basins to Baltic Sea (solicited)**
Maciej Zalewski

- 10:00 **Meteorologically possible potato yields for Estonia, derived from climate change scenarios**
Triin Saue and J. Kadaja
- 10:20 **The perceptions of Baltic Sea region climate scientists pertaining to climate change in the Baltic Sea region: Results of the survey SurBACC 2010 (solicited)**
Dennis Bray
- 10:50 *Break*
- Chair: Jörgen Nilsson*
- Special session**
EU strategy for the Baltic Sea Region and projects on regional adaptation to climate change in the Baltic Sea area
- 11:20 **Overview**
Jörgen Nilsson
- 11:40 **A northern European perspective on adaptation to climate change**
Sten Bergström
- 12:00 **Baltic Climate, an INTERREG project**
Julie Wilks
- 12:20 **BALTADAPT – A flagship project in the pipeline**
Lotta Andersson
- 12.40 *Lunch*

TOPIC 2: Water, energy and biogeochemical cycles in the regional Earth system

Topic 2a. Water and energy cycles

Chair: Michael Lautenschlager

- 14:00 **Current status of the BALTEX in-situ reference sites in CEOP (solicited)**
Frank Beyrich, C. Heret, U. Rummel, F. Bosveld, E. Kyrö and R. Kivi
- 14:30 **Energy and water budget over the BALTEX domain from a suite of atmospheric regional climate models (present and future)**
Burkhardt Rockel
- 14:50 **An advanced weather radar network for the Baltic Sea Region – BALTRAD**
Daniel Michelson
- 15:10 **New dataset of highly resolved atmospheric forcing fields for 1850-2009**
Frederik Schenk and E. Zorita

- 15:30 **Wind parameters in the centre of the Gulf of Finland from measurements and HIRLAM outputs**
Sirje Keevallik
- 15:50 *Break*
- Chair: Jüri Elken*
- 16:20 **Introducing air-sea interaction processes in numerical models (solicited)**
Anna Rutgerosson, Ø. Sætra, A. Semedo, B. Carlsson, R. Kumar and Ø. Breivik
- 16:50 **Impact of aerosol optical properties on climate change processes. The Baltic case study**
A. Ponczkowska, P. Makuch, J. Kowalczyk, T. Zielinski, T. Petelski, J. Piskozub, A. Smirnov, B. Holben, J. Pasnicki and K. Zielinski
- 17:10 **Air-sea interaction model for momentum and mass in the presence of wind waves**
Christoph Zülicke
- 17:30 **A reliability study of wave climate modelling in the Baltic Sea**
Andrus Räämet and T. Soomere
- 17:50 **Sensitivity of the CCLM to changing land use in Eastern Europe**
Dennis Söhl, D. Pavlik and C. Bernhofer
- 18:10 *Break*
- 18:20 **Workshop** on the EU strategy for the Baltic Sea Region and projects on regional adaptation to climate change in the Baltic Sea area

Thursday, 17 June 2010

TOPIC 2: Water, energy and biogeochemical cycles in the regional Earth system (continued)

Topic 2b. Biogeochemical cycles

Chair: Janusz Pempkowiak

- 8:30 **Phosphate release at the sediment surface during anoxic conditions: Myths, mysteries and facts (solicited)**
Bernd Schneider
- 9:00 **Dissolved organic phosphorus in the Baltic Sea: Temporal and spatial variations**
Monika Nausch, G. Nausch, D. Setzkorn, B. Sadkowiak and A. Welz.

