10th Meeting
of the
BALTEX Science Steering Group

at the
Faculty of Environmental Engineering,
Warsaw Technical University,
Warsaw, Poland

7 – 9 February 2000

edited by
Jens Meywerk

International BALTEX Secretariat
Publication No. 18
April 2000

CONTENTS

SUMMARY OF MAJOR ACTION ITEMS

The BALTEX Secretariat:

- The BALTEX Publication Library needs to be activated/updated again – MAP needs to go into library.
- The international exchange of scientists needs to be reanimated.
- A summary of the present status of BRIDGE needs to be on the BALTEX home page. The home page needs to be updated.
- Set link to other CSEs on BALTEX home page.
- Circulate the most recent updates of the Interim Memorandum of Understanding (IMoU) to EOP leaders and the BRIDGE Management Group.
- Remind all EOP Leaders about their outline by 10 February.
- Merge latest information and BRIDGE activity-outline from the EOP-leaders and post it on the BALTEX home page by February 29.
- Invite people to the 3rd Scientific Conference, send first announcement by the end of March. Invite poeple from other CSEs.

BRIDGE leaders:

- The BRIDGE leaders are requested to send outlines about BRIDGE activities to the Secretariat (see report on Break-out session on BRIDGE Plans)
- Summarize EOP plans for each EOP in writing and send it to the Secretariat by Feb. 17
- Leaders need to contact IMoU partners for update, if not done so far

Ehrhard Raschke, Sergeij Zhuravin and Kirsten Warrach:

- Write up 2-3 pages summerizing talk given at the Workshop and provide the most important one or two viewgraphs to the Secretariat.

Mikko Alestalo:

- Prepare BALTEX Science Conference on Åland, 2.-6.7.2001.
- Start fund raising for conference from EU and other national sources.

Lennart Bengtsson:

- Invite (write letter to) Leitass to participate in data exchange – remind on WMO policy of free data exchange.

Jarmo Koistinen:

- Send gif´s for advertisement on BALTEX-homepage to the Secretariat.
- Send copies of transparencies to the Secretariat.

Ehrhard Raschke:

- Write short article on BALTEX update for the GEWEX Newsletter
- Draft an article about BALTEX for publication in the Bulletin of the AMS
- Gather and spread information to the Science Steering Group about the next GHP meeting in South America in 2000 – ask Rick Lawford

Eberhard Ruprecht:

- Send WG Report to BALTEX Secretariat by e-mail.

1 INTRODUCTION

The 10th Meeting of the BALTEX Science Steering Group (BSSG) was hosted by the Faculty of Environmental Engineering of the Warsaw Technical University in Warsaw, Poland. Prof. Kaczmarek, Head of the Water Resources Department of the Polish Academy of Sciences kindly prepared the meeting. The meeting was opened by the chairman of the BSSG, Prof. Dr. Lennart Bengtsson on Tuesday, 8 February 2000 at 9 a.m. and it closed on Wednesday, 9 February 2000, 12:25 p.m. It was preceded by a scientific seminar on hydrological modeling on Monday, 7 February 3 p.m. to 6:30 p.m. The agenda of the seminar as well as the agenda of the Science Steering Group Meeting are given in Appendix 1. A list of the participants with complete contact information is attached in Appendix 2. Appendix 3 is an updated list of the members of the BALTEX Science Steering Group including the most recent changes. The minutes of the Workshop on the Scientific Use of Hydrometeorological Data in BALTEX and the minutes of the First BRIDGE Team Meeting can be found in Appendices 4 and 5, respectively. The Abstracts of the Seminar on Hydrological Modeling are attached as appendix 6.

2 WELCOME BY OFFICIALS/HOSTS

2.1 Welcome by Prof. Dr. Janusz Kindler

Janusz Kindler gave a brief overview of major research at the Faculty of Environmental Engineering of the Warsaw Technical University.

Major subjects of studies are environmental engineering, biotechnology, sanitation systems and municipal engineering. These studies are designed for courses lasting 3 to 5 years to obtain a Master's degrees. It is also possible to earn a Ph.D. in environmental engineering after successful completion of postgraduate classes over three years.

The faculty conducts research and various studies in the field of both, outdoor and indoor environmental engineering. Studies of basic processes are conducted at well-equipped laboratories of environmental engineering, environmental chemistry and hydraulics. Special attention is given to mathematical modelling of environmental and natural resource systems, which are supported by specialized computer laboratories.

Research on water includes water resource management and hydrology, water supply and sewage systems, waste water treatment processes, sludge treatment and disposal, municipal and industrial waste water disposal installations, and hydraulic engineering structures such as dams and reservoirs. There is also specialized research on air pollution, solid waste studies and studies on soil protection.

In the field of indoor environmental engineering the major research topics are water supply and sanitation in buildings as well as their heating, ventilation and air conditioning systems. After this brief overview of activities Janusz Kindler welcomed all participants of the 10th BALTEX Science Steering Group meeting to Warsaw and to his Faculty.

.

2.2 Welcome by Prof. Dr. Zdzislaw Kaczmarek:

As the host of the 10th BALTEX Science Steering Group Meeting Zdzislaw Kaczmarek expressed his satisfaction that Warsaw has been chosen and welcomed all participants.

2.3 Report of the chairman

General remarks

Prof. Dr. Lennart Bengtsson welcomed all participants to the Science Steering Group meeting. He started his report with information on the nomination of new members of the BSSG:

Prof. Dr. Eberhard Müller from DWD (German Weather Service) retired as Head of the Department for Research and Development at the DWD. He also resigned from his BSSG duties and will be replaced by Dr. Gerhard Adrian, who took over the responsibilities of Dr. Müller at the German Weather Service (DWD) in August 1999. His personal research interest is in the field of global and regional scale modelling of the atmosphere. A secoond new member is Prof. Dr. Pertti Seuna from the Finnish Environmental Institute who is a specialist for catchment hydrology.

Also Dr. Aad van Ulden, who was not able to attend the meeting, was proposed as a new member of the BSSG. Aad van Ulden is the Head of the Atmospheric Climate Research Division at the KNMI (National Weather Service of the Netherlands). He has been actively involved in many GEWEX activities during the last couple of years. His main research interest is in the field of fluid dynamics at Delft University. Aad van Ulden was represented by Dr. André van Lammeren (also from KNMI), who is the coordinator for the Cloud Liquid Water Network (CLIWA-NET), recently accepted for funding by the European Union (EU). CLIWA-NET will considerably contribute to BALTEX in the next couple of years.

Dr. Inese Jauja represented Andris Leitass, Head of the Latvian Hydrometeorological Service who had not been able to attend the meeting. Inese Jauja is engaged in hydrological modelling of the Daugava river basin.

Further changes in membership were discussed the following day.

The chairman also mentioned in his report the joint workshop of the Working Group on Numerical Experimentation and Working Group an Process Studies, which was held in Abisko, Sweden, from 20 to 21 June 1999. This meeting has been very successful and showed once again, what had been achieved during the last couple of years. A more detailed report of the workshop will be given by the Working Group Chairmen later.

Additionally the chairman reported about the fate of proposals for funding sent to the EU recently. Unfortunately only one of six proposals got funded within the 5th Framework Research Programme of the EU. He had been active to push the proposals in Brussels by contacting Dr. Patermann several times and travelled himself to Brussels in December 1999, where he was pointing out that the way the proposals were evaluated was not appropriate.

According to Lennart Bengtsson there is now a better chance to get the new proposals funded, which have been submitted to the 2. Call of the EU´s 5th Framework Programme. This call was issued on November 18, 1999. Deadline for submission is February 15, 2000. Five proposals that had not been taken into consideration for the first call evaluation have been resubmitted to EU after some adjustments including changes in participating persons/institutions.
He encouraged all participating institutions/representatives to get funding from the respective national research programmes. There is need to convince the national agencies of the benefits the nations get from participating in BALTEX.

