



7th Study Conference on BALTEX

10 - 14 June 2013, Borgholm
Island of Öland, Sweden

Conference Programme

**The conference opening is honoured by the presence
of H.M. King Carl XVI Gustaf, King of Sweden**

We would like to ask all participants to be seated ten minutes
before the Opening Ceremony commences.

Sunday, 9 June 2013

16:00 – 18:00 Registration

Monday, 10 June 2013

8:00 – 9:45 Registration

9:50 All participants seated in Conference Hall

Opening Ceremony

Welcome on behalf of the local host and moderation:

10:00

Joakim Langner

Swedish Meteorological and Hydrological Institute (SMHI), Sweden

Welcome addresses:

Lena Häll Eriksson

Director General SMHI

Stefan Carlsson

County Administrative Board Kalmar

Jan Erics

Chair of City Council, Borgholm Municipality, Öland

Ian A. Nicholls

Dean of Faculty of Health and Life Sciences, and Deputy Pro Vice-Chancellor,
Linnæus University at Kalmar

Opening Session

Chair: Anna Rutgersson

10:30 **BALTEX – 20 years of international and interdisciplinary research for the Baltic Sea region**

Anders Omstedt, University of Gothenburg, Sweden

Bringing together the East and West: Joining ideas, people, datasets

Sirje Keevallik, Tallinn University of Technology, Estonia

Challenges for the Baltic Sea region from the HELCOM perspective

Mikhail Durkin, Helsinki Commission, Helsinki, Finland

Climate change in the Baltic Sea region - The BACC Assessments

Hans von Storch, Helmholtz-Zentrum Geesthacht, Germany

A new science and outreach programme for the Baltic Sea region

Markus Meier, SMHI, Sweden

12:00 *Lunch*

Topic A: Improved understanding of energy and water cycles under changing conditions

Chair: Sirje Keevallik

14:00 **BALTEX - 20 years ago and before (special invited talk)**

Ehrhard Raschke

14:30 **What do we know about the human impact on aerosol cloud-mediated climate processes in the Baltic Region?**

Olaf Krüger

14:50 **Surface radiation budget of the Baltic Sea from satellite data**

Tomasz Zapadka, D. Stoltmann, M. Paszkuta and M. Sokólski

15:10 **Long term measurements of the energy balance in the urban area in Łódź, central Poland**

Krzysztof Fortuniak, W. Pawlak and M. Siedlecki

15:30 *Break*

Chair: Anders Omstedt

- 16:00 **Contributions of BALTEX towards the understanding of the Earth's water and energy cycle (solicited)**
Lennart Bengtsson
- 16:30 **A new perspective on atmospheric requirements for major inflow events into the Baltic Sea**
Semjon Schimanke, C. Dieterich and H.E.M. Meier
- 16:50 **Freshwater outflow of the Baltic Sea and transport in the Norwegian Current: A statistical correlation analysis based on a numerical experiment**
Robinson Hordoir, C. Dieterich, C. Basu, H. Dietze and H.E.M. Meier
- 17:10 **Sea ice thickness variability in the Baltic Sea**
Jari Haapala, M. Lensu, B.W. An, J. Lehtiranta and I. Ronkainen
- 19:00** *Ice Breaker*

Tuesday, 11 June 2013

Topic A (continued):

Improved understanding of energy and water cycles under changing conditions

Chair: Jüri Elken

- 09:00 **Knowledge of the Baltic Sea physics gained during the BALTEX II and related programmes (solicited)**
Anders Omstedt, J. Elken, A. Lehmann, M. Leppäranta, K. Myrberg, and A. Rutgersson
- 09:30 **Upwelling dynamics in the Baltic Sea studied by a combined SAR/infrared satellite data and circulation model analysis**
Andreas Lehmann, E. Gurova and A. Ivanov
- 09:50 **A statistical approach to coastal upwelling in the Baltic Sea based on the analysis of satellite data for 1990–2009**
Kai Myrberg, K. Höflich and A. Lehmann
- 10:10 **Ground-based GPS networks for remote sensing of the atmospheric water vapour content: A review (solicited)**
Gunnar Elgered
- 10:40** *Break*