- 9:20 **Response of Polish rivers (Vistula, Oder) to reduced pressure from point sources and agriculture during the transition period (1988-2008)**
Marianna Pastuszek and K. Pawlikowski
- 9:40 **Use of a spatially-irregular simulation model to study nitrogen and phosphorus transformation processes and dynamics of dissolved oxygen in the ecosystem of the Neva Bay, Gulf of Finland**
K.A. Podgorny
- 10:00 **Modelling nutrient balance for the Western Bug catchment under global change and data scarce conditions**
Tatyana Terekhanova, B. Helm and J. Tränckner
- 10.20 *Break*
- Chair: Bernd Schneider*
- 10:50 **Can observational pH data confirm the predicted acidification of Baltic Sea surface water? (solicited)**
Anders Grimvall, A. Omstedt and M. Pertillä
- 11:20 **Simulation of nutrient transport from different depths during an upwelling event in the Gulf of Finland**
Germo Väli, V. Zhurbas, J. Laanemets and J. Elken
- 11:40 **Carbon budget of the Baltic Sea**
Karol Kuliński and J. Pempkowiak
- 12:00 **Simulating dissolved organic carbon in the Baltic Sea catchment area**
Guy Schurgers, P. Miller, C.-M. Mörh, T. Wällstedt, A. Yurova and B. Smith
- 12:20 **Quality assessment of state-of-the-art coupled physical-biogeochemical models for the Baltic Sea**
Kari Eilola, B.G. Gustafson, R. Hordoir, A. Höglund, I. Kuznetsov, H.E.M Meier, T. Neumann and O.P. Savchuk
- 12.40 *Lunch*
- Chair: Marcus Reckermann*
- 14:00 **Modelling biogeochemical fluxes in the Vistula Lagoon**
Mariusz Zalewski, Z. Witek and M. Wielgat-Rychert
- 14:20 **Towards a comprehensive biogeochemical model of the Baltic Sea**
Letizia Tedesco, T. Stipa, A. Westerlund and A. Nummelin
- 14:40 **Impact of climate change on the distribution of phytoplankton biomass in the Baltic Sea**
J. Jakacki, L. Dzierzbicka-Glowacka and M. Janecki

- 15:00 **A methodological approach for the assessment of the ecological status of urban water bodies (Saint-Petersburg as a case study)**
Valery Vuglinsky, T. Gronskaya and N. Lemeshko
- 15:20 *Break*
- Chair: Pavel Groisman*
- 15:50 **Atmospheric deposition of particulate nitrogen, sulphur and benzo(a)pyrene into the Baltic Sea between 1995 and 2005 considering the influence of ship emissions (solicited)**
Armin Aulinger, V. Matthias and M. Quante
- 16:20 **Variability of the marine boundary layer parameters over the Baltic Sea sub-basins in HIRLAM parameterizations since 1993 and their impact on the nitrogen deposition**
Marke Hongisto

TOPIC 3: Hydrological modelling, water management and extreme hydrological events

- 16:40 **Extreme storm surge events in the Pomeranian Bay and their impact on water levels in the Lower Odra River (solicited)**
Halina Kowalewska-Kalkowska
- 17:10 **Tsunami waves in coastal zones due to an asteroid impact**
Stanisław R. Massel
- 17:30 **Frequencies of spring floods in the Belarus part of the Baltic Sea basin according to the atmospheric circulation**
Irina Danilovich and R. Chekan
- 17:50 *End of the Day*
- 19:00 *Conference Dinner*

Friday, 18 June 2010

TOPIC 3: Hydrological modelling, water management and extreme hydrological events (continued)

Chair: Berit Arheimer

- 8:30 **Baltic inflows – Extreme oceanographic events (solicited)**
Jan Piechura and R. Osiński
- 9:00 **Integrated Water Resource Management for the Western Bug catchment as a multi-scale - multi-objective approach**
Björn Helm, T. Terekhanova and F. Blumensaat

- 9:20 **Hydrological modelling of the lake flow using “Hydrograph” model**
Sergey Zhuravlev and Y. Vinogradov
- 9:40 **Droughts in Poland, recent variability and future predictions**
Joanna Wibig
- 10:00 **Temporal variability of extreme precipitation in Estonia 1961-2008**
Kalev Päädam and P. Post
- 10:20 *Break*
- Chair: Joakim Langner*
- 10:50 **Utilizing lagrangian trajectories for reducing environmental risks**
Bert Viikmäe, T. Soomere, N. Delpêche, H.E.M. Meier and K. Döös
- 11:10 **Using multi-year circulation simulations to identify areas of reduced risk
for marine transport. Application to the Gulf of Finland**
Oleg Andrejev, A. Sokolov, T. Soomere, K. Myrberg and B. Viikmäe
- 11:30 **Spatio-temporal changes in thunderstorm frequency in Estonia**
Sven-Erik Enno
- 11:50 **Identifying high risk areas of pollution in the western Baltic Sea**
Andreas Lehmann, H-H. Hinrichsen and K. Getzlaff
- 12:10 *Closing of the Conference*
- 12:30 *End of the Conference*