Overview of BALTEX research activities and problems

Lennart Bengtsson gave an overview of the general research going on in BALTEX. He showed the "BALTEX-box", which demonstrates the coupling between the climate system components atmosphere, land-surface and ocean. Some modelling results from the Max-Planck Institute for Meteorology (MPI) and the Swedish Meteorological and Hydrological Institute (SMHI) were presented, giving good examples of how well at least parts of the water cycle and energy budgets can now be modelled. He also showed which components definitely need improvement. He gave an example of results from ECHAM4, T106, 0.5° resolution 10 year runs, as well as ECHAM4, T106, 1° resolution (AMIP) 10 year runs. Both simulations had been driven by reanalyses from the ECMWF. The lower resolution model showed a net accumulation of water in soils.

A time series of the total precipitation over land (modelled) was compared with observations. Even though the variations (peaks) were not in very good agreement, the average values fitted quite well.

The most pressing issues in modelling are:

- land surface parameterization
- handling of snow (in general the model snow melts too fast, from which a too large ´artificial´ precipitation in spring results).

The snowbelts, which are a result of convective bands over Baltic Sea in winter time are represented reasonably well, as well as the simulation of sea ice.

He also identified more general problems:

- Due to funding problems the quantitative DWD radar data might not be available for the BRIDGE period
- The initialisation of soil moisture in the models is very critical
- The bowen ratio is very closely related to the net radiative forcing, which is still not adequately represented/parameterized in the models.
- If there is no additional funding, the improved data assimilation of SMHI (HIRLAM) and DWD are seriously in jeopardy.

Lennart Bengtsson reminded the members of the key objectives of BALTEX The development of coupled models is well on its way and he is going to push it further. There are still problems in land surface characterisation, calculation of salinity intrusions into the Baltic Sea, to name the most pressing problems.

The highest priority is now on BRIDGE.
BRIDGE should focus on:

- enhancement of the standard network mesurements (e.g. radiosoundings). Regarding radiosoundings the Gotland site for instance is already operating more frequently than normal.
- the collection of all available data, which is relevant to BRIDGE/BALTEX and on the storage in the respective data archives
- data assimilation activities by the national meteorological services
- coupled model integration

Regarding the resubmission of EU proposals he mentioned the necessity that it is very important to point out that BRIDGE is a key action in all proposals to be resubmitted. There should be a stronger focus on the science in the proposals resubmitted to EU.

More remarks about funding:
Prof. Dr. Hartmut Graßl emphasised during the discussion that the EU is a very unique way of getting funded, in terms of multinational funding, but it is highly recommended not to rely too much on EU money. First priority should always be the national funding agencies. It is very important to reach out and convince the decision-makers about the importance and benefits each country will gain through BALTEX.

3 REPORT FROM THE SECRETARIAT

Dr. Jens Meywerk gave an overview over the most recent events since the 9th BSSG meeting in Helsinki. These were:

- The Workshop on Numerical Experimentation and Process Studies, held in Abisko, Sweden, 20-21 June 1999
- GHP 5th Session & Workshop on Synthesis of Water and Energy Budgets, 13-17 Sept 1999, GKSS, Geesthacht, Germany
- Workshop on the Scientific Use of Hydrometeorological Data 21-22 Oct 1999, EMHI, Tallinn, Estonia (Minutes are attached as appendix 4)
- 1st BRIDGE Managemant Team Meeting, 27 October 1999, Risø, Denmark (Minutes are attached as appendix 5)
- Workshop on GEWEX/CEOP, 27-29 Jan 2000, at the University of Hawaii, USA

3.1 Data Contracts with Baltic States

There are agreements on the delivery of meteorological, hydrological and oceanographic data with the following countries: Belarus, Estonia, Latvia, Lithuania, Poland and Russian Federation. The national hydrological/meteorological services agreed on submitting data to the BALTEX community, which are not routinely transmitted to and dissiminated through the Global Telecommunication System (GTS) off the WMO. These data are very useful in addition to the GTS data, to be assimilated into the models and needed for initialisation of the models.
Current agreements are ending by the end of year 2000 but new contracts are beeing negotiated by the BALTEX Secretariat to cover at least the active BRIDGE period until Feb. 2002. It is also planned to extend these data delivery contract further to the end of 2003 in order to provide a better data coverage for the CEOP (see below) period.

3.2 BALTEX and its relation to WCRP/GEWEX:

As one of five Continental Scale Experiments (CSE) which are lead by the GEWEX Hydrological Panel, BALTEX has a very special meaning since it is not only a river catchment area, but also has an ocean as important component. Besides BALTEX the CSEs consists of similar studies in different climate regions, which are the MacKenzie GEWEX Study (MAGS), the GEWEX Continental-Scale International Project (GCIP), the Large Scale Biosphere-Atmosphere Experiment in Amazonia (LBA) and several riverbasins and areas in eastern Asia within the GEWEX Asian Monsoon Experiment (GAME). The GEWEX Hydrometeorology Panel (GHP) has initiated a Coordinated Enhanced Observing Period (CEOP) of all five CSEs for the period between Jan. 2001 and Dec. 2003 with the following scientific objectives:

- Demonstrate added skill in prediction on time scales up to seasonal for water resource applications using improved land-hydrology models
  - Evaluate the performance of regional coupled and uncoupled land-hydrology models across a spectrum of continental climatic zones and forecast time scales
  - Achieve a better understanding of land area and atmosphere interactions for improving the coupled hydrologic/atmospheric models
  - Demonstrate the utility of the new generation of experimental satellites in land area hydrological research to improve NWP and climate predictions
  - Prepare global land data assimilation products for at least one complete annual cycle during the two-year data collection phase
- Conduct a coordinated regional experiment in one or more of the significant heat source or sink regions that drive and modify the climate system and its anomalies

CEOP focusses on land processes, modelling and prediction studies between January 2001 and December 2002 as its first phase. The second phase is supposed to concentrate on the Asian/Australian Coordinated Regional Monsoon Experiment (GAME-related issues) between Jan. 2002 and Dec. 2003.
A very important boundary condition for this schedule is the delayed launch of two satellites, which are supposed to contribute with their data substantially to the CEOP. The

launch of ADEOS-2 has been postponed to June 2001 and the launch of ENVISAT will be delayed until October 2001.
The time plan for CEOP is currently being finalized. The CEOP planning phase has been completed by compilation of the Science and Implementation Plan, which had been discussed at a GHP-Meeting in Geesthacht (13–17 Sept., 1999) and the CEOP workshop that was held on 27-29 Jan. 2000 in Honolulu, Hawaii. The year 2000 has been allocated as preparations phase, followed by the data collection phase in 2001 through 2003. The principal research phase starts early 2002 and is expected to last until late 2005.
A CEOP Science Workshop is planned to be held in late 2002, as well as a Scientific Conference by the end of 2005.

Since BALTEX can contribute to CEOP, and in turn the BALTEX scientists will benefit from such a joined effort within CEOP, everybody is encouraged to browse through the GEWEX internet page, where a revised draft version of the Science and Implementation Plan is available at **http://www.gewex.com**.
For the data collection phase socalled reference sites have to be identified. These reference sites need to fulfill certain minimum requirements like for example radiosoundings, standard meteorological measurements, turbulent flux measurements and measurements of soil temperature and moisture profiles. For details see the CEOP Science and Implementation Plan on the web.
During the discussion Prof. Dr. Ehrhard Raschke again stressed the importance of BALTEX and its relations to GEWEX-CEOP. He once again encouraged all participants to perpetuate existing international cooperations with other CSE´s and to build up new cooperations from which both sides will certainly benefit. For the 3rd Science Conference on Åland in July 2001 scientists from all other CSE´s need to be informed and invited – this would lead to a 4 day conference instead of 3 days earlier planned.
Regarding international exchange within BALTEX:

- There should be a summary of the present status on the web.
- A report of activities should be prepared by the Secretariat.
- GEWEX-Meetings related to BALTEX need to be listed on the BALTEX home-page.

4 REPORTS FROM THE WORKING GROUPS (WG)

4.1 Working Group on Radar (WGR)

As chairman of the WG Radar, Dr. Jarmo Koistinen presented the most recent activities and achievements of the WG.
All radar products are operational since April 1999 and are accessible through the Radar Data Center's web-site (**http://www.smhi:se/brdc/**).
Koistinen showed an example of the average coverage of the BALTEX area by radars. There are several gaps in the Baltic States, the northern part of Finland and Poland, but the coverage over the Baltic Sea is complete. The images displayed are a composite of 30 Doppler radars operated throughout the Baltic Sea drainage basin. The Radar at Rovaniemi, Finland will be replaced soon and move to a slightly different position.