Special session: Finalised BONUS+ projects

Chair: Andreas Lehmann

- 11:10 **Advanced modeling tool for scenarios of the Baltic Sea ECOSystem to SUPPORT decision making (ECOSUPPORT, 2009-2011)**
Markus Meier and the ECOSUPPORT co-workers
- 11:30 **Baltic-C: Modeling and experimental approaches to unravel the Baltic Sea carbon (CO₂) cycle and its response to anthropogenic changes**
Bernd Schneider, A. Omstedt, C. Humborg, J. Pempkowiak, M. Pertillä, A. Rutgersson and B. Smith
- 11:50 **Methane cycling in shallow sediments and the overlying water column of the Baltic Sea: A synopsis of the project *BALTIC GAS***
Gregor Rehder, V. Brüchert, D. Conley, T. Ferdelman, H. Fossing, J. B. Jensen, Z. Klusek, N. Pimenov, P. A.G. Regnier, M. Schlüter, V. Spiess, B. B. Jørgensen and the BALTIC GAS science team
- 12:10 **Baltic Way: Towards the use of ocean dynamics for pollution control**
Tarmo Soomere
- 12:30 *Lunch***
- 13:30 – 15:30 **Poster Session (*all topics*)**
See page 11 of this programme
- 16:00 *Excursion by bus to touristic highlights on Öland including picnic dinner***

Parallel to the excursion for conference participants, there will be a presentation of the GeoDome Theatre for the public.

The GeoDome will be presented to conference participants on Wednesday afternoon. For a description of the GeoDome, see page 7 of this programme.

Wednesday, 12 June 2013

Special Session on the Future Programme and International Cooperation

Chair: Benjamin Smith

- 09:00 **Future Earth: Research for Global Sustainability**
Martin Visbeck, GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany, Member of the Executive Group of the Future Earth Transition Team
- 09:20 **The GEWEX Hydroclimatology Panel**
Jan Polcher, Laboratoire de Météorologie Dynamique, CNRS, Paris, France, GEWEX-GHP Co-Chairman; J. Evans, Climate Change Research Centre, University of New South Wales, Sydney, Australia, GEWEX-GHP Co-Chairman; S. Benedict, International GEWEX Project Office
- 09:40 **Grand Challenges defined for the new programme**
Anna Rutgersson, University of Uppsala
- 10:00 **Perspectives for Outreach and Education in the new programme**
Marcus Reckermann, International BALTEX Secretariat
- 10:20 Break**
- 10:50 **Open Discussion**
Based on the presentation of the morning and during the opening session on Monday, there will be an open discussion on the new programme and its scientific and outreach goals.
- 12:00 Lunch**

Special session: GEWEX Regional Hydroclimate Projects (RHPs)

Chair: Hans-Jörg Isemer

- 13:00 **The Northern Eurasia Earth Science Partnership Initiative (NEESPI) in the past two years**
Pavel Groisman, University Corp. for Atmospheric Research at NOAA/NCDC, Asheville, North Carolina, USA; R.G. Lawford, International GEWEX Project Office, Washington D.C., USA
- 13:20 **The La Plata Basin RHP: Rethinking the design of adaptation strategies**
E. Hugo Berbery, University of Maryland, Earth System Science Interdisciplinary Center, College Park, Maryland, USA; J.-P. Boulanger, LOCEAN, UMR CNRS/IRD/UPMC, France; E. Gentile, University of Buenos Aires, Argentina; S. Schlindwein, Federal University of Santa Catarina, Florianópolis, Brazil

Topic B:

Analysis of climate variability and change, and provision of regional climate projections over the Baltic Sea basin for the 21st century