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Tuesday, 15 June 2010

14.00 – 15:30 **Poster Session**

TOPIC 1: Climate variability and change in the past and future

Topic1 - 01

ECOSUPPORT (Advanced tool for scenarios of the Baltic Sea ECOSystem to SUPPORT decision making): Project approach and selected results

Helèn C. Andersson and the ECOSUPPORT consortium

Topic1 - 02

Impact of recent changes of snow cover and climate on river runoff in the Baltic Sea basin of the East European plain

Ala Bildziuh, L. Trafimova, I. Danilovich and R. Chekan

Topic1 - 03

Precipitation changes in the Russian sector of the Baltic Sea Basin after accounting for comprehensive biases in their measurements

Esfir G. Bogdanova, B. Iljin, S-Y. Gavrilova and P. Groisman

Topic1 - 04

Long term water level and surface temperature changes in the lagoons of the South and East Baltic

Inga Dailidienė, H. Baudler and B. Chubarenko

Topic1 - 05

High resolution reanalysis for the Baltic Sea region during 1965-2005

Andres Luhamaa, K. Kimmel, A. Männik and R. Rõõm

Topic1 - 06

Long-term changes in frequency and duration of southern cyclones influencing climate variability in Estonia

Kaupo Mändla, M. Sepp and J. Jaagus

Topic1 - 07

Comparison of the sea surface temperatures and sea ice concentration from ERA-Interim and BSH

Thomas Raub, T. Cesko, K. Getzlaff, A. Lehmann and D. Jacob

Topic1 - 08

On regime shift in the general atmospheric circulation over the Baltic Sea region in winter

Mait Sepp

Topic1 - 09

Changes in some elements of the water cycle in the Baltic Sea areas of the former Soviet Union

Nina Speranskaya

TOPIC 2: Water, energy and biogeochemical cycles in the regional Earth system

Topic 2a. Water and energy cycles

Topic2a - 01

Wave conditions along the Latvian coast of the Baltic Proper derived from visual wave observations

Anita Draveniece

Topic2a - 02

Spatial variability of thermohaline and dynamical parameters during wind-driven coastal upwelling in the south-eastern Baltic Sea

Mariy Golenko and N. Golenko

Topic2a - 03

Combining MODIS and SAR images in research of water dynamics in the south-eastern Baltic Sea

Evgenia Gurova and A. Ivanov

Topic2a - 04

Modelling of ice cover of the Baltic Sea

M. Janecki, J. Jakacki, L. Dzierzbicka-Glowacka and R. Osinski

Topic2a - 05

Assessment of precipitation conditions in the Polish zone of the southern Baltic coastland

Eliza Kalbarczyk and R. Kalbarczyk

Topic2a - 06

A study of ASCAT wind measurements near the coastal region of Estonia

Jekaterina Služenikina and A. Männik

Topic2a - 07

Large scale skill in regional climate modelling and the lateral boundary condition scheme: 32-day ensemble experiments

Katarina Veljovic, B. Rajković and F. Mesinger

Topic2a - 08

Mesoscale patterns of wind and precipitation due to inertia-gravity waves in model simulations and observational networks

Christoph Zülicke

Topic 2b. Biogeochemical cycles

Topic2b - 01

Depositions of acidifying and neutralising compounds over the Baltic Sea drainage basin between 1960 and 2006

Björn Carlsson and A. Rutgersson

Topic2b - 02

Development of the marine planktonic copepod *Acartia spp* in the southern Baltic Sea