The Dresden radar, which is only of minor importance for BALTEX, will be operational in April 2000. There are approximately 2 to 5 radars operating in the Russian Federation but no data has been submitted to the BALTEX community. A more detailed description of the Working Group activities can be found at the above mentioned web-site.

The BALTEX Radar Data Center (BRDC) is involved in three EU proposals that will be submitted by February 15, 2000. Key issues in these proposals with respect to radar are:

- Assimilation of precipitation data derived from weather radar into atmospheric models
- Validation of model output

There is also a link to other activities like AMS, ERAD, OPERX, COST 717, NORDRAD. The first European Radar Conference will be held from 4 - 8 September 2000 in Bologna/Italy, where the WGR/BRDC will participateThe chairman is not considering a restructuring of the WGR. He mentioned that the communication should be better to other participants and the Secretariat.

Additional remarks:
The Radar data does not distinguish between the different phases of hydrometeors. This would make it necessary to install the much more expensive polarisation radars. PIDCAP data is found to be biased by 5 dB. That would result in an overestimation of precipitation by a factor of 7. Everybody using the raw data should be aware of this.

4.2 Working Group on Numerical Experimentation

As the chairman of the working group on Process Studies, Prof. Dr. Eberhard Ruprecht gave a brief report about recent achievements and events.
In earlier years, the Working Group (WG) was active both, in identifying those processes, which are relevant to modelling and monitoring of the energy and water budget of the BALTEX area, and in the planning of field campaigns. During the last year the working group also cooperated with the WG on Numerical Experimentation. Together with that WG it organized a workshop in Abisko, Sweden, 20 - 21 June 1999 on parameterization of surface fluxes, atmospheric planetary boundary layer and ocean mixed layer turbulence for BRIDGE. On the first day 15 talks were given by invited experimentalists and modellers set the stage for discussions within 3 working groups on the second day:

- WG on marine processes
- WG on land surface processes
- WG on snow and ice

The extended abstracts and the results of the WG discussions will be sent to the Secretariat and be published in the BALTEX Publication Series in the near future.

The main results of this workshop are:

- Modellers very often did not know that BALTEX field campaigns have produced data sets, which could be used to validate model results and to test new parameterizations.
- The experimentalists were partly not aware of what the modellers needed from experiments.

Therefore the following recommendations were given:

- For improved physical parameterizations in the models we need measurements representative of the model scales. Thus, area averages of observed turbulent fluxes and long continuous measurements are important for model verifications.
- Climate mode simulations are important for detection of accumulative errors in the parameterizations.
- Further workshops with participation of scientists from the other GEWEX continental scale experiments should follow to learn from their experiences.

In summary all participants agreed, that the workshop was very successful and that such a joint forum for experimentalists and modellers is highly needed. Because of these fruitful

discussions the two WGs on Numerical Experimentation and on Process Studies recommend that they should merge into a new working group which can continue this joint effort. It should be based on the scientists who cooperate in the EU-project NEWBALTIC, chaired by Lennart Bengtsson.

4.3 WG Ocean Process Studies

Prof. Willebrand was not attending, so his report was read by Lennart Bengtsson.
The last activity of the Baltex WGNE was the Abisko meeting in June 1999 (jointly with the WG on Process Studies) which he believes went very well. The meeting report is ready except for one missing contribution. In particular the combination of modellers with experimentalists at the workshop was very fruitful, and would be usefully repeated at future occasions. From discussions with the WG on Numerical Experimentation co-chair Nils Gustaffson and several other individuals, he got the impression that at this stage of BALTEX the need for the WG on Numerical Experimentation in its present form may be somewhat reduced, since the principal modeling discussions and activities have rightfully been carried out within the main projects, and in the future should be closely associated with the work in BRIDGE. The SSG might therefore wish to consider a restructuring of the WGNE.

4.4 Ocean Modelling Status

Prof. Wolfgang Krauss gave a brief summary of the status on ocean modelling activities. There is a sea ice model coupled to the ocean model. The coupled model has a horizontal resolution of 5x5 km. The model is set up to be driven by observed meteorological fields and is supposed to conduct runs for a 10 years period. So far the PIDCAP period and the following three summer seasons have been modelled. The wintertime has not been modelled, since the coupling to the sea ice was not available until recently. It is not clear yet, how the coupled ocean-sea-ice model will behave. Test runs need to be conducted. With regards to the summer season simulations the model simulates the in- and outflow through the Danish Straits pretty reasonable.
The Rossby Center is currently working towards coupling an ice model to their Ocean model, but they still need about one year to complete this task. There are problems in keeping the ocean stratification right for longer time series of 10 years or more. (It is planned to organise a high resolution modelling together with Rossby Center and Kiel).

5 BRIDGE UPDATE

Prof. Ehrhard Raschke presented the most recent timeline for BRIDGE as well as the results/summary from the first meeting of the BRIDGE Management Group in Risø on October 27, 1999. BRIDGE already started in October 1999 and will at least last until February 2002 with a possible extension to late 2002, if funding can be received, especially from the 2. Call of the 5th Framework Programme of EU and/or the most recent call for proposals (DEKLIM) from the German Research Ministry (BMBF). A possible extension would be very useful regarding our participation in CEOP (see report from the Secretariat). The Enhanced Observation Periods (EOPs) are scheduled according to seasons:

- EOP 1 and 3 to be conducted in the late summer/early fall season (Aug./Sep. 2000 and 2001)
- EOP 2 and 5 to be conducted during wintertime (Jan./Feb. 2001 and 2002)
- EOP 4 will be conducted during spring in April/Mai 2001 which is representative for the snow melting season.

Ehrhard Raschke asked for socalled volunteering hosts/coordinators for each of these EOPs. He already convinced Dr. André van Lammeren and Prof. Dr. Clemens Simmer to coordinate EOP 3 and EOP 4 respectively. He also offered that EOP 1 will be hosted by somebody from GKSS, and proposed Prof. Dr. Jouko Launiainen to host EOP 2. This led to a discussion about whether to have ´coordinators´ for each EOP at all, or better have the Secretariat and BRIDGE Management Working Group coordinate all EOPs jointly. In this context the question about a more detailed scientific plan of actions for BRIDGE came up. Also what is the role of the Secretariat with respect to BRIDGE and the individual EOPs. A breakout session was set up that was supposed to propose solutions for the above mentioned issues.
Other plans for BRIDGE are as follows:

- Dr. Jan Piechura is planning to allocate shiptime from the Polish side for all EOPs. There is need to repeat the profiling of the Baltic Sea as was done in October 1999. The profiling is important information about the state of the Baltic Sea and will enter the ocean models.
- Prof. Dr. Anders Omstedt showed a very interesting example from the October 1999 cruises. This plot contained temperature and salinity crossections of the Stolpe Channel five days apart of each other. Comparing these two plots the ventilation of the basin can be seen.

- Other already on-going BRIDGE activities are extra radiosoundings from Visby (Gotland).
- For BRIDGE field experiments the following sites have been identified as possible contributers:
  - Lindenberg, Cabauw, Marsta, Nolanda, Östergarnsholm (Prof. Ann-Sofi Smedman needs to look into funding), and Tartu in Estonia (unfortunately without a flux tower).

4DDA

There is a joint 4-Dimentional Data Analysis (4DDA) activity of the Finnish Meteorological Institute (FMI) planned together with the DWD. The Danish Meteorological Institute (DMI) and the Swedish Meteorological and Hydrological Institute (SMHI) are also conducting 4DDA. Almost 100% of the planned work can be done. One exception is the assimilation of GPS products into models which is only possible with additional funding from EU or through the German Ministry of Research´s call for proposals to their DEKLIM Programme. DWD confirms 4DDA for all EOPs as a minimum contribution to BRIDGE. The Swedish part is secure, and FMI can do their part on a reduced basis.

Additional modelling activites

Modelling of the Odra River, Vistula and Daugava will be done by GKSS and Inese Jauja. There is no progress regarding the Neva River Basin (Prof. Dr. Vuglinsky) during the last two years. There is still lack of a coordinated river modelling yet. The hydrological modellers expressed the need to focus on the four river test beds Tornälv, Neva, Daugava and Odra. They do need daily discharge data for their investigations.