Chair: Franz Berger

Part 1: Analysis of climate variability and change

- 13:40 **Climate variability in the Baltic Sea basin over the last 12,000 calendar years: Lessons from the past for the future (solicited)**
Irena Borzenkova, E. Zorita, O. Borisova, L. Kalnina, D. Kisieliene, T. Koff, D. Kuznetsov, G. Lemdahl, T. Sapelko, M. Stancikaite and D. Subetto
- 14:10 **Observed changes and variability of atmospheric parameters in the Baltic Sea region during the last 200 years**
Anna Rutgersson, J. Jaagus, F. Schenk and M. Stendel
- 14:30 **Spatio-temporal climate variations and trends over the Baltic Sea since 1850**
Frederik Schenk and E. Zorita
- 14:50 **Variability and trends in daily minimum and maximum temperatures and in diurnal temperature range in Lithuania, Latvia and Estonia**
Jaak Jaagus, A. Briede and E. Rimkus
- 15:10 *Break***
- Chair: Martin Stendel*
- 15:30 **Climate change and local trends in longer air temperature time series of the Baltic region**
Andres Tarand
- 15:50 **Sea level variations of the Baltic Sea in response to climate variability for the period 1970-2010**
Andreas Lehmann, W. Huneke, K. Getzlaff and K. Myrberg
- 16:10 **Detecting acceleration in long time series of Baltic sea level**
Eduardo Zorita and B. Hünicke
- 16:30 **Long-term variations of simulated sediment transport along the eastern Baltic Sea coast as a possible indicator of climate change**
Maija Viška and T. Soomere

- 17:00 **Presentation of the GeoDome Theatre**
The GeoDome Theater of the SMHI provides a comfortable and experiential interface to virtual worlds, enabling participants to collectively and interactively explore a broad range of interdisciplinary subjects across multiple scales of space and time. The fully inflatable GeoDome Theater is a new way to bring scientific data and stories to life in a compelling, interactive, and globally networked immersive virtual environment.
- This presentation shall be dedicated to conference participants only. The GeoDome Theatre shall be accessible to the open public on Tuesday afternoon.

Thursday, 13 June 2013

Topic B (continued):

Analysis of climate variability and change, and provision of regional climate projections over the Baltic Sea basin for the 21st century

Chair: Hans von Storch

Part 2: Regional climate projections

- 09:00 **A new generation of regional climate model scenarios for the Baltic Sea area**
Erik Kjellström, G. Nikulin, P. Samuelsson and C. Jones (solicited)
- 09:30 **Variations in projections of atmospheric climate change for the Baltic Sea region**
Ole Bøssing Christensen and E. Kjellström
- 09:50 **Simulation of present and future climate variability over the Baltic Sea area with the new SMHI atmosphere-ocean-ice coupled model RCA4_NEMO**
Shiyu Wang, C. Dieterich and R. Döscher
- 10:10 **How a two-way online coupled model system impacts regional climate simulations**
Ha Thi Minh Hagemann, B. Rockel and B. Geyer
- 10:30 **Future climate change A1B scenario downscaling - Results for the Baltic and North Sea**
Dimitry V. Sein, U. Mikolajewicz, M. Groeger, E. Maier-Reimer, and D. Jacob
- 10:50** *Break*

Chair: Eduardo Zorita

11:20 **Introducing the coupled atmosphere-ocean system: COSMO-CLM and NEMO for the North and Baltic Seas**

Trang Van Pham, J. Brauch, B. Frueh and B. Ahrens

11:40 **Consistency of recently observed trends over the Baltic Sea basin with climate change projections**

Armineh Barkhordarian and H. von Storch

12:00 **Projected changes in Baltic Sea upwelling from an ensemble of RCP scenario simulations**

Christian Dieterich, G. Väli, S. Schimanke and H.E.M. Meier

12:20 **Baltic Sea wave conditions under climate change scenarios**

Nikolaus Groll, B. Hünicke and R. Weisse

12:40 *Lunch*

Topic C:

Provision of improved tools for water management, with an emphasis on extreme hydrological events and long-term changes

Chair: Joanna Wibig

13:40 **From BALTEX research to adaptation to climate change – A Swedish perspective (solicited)**

Sten Bergström

14:10 **The impacts of climate change and nutrient reduction measures on river discharge and nutrient fluxes to the Baltic Sea**