Lidia Dzierzbicka-Glowacka, I.M. Żmijewska, J. Jakacki, A. Lemieszek and S. Mudrak

Topic2b - 03

The distribution of phytoplankton biomass in the Baltic Sea simulated by a three-dimensional model

Maciej Janecki, L. Dzierzbicka-Glowacka and J. Jakacki

Topic2b - 04

Determination of carbon return flux from the Baltic bottom sediments

Karol Kuliński, A. Szczepańska and J. Pempkowiak

Topic2b - 05

Impact of climate change on the development of *Temora longicornis* in the southern Baltic Sea

Anna Lemieszek, L. Dzierzbicka-Glowacka and I.M. Żmijewska

Topic2b - 06

Modelling the egg production of *Temora longicornis*

Anna Lemieszek, L. Dzierzbicka-Glowacka and I. M. Żmijewska

Topic2b - 07

Particulate organic carbon in the southern Baltic Sea

Anna Maciejewska, L. Dzierzbicka-Głowacka, K. Kuliński and J. Pempkowiak

Topic2b - 08

Factors influencing the acid-base (pH) balance in the Baltic Sea: A sensitivity analysis

Anders Omstedt, M. Edman, L. Anderson and H. Laudon

Topic2b - 09

Importance of the Szczecin Lagoon for the Odra River mouth area in the light of geochemical studies in the Polish part of the basin

Andrzej Osadczyk, A. Skowronek, A. Witkowski and Ł. Maciąg

Topic2b - 10

Database of published nitrogen concentrations in air and precipitation around the Baltic Sea 1850-1960

Tuija Ruoho-Airola, M. Parviainen and V. Tarvainen

Topic2b - 11

Do the ratio of pigments and carbon content in main groups of algal classes depend on trophicity? Preliminary results

Mirosława Ostrowska, J. Stoń-Egiert, M. Łotocka and R. Majchrowski

Topic2b - 12

Ecological and hydrological field studies in southern Karelia within the easternmost part of the Baltic Sea Basin: The Onego/Ladoga lakes system

Tatiana Sazonova, V. Bolondinsky and V. Pridacha

Topic2b - 13

Long term changes in phytoplankton pigments characteristics in Southern Baltic region

Joanna Stoń-Egiert

TOPIC 3: Hydrological modelling, water management and extreme hydrological events

Topic3 - 01

Towards a quantification of areas of high and low risk of pollution in the Gulf of Finland, with the application to ecologically sensitive areas

Nicole Delpeche, T. Soomere and B. Viikmäe

Topic3 - 02

Drought analysis of the Mediterranean region using the z-score

Aleksandra Kržič and I. Tošić

Topic3 - 03

Drought analysis of the Mediterranean region according to the A2 scenario using the Standard Precipitation Index

Aleksandra Kržič and I. Tošić, B. Rajković and V. Djurdjević

Topic3 - 04

Circulation of groundwater below a rippled sea bed

Stanisław R. Massel

Topic3 - 05

Recent dynamics and prediction of heavy precipitation events in Lithuania

Egidijus Rimkus, J. Kažys and A. Bukantis

Topic3 - 06

Submarine groundwater discharge to the Gulf of Gdańsk

Beata Szymczycha, L. Kotwicki and J. Pempkowiak

Topic3 - 07

Changes of mean and peak river runoff in Belarus during the 20th century

Alexander Volchek, J. Stefanenko, S. Parfomuk, V. Luksha, A. Volchek, O Natarova and T. Shelest

Topic3 - 08

Physical characteristics of extreme storm surges and falls on the Polish coast

Bernard Wiśniewski and T. Wolski

TOPIC 4: Regional adaptation to climate change

Topic4 - 01

Connections between the atmospheric circulation type and the modelled potato crop yield in Estonia

Mait Sepp and T. Saue

Topic4 - 02

Warm season degree-days in south-western Belarus and their dynamics

Alexander Volchek, O. Meshik and V. Luksha

List of Participants (as of 26 May 2010)

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