6 FUNDING PROBLEMS

Ehrhard Raschke encouraged everybody to reach out and try to get national funding for BALTEX and BRIDGE related investigations. It is necessary to convince the national funding agencies of the benefits the respective country will have by participating in BALTEX. Everybody is encouraged to make up his mind and think about the mutual benefits. In Germany, for instance, the BALTEX community has been sucessfull in convincing the German Ministry of Education and Research to designate one fifth of the national climate research programme to BALTEX/BRIDGE . A small group of scientist has been active in writing up the scientific requirements for BRIDGE. This small paper now acts as the fundament for the most recent call for proposals of the new German Climate Research Program DEKLIM. The deadline for submitting proposal sketches is 15 March 2000, with a possible start of funding in early 2001. DEKLIM will give a strong support for the sucessfull continuation of BALTEX and the implementation of BRIDGE.

Lennart Bengtsson mentioned that there is already national money being raised for BALTEX in Sweden, but it needs to be increased. Many countries focus their scientific main interests on environmental chemistry and biology. On the other hand, services from the national weather services should be available to the BALTEX community without charge, at least for extra meteorological and hydrological data (non-GTS data). In many cases, however, it is still necessary to pay for digitalization of the required data, since it is availiable not always in electronic form. It would be also highly recommended to encourage young scientists to work for BALTEX.

Prof. Mikko Alestalo mentioned that most national funding agencies focus on other issues. In Finland for instance the main research focus is related to ozone depletion. If we could change the BALTEX goals or slightly adjust the goals towards those the funding agencies focus on, it might be more likely to get funding from the national agencies.

Prof. Zdzislaw Kaczmarek explained the situation in Poland. He mentioned that the Polish governement also runs a priority research with a main focus on climate change and ozone related research. BALTEX does not fit exactly into these patterns, so it is hard to get funding for BALTEX related research. He also explained, that there is a national committee dealing with international hydrological problems with a panel that already expressed strong interest in BALTEX related research. Members of this panel are among others, Jerzy Dera, Zdzislaw Kaczmarek, Piotr Kowalczak, and Jan Piechura.

Prof. Dr. Sten Bergström mentioned that the benefits of BALTEX to the respective countries should be emphazised and brought to the funding agencies. For instance the BALTEX related research helped building up the Rossby Center in Sweden, which is beneficial for many other aspects of climate reseach, not just for BALTEX. The Rossby Center currently employs 4 Ph.D students for BALTEX related research. So the SMHI has

greatly benefited from BALTEX and so can others. He encouraged everybody to contribute more actively to BALTEX and BRIDGE. He is very positive about this issue.
Prof. Dr. Anders Omstedt mentioned that the BALTEX community needs new momentum, enthusiasm, positive attitude, and willingness to contribute more actively to the project. He feels that BALTEX needs a new kick to push the research forward. In reply Jerzy Dera pointed out that Poland had been able to supply some ship time for BALTEX related research most likely for the entire BRIDGE period and its EOPs. Everybody highly appreciates the Polish contribution.
Prof. Dr. Zbigniew Kundewicz mentioned that BALTEX should mainly draw its data from existing observation networks. He questioned that the BALTEX umbrella is always a bonus to Poland as well as the upcoming membership in the EU. Poland already contributes money to the EU, but since it is not member yet, does not get many benefits back. For example the IPCC pays for travel and they had a NATO grant some time ago. Polish scientists have learned from the non-successful proposals submitted to the EU. He is aware that the Polish BALTEX community needs to raise money from all possible sources.
Lennart Bengtsson tried to summarize the situation. Everybody is aware that the funding problems are very specific for each country and cannot be generalized. But still he thinks Brussels is excited about the scientific questions dealt with in BALTEX and again encouraged everybody to reach out to the funding agencies and convince the decision-makers about the need to have a successful BALTEX.
Prof. Dr. Bergström proposed to have the highlights collected and published in scientific journals. This would help exhibiting the benefits of BALTEX. The BALTEX Secretariat should have a pool of transparencies available that display the present achievements in BALTEX and can be given to anybody who is going to present BALTEX related research to the public. This can only be reached if everybody is active and sends transparencies to the Secretariat together with some discussion of the plots.
Prof. Dr. Hartmut Graßl mentioned that often the scientists are not working close enough with the national services. This needs to be improved. One very good example is the European Center for Medium-Range Weather Forecasting (ECMWF) in Reading that very much benefited from collaborations with GEWEX related experiments. Without these collaborations between the service and the various experiments ECMWF would probably not be the leader in its field. The ECMWF has been able to improve their atmospheric model substantially due to the data they got from the GEWEX experiments. Joint projects between the services, universities and other institutions would help very much to make BALTEX even more successful and efficient. He stressed, that the BALTEX home-page needs to be improved and updated. The BALTEX home-page is supposed to be an advertisement for BALTEX.

7 BREAK-OUT SESSION ON BRIDGE PLANS

Participants: Mikko Alestalo, Lennart Bengtsson, Sten Bergström, Andre van Lammeren, Angela Lehmann, Jens Meywerk, Anders Omstedt, Ehrhard Raschke.

This break-out group was formed during the afternoon session on the BRIDGE update, it had become evident, that the plans for BRIDGE are not really known and put in stone so far to the extend needed. This session seeks to define the BRIDGE activities as well as clarifying the role of the Secretariat in BRIDGE.

The BRIDGE activities can be devided into two categories:

- Baseline activities that are conducted during the entire BRIDGE period and do not rely on any EOP:
  - Additional radiosoundings from Visby
  - Enhanced hydrological modelling activities
  - Data assimilation efforts
  - General modelling activities (ocean, atmosphere, land)
- EOP activities, that focus on additional measurements during the following time frames:

Aug/Sep 2000/2001	DIAMIX, PEP, CLIWA-NET, Cabauw
Jan/Feb 2001/2002	BASIS, PEP, LITFASS, NOPEX, Cabauw
Apr/May 2001	LITFASS, CLIWA-NET, Cabauw

The BASIS contributions will consist of added soundings in Finland for Jan/Feb 2001 only.

The NOPEX contribution will be a reduced contribution.

For each activity responsible contact persons (also called BRIDGE leaders) have been nominated:

Ocean measurements:	Piechura, Omstedt, Alenius
LITFASS	Adrian
PEP	Smedman
CLIWA-NET and Cabauw Observatory	van Lammeren
Sodankylä Observatory	Heikinheimo
NOPEX	Halldin
BASIS	Launiainen

The role of these contact persons is to:
Write up details about the respective experiments/oberservations/activities including information about the major scientific objectives, expected deliverables and required measurement, modelling, and coordination activities. These brief outlines are supposed to be sent to the Secretariat by February 15.

The role of the IMoU (Interim Memorandum of Understanding) partners is to:
Update their list of activities in BRIDGE including a time-plan and the major objectives of their activities. The data from the EOPs and modelling activities stays at the respective 'provider'. A brief desciption of the data (parameters and contact person's e-mail) needs to be posted to the BALTEX web pages.

The role of the Secretariat is to:
Be the focal point of information between IMoU Partners, BRIDGE leaders and the public. This can be mainly achieved by having all information posted to the web-pages, to update them frequently and inform the BALTEX community about major updates.

In order to finalize the BRIDGE plans the following schedule has been set up:
10 February: The Secretariat informs all BRIDGE leaders (responsible contact persons) about this schedule and asks all to write up their outline as mentioned above.
17 February: The BRIDGE leaders are supposed to have the outlines sent to the Secretariat. The Secretariat will spread the information about already updated IMoU activities to the BRIDGE leaders. The BRIDGE leaders are requested to contact the IMoU partners in case the information of the respective IMoU partner is not updated yet.
24 February: The Secretariat is merging all the information from the outlines of the BRIDGE leaders into one document, posts the draft on the web, and informs the BRIDGE leaders, and asks them to browse through the information and send comments to the Secretariat.
29 February: end of the iteration process of the BRIDGE Plan.
1 March: The Secretariat postes the BRIDGE plan to the BALTEX web site and asks the BALTEX Science Steering Group to browse the information and send comments to the Secretariat.