Chantal Donnelly and B. Arheimer

14:30 **Improved tools for river flood preparedness under a changing risk in Poland**

Zbigniew W. Kundzewicz

14:50 **Towards flood assessment over Eurasian watersheds using RCM and river flow routing algorithm**

Elena Stafeeva and I. Shkolnik

15:10 **Estimation of the peak outflow from natural lakes within the Neva River basin**

Sergey Zhuralev

15:30 *Break*

Chair: Chantal Donnelly

- 16:00 **Flood frequency on the rivers in the Belorussian part of the Baltic Sea basin and cyclonic activity**
Irina Partasenok and R. Chekan
- 16:20 **Precipitation extremes projections for Poland for the period 2021-2050**
Joanna Wibig
- 16:40 **Simulation of annual maximum runoff in a river catchment with a spatial weather generator and climate change scenarios**
Leszek Kuchar, S. Iwanski, L. Jelonek and W. Szalinska

Topic D:

Biogeochemical cycles in the Baltic Sea basin and transport processes within the regional Earth system under anthropogenic influence

Chair: Bernd Schneider

- 17:00 **Land cover-climate interactions in the past for the understanding of current and future climate change: the LANDCLIM project (solicited)**
Marie-José Gaillard, A-K. Tondman, J.O. Kaplan, A. Poska and G. Strandberg
- 17:30 **Modelling the extent of hypoxia and anoxia in the Baltic Sea for the period 1970-2010**
Andreas Lehmann, H.-H. Hinrichsen, K. Getzlaff and K. Myrberg
- 17:50 **Regime shifts and trends in the Baltic Sea area: A statistical approach**
Adolf Konrad Stips and M.-J. Lilover
- 19:00** *Conference Dinner*

Friday, 14 June 2013

Topic D (continued):

Biogeochemical cycles in the Baltic Sea basin and transport processes within the regional Earth system under anthropogenic influence

Chair: Kai Myrberg

- 09:00 **The role of the terrestrial dissolved organic matter mineralization for the acid-base system of the Baltic Sea (solicited)**
Karol Kulinski, B. Schneider, K. Hammer and D. Schulz-Bull

- 09:30 **Influence of DOM on the CO₂ pressure in the Gulf of Bothnia surface water**
Moa Edman and L.G. Anderson
- 09:50 **Remote sensing algorithms for sea surface CO₂ in the Baltic Sea**
Gaëlle Parard, A. Rutgersson and S.R. Parampil
- 10:10 **Influence of coastal upwelling on the Air-Sea exchange of CO₂ in a Baltic Sea basin**
Maria Norman, S.R. Parampil, A. Rutgersson and E. Sahlée
- 10:30 **Ten years of CO₂ measurements on a cargo ship reveal new insights and knowledge gaps in the Baltic Sea net community production**
Bernd Schneider and B. Sadkowiak
- 10:50 Break**
- Chair: Karol Kulinski*
- 11:20 **The Submarine Groundwater Discharge as a carbon source to the Baltic Sea**
Beata Szymczycha and J. Pempkowiak
- 11:40 **Modelling the interaction between eutrophication, acidification and climate change in the Baltic Sea**
Anders Omstedt and M. Edman
- 12:00 **Simulations of eutrophication scenarios using the current and an improved version of ERGOM**
René Friedland, T. Neumann and G. Schernewski
- 12:20 **Urban snow and snowmelt runoff inorganic pollution and its impact on the receiving river in the city of Brest, Belarus**
Ina Bulskaya and A. Volchek
- 12:40 **Impact of the emissions of the international sea traffic on the airborne deposition to the Baltic Sea and concentrations at the coastline**
Marke Hongisto
- 13:00 Closing of the Conference**
- 13:15 Lunch and Farewell**

Posters

On display Tuesday through Thursday

Dedicated poster session on Tuesday, 11 June 2013 after Lunch

Poster sequence alphabetically within topics

Topic A:

Improved understanding of energy and water cycles under changing conditions

- A1 **Different tracks of Mediterranean cyclones towards Europe and their associated precipitation fields in Poland**
Jan Degirmendžić
- A2 **GNSS for global Earth observation: An update from the European coordination action Gfg²**
Gunnar Elgered, J. Wickert, C. Arras, M. Caparrini, A. Puig-Centelles, A. Egido, S. Fuller, M. Gauss, R. Haas, R. Jongman, J. Johansson, P. Monks and S. Zolotikova
- A3 **Surface energy balance and exchange of greenhouse gases in Eastern Poland wetland – A new EC site in Biebrza National Park**
Krzysztof Fortuniak, W. Pawlak, M. Siedlecki, and M. Zieliński
- A4 **Snow cover impact on ground freeze-thaw in northern Sweden**
Maria Nilsson
- A5 **A coupled Atmosphere Ice Ocean Model for the Baltic Sea**
Thomas Raub, K. Getzlaff, D. Jacob and A. Lehmann
- A6 **Atmospheric circulation during dry periods in Lithuania**
Egidijus Rimkus, J. Kažys, D. Valiukas, G. Stankūnavičius
- A7 **First long-term ARGO float experiment in the Baltic Sea**
Petra Roiha, A. Nummelin, S. Siiriä and T. Purokoski
- A8 **Snow storage formation specifics for the Neman river basin**
Alexander Volchak, N. Sheshko, D. Kostiuk, D. Petrov
- A9 **Forecasting sea level variations in the northern Baltic Sea with a three-dimensional hydrodynamical model**
Antti Westerlund, P. Roiha, L. Tuomi, S. Siiriä, H. Boman
- A10 **Singularities of turbulent sensible heat flux in urban areas – Łódź case study**
Mariusz Zieliński

Topic B:

Analysis of climate variability and change, and provision of regional climate projections over the Baltic Sea basin for the 21st century

- B1 **Dynamics of the Baltic Sea environment under the influence of climate change (A case study of the most important Lithuanian coastal summer resorts)**
Aldona Baubiniene and R. Morkūnaite
- B2 **Estimations of social and economic consequences of modern climate change in St. Petersburg and the Leningrad region**
Irina M. Baykova, N.F. Ivanova and V.L. Marich
- B3 **The variability of wind speed and wind direction of mean and extreme winds over the Baltic Sea**
Svenja Bierstedt, H. von Storch, E. Zorita and B. Hünicke
- B4 **ECDS, an infrastructure for Swedish researchers in climate and environment and a source to find interesting data sets**
Barry Broman, T. Klein, B. Frankenberg, J. Svensson and C. Bennet
- B5 **The influence of regional climate change on the local wave climate and the longshore sediment transport at the German Baltic Sea Coast**
Norman Dreier, C. Schlamkow and P. Fröhle
- B6 **Towards a reconstruction of palaeoclimate: Research in the southeast Baltic Sea region during 2011-2013**
Olga Druzhinina, Y. Kublitsky, D. Subetto and L. Syryh
- B7 **Diurnal variability of water vapour in the Baltic Sea region according to NCEP-CFSR and BaltAn65 reanalyses**
Erko Jakobson, H. Keernik, A. Luhamaa and H. Ohvril
- B8 **Trends in tropospheric humidity and temperature over Estonia and Finland derived from radiosonde measurements**
Hannes Keernik, E. Jakobson and H. Ohvril
- B9 **Regional aspects of climate in the southeast Baltic region in connection with global changes**
Evgeny V. Krasnov, G. M. Barinova and D. V. Gaeva
- B10 **Reanalysis vs. regional climate model for the Baltic Sea region**
Andres Luhamaa, M. Zirk and P. Post
- B11 **Multi-model estimates of sea ice cover changes in the Baltic Sea by 2090**
Anna Luomaranta, J. Haapala, K. Ruosteenoja, K. Jylhä, H. Gregow and A. Laaksonen