8 REORGANIZATION OF THE BSSG

Lennart Bengtsson listed the changes in the BALTEX Science Steering Group.
After 7 years of active membership Prof. Dr. Jerzy Dera wished to resign from his duties. Dr. Jan Piechura will replace Jerzy Dera.
Prof. Krauss has been a member of the SSG since 1992. He asked to be released from his SSG duties as well. He proposed Dr. Andreas Lehmann being a replacement for him.
Prof. Kaczmarek also laid down his SSG duties. The replacement from the polish side will be Prof. Dr. Zbigniew Kundzevicz.
Lennart Bengtsson expressed thanks to all the resignees and Ehrhard Raschke as the Secretariat. He also annouced that he will be leaving the SSG and proposed Prof. Dr. Hartmut Graßl as the new chairman, which was confirmed by the BSSG members. Hartmut Graßl pointed out the highlights of BALTEX research being even beyond all other GEWEX CSEs by including an ocean in its coupled modelling efforts. He thinks that the major challenge in BALTEX, having a coupled interactive model for the entire region will soon be reached. Then many applications are open to the international community of researchers and services for the benefit of all participating countries. He stressed that the current trend regarding funding in BALTEX needs to be reversed. He also emphasized the need for much more international exchange of scientists within the BALTEX community and with other CSEs.
A complete new list of the BSSG members is attached to the minutes as appendix 2, together with a summary of the changes mentioned above.

Reorganization of the working Groups:

The working Group on Radar will continue, while the Working Groups on Numerical Experimentation and Process Studies will be combined with the NEWBALTIC Working Group led by Lennart Bengtsson. This newly formed group will be called Working Group on Coupled Modelling WGCM. Lennart Bengtsson will send a list of members of the former NEWBALTIC Working Group to the Secretariat. The structure, objectives and goals of this new working group have not yet been finalized. The new group is expected to push the work between modellers and experimentalists. The next working group meeting should be a joint meeting of all working groups.
The BRIDGE working group and the Working Group on Coupled Modelling need to work closely together. It is highly recommended that the modellers and experimentalists meet more often for mutual benefit.

9 PREPARATION OF THE SCIENCE CONFERENCE IN 2001

The 3rd scientific conference will be held on Åland, which is a small island in the southern part of the Bothnian Sea, from 2 to 6 July 2001. Prof. Dr. Mikko Alestalo, who will act as the local host presented some information about the island, as well as the possible place to meet and its facilities. He also presented a very preliminary draft of a financial plan for the conference. The total budget for an estimated number of participants of probably 150 will be about $US 50,000. He will need to start working out details and raise money for the event. The admission fee per participant will be around $100, so only a part of the total budget needs to get additional funding. Possible funding agencies would be the EU, NATO, other national supporters and private companies. The Secretariat will send Mikko Alestalo information about the organizational issues and possible supporters from the Second Scientific Conference, which was organized by the Secreatriat and held on Rügen in May 1998. For the upcoming 3rd Science Conference it was stated that it should be planned to have scientists presenting papers from the other GEWEX CSEs, in order to encourage the information exchange and collaborations between these experiments and other scientists.
A scientific committee for this conference was established, chaired by Prof. Graßl, including the members Omstedt, Rosbjerg, Läpparanta, Launiainen, Wergen and Meywerk.
The first annoucement for this conference should be late March 2000. It is supposed to be sent by surface mail, rather than by e-mail or fax. Mikko Alestalo sends digital pictures and other material of Åland to the Secretariat in order to be able to design a flyer.

10 DATE AND PLACE OF NEXT BSSG

The next meeting will be held at the Max-Planck-Institute for Meteorology in on 13 to 14 November 2000. Agenda items to be included are:

- Oral report of all four BALTEX Data Centers, based on a written report.
- Definition of the goals and objectives of the different working groups.
- Proposals regarding an exchange programme for young scientists (Graßl will write to EU)
- Written report and brief oral presentation of the leader of EOP 1 (Raschke)
- Written report of the Secreatriat about the status of the BALTEX publication library (Meywerk)
- Travel funds need to be offered for some of the Baltic State participants for the next meeting.

Appendix 1: AGENDA OF THE BSSG MEETING

BALTEX Science Steering Group Meeting in Warsaw, Poland, February 7-9th 2000

---Agenda---

Workshop/Seminar on hydrological modelling (Monday 15:00 – 18:00)

15:00 **Prof. Dr. Zdzislaw Kaczmarek:** Hydrologic models - who needs them?

15:30 **Dr. Inese Jauja:** Modelling the Daugava river

16:00 **Dr. Pertti Seuna:** Hydrologic modelling in Finland

16:30 **Dr. Sergei A. Zhuravin:** Modelling the Neva river

17:00 **Mrs. K. Warrach:** Hydrologic modelling activities at GKSS

17:30 **Prof. Dr. Sten Bergström:** Integration of hydrological and meteorological land parameterizations within SWECLIM

18:00 **Prof. Dr. Ehrhard Raschke:** Joint project on the Odra floods

Most of these reports should concentrate on the status of models which later should be coupled to an atmospheric model.

Science Steering Group Meeting (Tuesday 9:00 – 17:00 and Wednesday 9:00 – 12:00)

Tuesday 9:00 – 17:00

1. **Welcome (Bengtsson, Kaczmarek, and other officials)**
2. **Report of the chairman (Bengtsson)**
3. **Report of the Secretariat (Meywerk, Raschke)**
   This will cover internal affairs, meetings and the international development within the WCRP/GEWEX community as well. Of particular interest is the cooperation between all 5 GEWEX Continental Scale Experiments.
4. **Reports from the working groups (Koistinen, Ruprecht, Willebrand)**
   Chairpersons or their authorized representatives should report about activities and in particular on the need whether to continue with their working group. Possible new working groups need to be defined.

----- Lunch break -----

Tuesday, 9:00 – 17:00

5. **BRIDGE status report and required planning (Meywerk, Raschke)**
   The Secretariat and the "BRIDGE task force" will stress recent developments of BRIDGE. In particular "hosting teams" are sought for each of the EOPs to define their specific goals and coordinate respective activities. EOPs 3 and 4 have already their hosts (Uni Bonn and KNMI), possibly also EOP 2 (Risø with Helsinki). Members of the BSSG should be prepared to contribute to the other 2 EOPs.
6. **Funding problems (Raschke)**
   Open discussion on benefits obtained from participating in BALTEX. This discussion must stress the need to raise national funds and also the EU sources. All members should prepare arguments to support in particular the national positions. Since apparently many of the Services in BALTEX could not make clear to their respective governments the advantage they will have in participating in BALTEX and possible improvements of their "products". Further we miss in some countries contributions from the respective scientific community. As we see it from one country, such contributions can begin even when additional external support is available later. Therefore all BSSG members are urged to consult interested scientific parties in their country.

----- Dinner -----

Wednesday 9:00 – 12:00

7. **Reorganization of the BALTEX-SSG**
   While some members will retire, new members have already been proposed, who will already attend the meeting. An election/nomination of a new BALTEX SSG chairman is necessary.
8. **Preparation of Science Conference in 2001**
   We need to establish a scientific committee and to collect ideas on major issues to be discussed there. Dr. Alestalo should provide us with a brief report on his preparations and on the required financial budget.
9. **Other issues/items**
10. **Place and date of next meeting**

----- Adjourn -----
Wednesday ~12 p.m.