- B12 **Features of climate change on the territory of the Republic of Belarus**
Victor Melnik and E. Komarovskaya
- B13 **New historical climate data of the southern Baltic Coasts**
Gudrun Rosenhagen and B. Tinz
- B14 **Lessons from the almost seven decades of visual wave observations from the eastern Baltic Sea coast**
Tarmo Soomere, M. Eelsalu, K. Pindsoo and M. Zujev
- B15 **Simulated halocline variability in the Baltic Sea during 1961-2007**
Germo Väli, M. Meier and J. Elken
- B16 **Assessment of regional climate variability and change using ECA&D and E-OBS**
G. van der Schrier, E.J.M. van den Besselaar, R. Leander and A.M.G. Klein Tank

Topic C:

Provision of improved tools for water management, with an emphasis on extreme hydrological events and long-term changes

- C1 **Causes and rates for erosion caused by the January 2012 storm surge on the accumulative Polish dune coast**
Tomasz A. Labuz
- C2 **An emergency communication system against hydrosphere and atmosphere threats for the Baltic Sea and the Polish coastline: The role of new media in warning of extreme hydrological and marine hazards**
Łukasz Legutko, A. Plygawko and M. Ostojski
- C3 **Characteristics of cyclones causing extreme sea levels in the Northern Baltic Sea**
Piia Post and T. Kõuts
- C4 **Precipitation – Too much or too little for potato growth**
Triin Saue and J. Kadaja
- C5 **'Stormy' circulation types of COST 733 classifications in Estonia**
Mait Sepp
- C6 **Maximum sea levels at selected stations of the Baltic Sea coast**
Tomasz Wolski and B. Wiśniewski

Topic D:

Biogeochemical cycles in the Baltic Sea basin and transport processes within the regional Earth system under anthropogenic influence

- D1 **Tracing terrestrial DOC in the Baltic Sea – A 3D model study**
F. Fransner, C. Humborg, H.E.M. Meier, C.M. Mörtz and J. Nycander
- D2 **Will the growing season have changed in Poland by the end of the 21st century? Intra- and multi-model projections**
Joanna Jędruszkiewicz
- D3 **Anthropogenic sources of nutrient pollution as a cause of degradation of the Baltic Sea and sustainable wastewater management for its prevention**
Edyta Kiedrzyńska, M. Kiedrzyński, M. Urbaniak, A. Magnuszewski and M. Zalewski
- D4 **Biotic responses to post-glacial climate change in the Baltic Sea area**
Evgeny V. Krasnov, G. M. Barinova and A. Y. Romanchuk
- D5 **Simulations of future sulphur and nitrogen deposition over the Baltic Sea drainage basin using meteorological data from three regional climate projections**
Joakim Langner and M. Engardt
- D6 **The Gulf of Finland Year 2014 - 'Clean Gulf of Finland ahead of time'**
Kai Myrberg and K. Kostamo
- D7 **Energy flows, production and filtration activity of mollusks in the salinity gradient of estuaries of the southern Baltic Sea**
Dmitry Philippenko
- D8 **Atmospheric phosphorus load to the Baltic Sea – An approach for the estimation in the Finnish sea area**
Tuija Ruoho-Airola, S. Knuuttila and J. Vuorenmaa
- D9 **Estimates of possible changes in indicators of eutrophication of the Baltic Sea under different scenarios of climate change and nutrient loads**
Vladimir Ryabchenko, M. Molchanov, A. Isaev, T. Eremina, O. Savchuk and R. Vankevich
- D10 **Climate change responses of the large aquatic ecosystems in the Baltic Sea basin**
Andrey N. Sharov, L. E. Nazarova, T. N. Polyakova and N. A. Berezina
- D11 **Transport of PCDD/PCDF along the Pilica River continuum under different hydrological conditions – A possible impact on the Baltic Sea environment**
Magdalena Urbaniak, E. Kiedrzyńska, M. Zieliński and M. Zalewski

- D12 **Migration, retention and leaching of PCBs in soil fertilized with sewage sludge**
Magdalena Urbaniak, M. Szewczyk, W. Tołoczko and M. Zalewski
- D13 **Influence of temperature on the long-term spring diatom development in the Baltic Sea**
Norbert Wasmund, G. Nausch and R. Feistel