Appendix 2: LIST OF PARTICIPANTS

Priv.-Doz. Dr. Gerhard Adrian e-mail: gerhard.adrian@dwd.de
Deutscher Wetterdienst
GB Forschung und Entwicklung
Postfach 10 04 65
D-63004 Offenbach
Germany

Dr. Pekka Alenius e-mail: alenius@fimr.fi
Finnish Institute of Marine Research
Oceanographic Data Base
P.O. Box 33, Asiakkaankatu 3
FIN-00931 Helsinki
Finland

Dr. Mikko Alestalo e-mail: mikko.alestalo@fmi.fi
Finnish Meteorological Institute
Meteorological Research
P.O. Box 503, Vuorikatu 24
FIN-00101 Helsinki
Finland

Prof. Dr. Lennart Bengtsson e-mail: bengtsson@dkrz.de
Max-Planck-Institut für Meteorologie
Bundesstraße 55
D-20146 Hamburg
Germany

Prof. Dr. Sten Bergström e-mail: sten.bergstrom@smhi.se
Swedish Meteorological and Hydrological Institute
Research and Development
Folkborgsvägen 1
S-60176 Norrköping
Sweden

Prof. Dr. Jerzy Dera e-mail: dera@iopan.gda.pl
Polish Academy of Sciences
Institute of Oceanology
Powstanców Warszawy 55
PL-81-712 Sopot
Poland

Prof. Dr. Hartmut Graßl e-mail: grassl@dkrz.de
Meteorologisches Institut
Universität Hamburg
Bundesstraße 55
D-20146 Hamburg
Germany

Inese Jauja e-mail: jauja@latnet.lv
Latvia University of Agriculture
Dept. of Environmt. Engineering
Akademijas str. 19
LV-3001 Jelgava
Latvia

Prof. Dr. Zdzislaw Kaczmarek e-mail: kaczmar@igf.edu.pl
Polish Academy of Sciences
Institute of Geophysics
64, Ks. Janusza str.
PL-01-452 Warsaw
Poland

Malgorzata Kepinska-Kasprzak e-mail: dyr_imgw@rose.man.poznan.pl
Institute of Meteorology and Water Management
Branch of Poznan
ul. Dabrowskiego 174/176
PL-60-594 Poznan
Poland

Prof. Dr. Janusz Kindler
Warsaw Technical University
Nowowiejska 20
PL-00653 Warsaw
Poland
e-mail: jkindler@saturn.iis.pw.edu.pl

Jarmo Koistinen
Finnish Meteorological Institute
P.O. Box 503
FIN-00101 Helsinki
Finland
e-mail: jarmo.koistinen@fmi.fi

Prof. Dr. Piotr Kowalczak
Institute of Meteorology and Water Management
Branch of Poznan
ul. Dabrowskiego 174/176
PL-60-594 Poznan
Poland
e-mail: dyr_imgw@rose.man.poznan.pl

Prof. Dr. Wolfgang Krauß
Institut für Meereskunde
an der Universität Kiel
Düsternbrooker Weg 20
D-24105 Kiel
Germany
e-mail: wkrauss@ifm.uni-kiel.de

Prof. Dr. Z.W. Kundzewicz
Polish Academy of Sciences
Research Centre of Agr. and Forest Envir.
ul. Bukowska 19
PL-60-809 Poznan
Poland
e-mail: zkundze@man.poznan.pl

Dr. Angela Lehmann e-mail: angela.lehmann@dwd.d400.de
Deutscher Wetterdienst
BALTEX-Datenzentrum
Postfach 10 04 65
D-63004 Offenbach/Main
Germany

Prof. Dr. Wojciech Majewski e-mail: wmaj@ibwpan.gda.pl
Polish Academy of Sciences
Institute of Hydroengineering
ul. Koscierska 7
PL-80-953 Gdansk
Poland

Dr. Jens Meywerk e-mail: meywerk@gkss.de
GKSS Forschungszentrum GmbH
Institut für Atmosphärenphysik
Max-Planck Straße
D-21502 Geesthacht
Germany

Prof. Dr. Anders Omstedt e-mail: anders.omstedt@smhi.se
Swedish Meteorological and Hydrological Institute
Research and Development
Folkborgsvägen 1
S-60176 Norrköping
Sweden

Ms. Marzena Osuch e-mail: marz@igf.edu.pl
Polish Academy of Sciences
Institute of Geophysics
Ks. Janusza 64
PL-01-452 Warsaw
Poland

Dr. Jan Piechura e-mail: piechura@iopan.gda.pl
Polish Academy of Sciences
Institute of Oceanology
Powstanców Warszawy 55
PL-81-712 Sopot
Poland

Prof. Dr. Ehrhard Raschke e-mail: raschke@gkss.de
GKSS Forschungszentrum GmbH
Institut für Atmosphärenphysik
Max-Planck Straße
D-21502 Geesthacht
Germany

Dr. Dan Rosbjerg e-mail: dan@isva.dtu.dk
ISVA-Technical University of Denmark
Department of Hydrodynamics and Water Resources
Building 115
DK-2800 Lyngby
Denmark

Prof. Dr. Eberhard Ruprecht e-mail: eruprecht@ifm.uni-kiel.de
Universität Kiel
Institut für Meereskunde
Düsternbrooker Weg 20
D-24105 Kiel
Germany

Dr. Pertti Seuna e-mail: pertti.seuna@vyh.fi
Finnish Environment Institute
P.O. Box 140
FIN-00251 Helsinki
Finland

Prof. Dr. Clemens Simmer
Rhein. Friedrich-Wilhelms-Universität
Meteorologisches Institut
Auf dem Hügel 20
D-53121 Bonn
Germany
e-mail: csimmer@uni-bonn.de

Dr. Ivan M. Skuratovich
State Committee for Hydrometeorology
Republic of Belarus
110 Skarina Avenue
220 023 Minsk
Belarus
e-mail: Skrt@by.mecom.ru

Dr. André van Lammeren
The Royal Netherlands Meteorological
Institute - KNMI -
Postbus 201
NL-3730 AE de Bilt
The Netherlands
e-mail: lammeren@knmi.nl

Kirsten Warrach
GKSS Forschungszentrum GmbH
Institut für Atmosphärenphysik
Max-Planck Straße
D-21502 Geesthacht
Germany
e-mail: warrach@gkss.de

Dr. Sergei A. Zhuravin
Russian Fed. Service for Hydrometeorology
State Hydrological Institute
23, Second Line
St. Petersburg 199053
Russian Federation
e-mail: root@shi.spb.ru

Appendix 3: BALTEX SCIENCE STEERING GROUP MEMBERS AND MOST RECENT CHANGES

Resignees:

Prof. Dr. Lennart Bengtsson (chairman)
Prof. Dr. Jerzy Dera
Prof. Dr. Wolfgang Krauß
Prof. Dr. Eberhard Müller
Prof. Dr. Zdzislaw Kaczmarek

New members:

Prof. Dr. Hartmut Graßl (chairman)
Dr. Jan Piechura
Dr. Andreas Lehmann
Prof. Dr. Zbigniew W. Kundzewicz
Dr. Gerhard Adrian
Dr. Pertti Seuna
Prof. Dr. Clemens Simmer
Dr. Aad P. van Ulden

BSSG Member list

Dr. Gerhard Adrian
Deutscher Wetterdienst
GB Forschung und Entwicklung
Postfach 10 04 65
D-63004 Offenbach / Germany
Phone: + 49-69-8062-2720
Fax: + 49-69-8062-3721
e-mail: gerhard.adrian@dwd.de

Dr. Mikko Alestalo
Finnish Meteorological Institute
Director of Meteorological Research
P.O. Box 503, Vuorikatu 24
FIN-00101 Helsinki / Finland
Phone: + 358-9-1929-4100
Fax:+ 358-9-1929-4103
e-mail: mikko.alestalo@fmi.fi

Prof. Dr. Sten Bergstrøm
Swedish Meteorological and Hydrological Institute
S-60176 Norrkøping / Sweden
Phone: + 46-11-158292
Fax: + 46-11-170207
e-mail: sten.bergstrom@smhi.se

Prof. Dr. Hartmut Graßl (chairman)
Max-Planck-Institut für Meteorologie
Bundesstraße 55
D-20146 Hamburg / Germany
Phone: + 49-40-41173-225
Fax: + 49-40-41173-350
e-mail: grassl@dkrz.de

Prof. Dr. Erland Källen
Stockholm University
Department of Meteorology
Arrhenius Laboratory
S-10691 Stockholm / Sweden
Phone: + 46-8-16-2396
Fax: + 46-8-15-7185
e-mail: erland@misu.su.se

Prof. Dr. Peeter Karing e-mail: sirje@nimbus.emhi.ee or emhi.karing@torn.ee
Estonian Meteorological and Hydrological Institute
Rävala 8
EE-0001 Tallinn / Estonia
Phone: + 372-6-419-159
Fax: + 372-6-454-277

Dr. Petras Korkutis e-mail: korkutis@meteo.lt
Lithuanian Hydrometeorological Service
Rudnios 6
Vilnius 2600 / Lithuania
Phone: + 370-2-75-1194
Fax: + 370-2-72-4160

Prof. Dr. Piotr Kowalczak e-mail: dyr_imgw@rose.man.poznan.pl
Institute of Meteorology and Water Management
Branch of Poznan
ul. Dabrowskiego 174/176
PL-60594 Poznan / Poland
Phone: + 48-61-841-1621
Fax: + 48-61-847-5440

Prof. Dr. Zbigniew W. Kundzewicz e-mail: zkundze@man.poznan.pl
Polish Academy of Sciences
Research Centre of Agr. and Forest Envir.
Ul. Bukowska 19
PL-60-809 Poznan / Poland
Phone: + 48-61-8475-601
Fax: + 48-61-8473-668

Prof. Dr. Jouko Launiainen e-mail: jouko.launi@fimr.fi
Finnish Institute of Marine Research
Department of Physical Oceanography
P.O. Box 33
FIN-00931 Helsinki / Finland
Phone: + 358-9-613 941
Fax: + 358-9-331 025

Dr. Leif Laursen e-mail: ll@dmi.min.dk
Danish Meteorological Institute
Research and Development Department
Lyngbyvej 100
DK-2100 Copenhagen / Denmark
Phone: + 45-3915 7420
Fax: + 45-3915 7460

Dr. Andreas Lehmann e-mail: alehmann@ifm.uni-kiel.de
Institut für Meereskunde
an der Universität Kiel
Düsternbrooker Weg 20
D-24105 Kiel / Germany
Phone: +49-431-5974013
Fax: +49-431-565876

Mr. Andris Leitass e-mail: lhma@lhma.org.lv
Latvian Hydrometeorological Agency
165, Maskavas Str.
LV-1019 Riga / Latvia
Phone: + 371-7-112040 or 144390
Fax: + 371-7-145154

Prof. Dr. Anders Omstedt e-mail: anders.omstedt@smhi.se
Swedish Meteorological and Hydrological Institute
S-60176 Norrkoeping/Sweden
Phone: + 46-11-495-8284
Fax: + 46-11-495-8001

Dr. Jan Piechura e-mail: piechura@iopan.gda.pl
Polish Academy of Sciences
Institute of Oceanology
Powstanców Warszawy 55
PL-81-712 Sopot / Poland
Phone: +48-58-551-7281 ext. 313
Fax: +48-58-551-2130

Prof. Dr. Ehrhard Raschke (vice chairman) e-mail: raschke@gkss.de
GKSS Forschungszentrum Geesthacht GmbH
Institut für Atmosphärenphysik
Max-Planck Straße
D-21502 Geesthacht / Germany
Phone: +49-4152-871533
Fax: +49-4152-872020

Dr. Dan Rosbjerg e-mail: dan@isva.dtu.dk
Department of Hydrodynamics and Water Resources
ISVA - Technical University of Denmark
Building 115
DK-2800 Lyngby / Denmark
Phone: + 45-4525-1449
Fax: + 45-4593-2860

Dr. Pertti Seuna e-mail: pertti.seuna@vyh.fi
Finnish Environment Institute
Kesäkatu 6
P.O. Box 140
FIN-00251 Helsinki / Finland
Phone: + 358-9-4030-567
Fax: + 358-9-4030-590

Prof. Dr. Clemens Simmer e-mail: csimmer@uni-bonn.de
Rhein. Friedrich-Wilhelms-Universität
Meteorologisches Institut
Auf dem Hügel 20
D-53121 Bonn / Germany
Phone: + 49-228-73-5190
Fax: + 49-228-73-5188

Dr. Ivan M. Skuratovitch e-mail: skrt@by.mecom.ru
State Committee for Hydrometeorology
I6 Komsomolskaya Street
220 600 Minsk / Belarus
Phone: + 375-172-640436
Fax: + 375-172-640335

Dr. A.P. van Ulden e-mail: vanulden@knmi.nl
KNMI Head Atmospheric Research
Climate Research and Seismology Department
Postbus 201, Wilhelminalaan 10
NL-3730 AE De Bilt / The Netherlands
Phone: +31-30-220-6447
Fax: +31-30-221-407

Prof. Dr. Valeri S. Vuglinsky e-mail: VVuglins@VV4218.spb.edu
State Hydrological Institute
23, Second Line
SU-199053 St. Petersburg / Russian Federation
Phone: + 7-812 323-3458
Fax: + 7-812 323-1028

Ex-officio:
Dr. Jens Meywerk e-mail: baltex@gkss.de or meywerk@gkss.de
International BALTEX Secretariat
Institut für Atmosphärenphysik
GKSS Forschungszentrum Geesthacht
Max-Planck-Straße
D-21502 Geesthacht / Germany
Phone: + 49-4152-87 1536
Fax: + 49-4152-87 2020

Appendix 4: MINUTES OF THE WORKSHOP ON SCIENTIFIC USE OF HYDROMETEOROLOGICAL DATA IN BALTEX

held on 21 and 22 October 1999 in Tallinn, Estonia

Participants: Ute Karstens, Angela Lehmann, Sabine Hartmann, Jens Meywerk (Germany), Zenon Wozniak (Poland), Andris Leitass, Inese Jauja (Latvia), Olga Repinskaya (Lithuania), Valery Vuglinsky (Russian Federation), Peeter Karing, Sirje Keevallik, Rene Rajasalu, Jüri Kadaja, Ivar Ansper, Lia Pahapill, Svetlana Kaputerko (Estonia)

Revised final agenda

Thursday, 21 October 1999

9:30	P. Karing/S. Keevallik	Welcome addresses
	J. Meywerk	recent developments within BALTEX
10:00	U. Karstens	progress of BALTEX – an overview
10:30	**coffee break**	
11:00	S. Keevallik (Estonia)	status report of each of the Eastern
11:30	I. Jauja (Latvia)	European countries:
12:00	**lunch**	Give a status about the data
13:00	O. Repinskaya (Lithuania)	Identify problems encountered
13:30	Z. Wozniak (Poland)	status of scientific analysis
14:00	**coffee break**	
14:30	V. Vuglinsky (Russia)	
15.00	Open discussion	individual contributions from each party
		1. mutual benefits from cooperation
		• planning for further cooperation
		• how can we get back up funding from EU/INTAS/GTZ
16:00	Adjourn	
20:00	Social event – dinner	

Friday, 22 October 1999

9:30	J. Meywerk	overview of data contracts
10:00	A. Lehmann	report from BMDC
10:40	**coffee break**	
11.00	Final discussion	
12:30	**lunch**	
13:30	Adjourn	

Scope of this workshop:

- To exchange information about scientific contributions of the Baltic States to BALTEX.
- To give a report about existing data contracts with the BALTEX secretariat.
- To discuss any problems with the collected data from the different countries.
- To kick off new data exchange contracts for the future.

U. Karstens gave an overview of progress in BALTEX and presented some highlights and scientific results.
Each of the Baltic states sent a representative to the workshop except Belarus and Kaliningrad, in order to give a report about their scientific contributions to BALTEX, if any, and the status of their data delivery.

Estonia: There is quite some scientific activity in Estonia (5 Institutions) that are registered BALTEX data users. S. Keevallik gave a comprehensive overview of BALTEX scientific activities that are currently going on in Estonia. Those activities include but are not limited to the analysis of long time series (up to 41 years) of different parameters at different stations. A number of presentations have been given during conferences and some papers have been accepted in different journals.

Latvia: I. Jauja reported about her scientific work with BALTEX data. She is currently the only one doing modelling work from Latvia in the frame of BALTEX. She is running a precipitation/runoff model for the Daugava river basin (METQ98) and is modelling possible maximum floods generated by snowmelt. She mentioned the problems regarding data exchange even with the Latvian Hydrometeorological Service (Leitass) which is just releasing data for money. The same is true for the other parts of the Daugava catchment area, which is shared by the three countries Latvia, Belarus and Russia. This data situation is not satisfying when it comes to validation of her model.

Lithuania: O. Repinskaya was sent as representative from Lithuania. Lithuania is not conducting any additional scientific work in the frame of BALTEX. She gave a brief overview of the data Lithuania is submitting to the BALTEX Secretariat.

Poland: Z. Wozniak reported about the scientific activities of Poland in the frame of BALTEX. He showed some examples of analysis of severe rainfall events in the Sudety Mountains in southern Poland and the following Odra flood wave. Poland is also a major contributer to the BALTEX data archives. The only exception is the Vistula river basin which is a major gap in the runoff data for BALTEX.

Russian Federation: V. Vuglinsky gave an overview of different oceanographic and atmospheric projects within the BALTEX area. There is also some work underway with the Hydrograph-98 model which is used to model the Neva river runoff. This model can be improved regarding the addition of buffer terms for the treatment of lakes (proposed

activity). Another proposed activity is the investigation of the water balance over the Neva river basin by means of the Moscow Regional Climate model. He is looking for partners for these projects.
He is the coordinator for all Russian contributions to BALTEX both, scientifically and with regards to data exchange. There is currently no data exchange contract with Russia, but he is interested in a new contract together with a scientific cooperation.

Open Discussion:

A general discussion about the problems connected with the data exchange came up. In particular Russia (Vuglinsky), Latvia (Leitass) and Lithuania (Korkutis) are only interested if the data exchange pays off. The financial situation fro research in Russia and the Baltic States got worse during the last couple of years. In general the budgets for science are cut by about 20% in all countries.

Mutual benefits:

Initiated through the data exchange in the frame of BALTEX, Poland started to build up its own data base system. Wozniak mentioned that Poland learned a lot in the frame of BALTEX, in particular for data preparation and archiving. After the Odra river flood event of 1997 there have been even more connections with the BALTEX community. This reflects a new value of the cooperation. The improvements regarding flood forecasting not only for Poland are a benefit for all.
Inese Jauja complained about her situation. For her scientific work she needs runoff data from three different countries (Belarus, Latvia, Lithuania). Even from her own country she is not able to get any data, since the head of the Hydrological Service is asking for too much money - not to mention the problems in getting data from the other two countries. She is glad, that the BALTEX community (through the Secretariat) is collecting data from the entire area, so she will be able to get the data from the respective data centers for a comparatively small incremental costs.
Vuglinsky can only validate his models with the help of BRIDGE data.

Funding issues:

There is no directly BALTEX-related funding available in either of those countries. The only chance Vuglinsky sees is through a joint proposal with GKSS. He already initiated some collaboration with Sweden.

Report from the BALTEX Secretariat about the contracts:

There are currently data delivery contracts with Belarus, Estonia, Latvia and Lithuania covering the entire period from 1996 through the end of 2000. Negotiations with Poland are currently underway for a new contract until the end of 2000.

There have not been any data exchange contracts with Russia since the test period 1992/93. There is a separate contract with the Kaliningrad area covering the period from 1996 until 1998. Those contracts with Kalinigrad have not been fulfilled yet. It is anticipated to negotiate about new contracts for the entire BRIDGE period (October 99 until December 2002) with all Baltic States, Belarus, Russia, Poland and Kaliningrad.
Parameters delivered from those countries are 3-hourly non GTS synoptical observations, daily precipitation, radiation (daily sums), soil moisture, soil temperature, snow depth (not all countries yet), river runoff (not from the Vistula in Poland) and sea level measurements where applicable.
For future contracts it is desired to get a complete list of parameters from all those countries from the maximum number of stations. Poland will probably be able to provide the Vistula runoff data in the future.

Report from the data centers:

A. BMDC: A. Lehmann gave an overview of the organizational structure, what data has been received by the BMDC and about problems with the data. The most serious problems are that many data deliveries are in Excel format and some meta information is not up to date. The BALTEX secretariat will take care of a respective request in the future data contracts. A list of requirements for future data exchange contracts is appended to this protocol.

B. BHDC: B. Carlsson had not been able to attend. He left a short written notice about the status of hydrological data. The data base for hydrological data stores runoff data from 1970 until 1993. 90% of the data requests are for monthly mean runoff data to the Baltic Sea as measured on the river mouths. The data base will be extended to present time. The SMHI also provides (1x1 degree) gridded meteorological data from the routine synoptical network.

Action items:

- The BALTEX Secretariat
  - is requested to look after the physiogeographic data, which was submitted to the secretariat a couple of years ago.
  - should include the list of requirements from BMDC to future contracts.
  - needs to find out about the amount of funding for scientist exchange to GKSS.
- Sirje Keevallik would like to send publication list of BALTEX related publications to the BALTEX publication library on her own – Secretariat needs to find out how.
- It is necessary to get Kaliningrad back to the data supplying countries.
- Lehmann is asking for hourly sums of radiation from the Baltic states. It should be included in the new data exchange contracts.
- Inese Jauja would like to get the BMDC report directly from the BMDC.

Time and location of the next workshop:

There is the request from all participants, to have this workshop once a year. Inese Jauja proposed fall 2000 and offered to be the local host in Jelgava/Latvia.

These are the most urgent requirements for the submission of the meta-data information that should come with each data delivery:

Meta-information for BALTEX Data

General information on stations

- Complete station list (station name, ID (WMO, national), coordinates, elevation above mean sea level
- If necessary, beginning und end of the „life time“ of a station,
- Assignment of a station to a river catchment (Precip Network),
- Characteristic of soil type at the station (Soiltemp and Soilmoist Network), *(a classification scheme will be given by BMDC)*
- equipment / method of measuring,
- observation times and, if measurements are not made every day, frequency of observation,
- reference time and if necessary date of reference for measured sums,
- dimensions of delivered data.

Special information for meteorological parameters:

- Precipitation:
  a) Type of gauge; with / without wind shield
  b) measuring height above ground
  c) observation time, reference time and date of reference
  d) corrections of the systematic measurement errors
  e) dimension of delivered data

- Radiation:
  a) equipment
  b) orientation of the surface of the receiver (horizontal or normal to the incoming direct solar radiation)
  c) dimension of delivered data
  d) reference time

- Soil temperature:
  a) reference level of depth
  b) character of the surface at the measuring place (with/without vegetation, with/without snow in winter times)
  c) type of soil at the station
  d) type of used instruments
  e) type of measurements (snapshot, average)
  f) observation time and frequency
  g) dimension of the delivered data

- Soil moisture:
  a) reference layer of depth
  b) character of surface at the measuring place (with/ without vegetation, kind of vegetation)
  c) type of soil at the station
  d) type of used instruments / methods
  e) observation time and frequency

- Snow:
  a) measurements where, how, when?

Data format requirements for BALTEX Data

The delivered data is expected to be submitted in **ASCII-format**, either comma, space, or tab delimited data columns. No EXCEL or any other formats will be accepted in the future, since conversion of those formats to ASCII turned out to be extremely time consuming.

Appendix 5: MINUTES OF THE FIRST BRIDGE TEAM MEETING

27 October 1999, 9 a.m. – 4 p.m., Risø, Denmark

Participants: Ekaterina Batchvarova (guest in Risø), Sven-Erik Gryning (Risø), Andre van Lammeren (KNMI), Jens Meywerk (GKSS), Anders Omstedt (SMHI), Ehrhard Raschke (GKSS), Ann-Sofi Smedman (Uppsala Univ.)
Fortelius and Carlsson could not come.

Agenda:

1. Welcome
2. Background for BRIDGE
   a) EU funding situation
   b) National funding situations
   c) CEOP (GEWEX) situation
3. Roll of this group in relation to BRIDGE
4. Possible Plans for BRIDGE
   a) Minimum plans for BRIDGE
   b) New EU initiative
   c) IMoU
5. Other Countries participation in BRIDGE
   a) Poland/Russia/Baltic States
6. Miscellaneous

- **Welcome**

Gryning and Raschke welcomed all participants and gave some technical information.

- **Background for BRIDGE:**

a) EU funding situation:
E. Raschke gave an introduction to the BRIDGE history, its purpose, its current funding situation (EU proposals did not get funded except one) and stressed that BRIDGE has to obtain a **GO AHEAD** even without funding from the EU at the present time. One needs to look into national and the base funding and develop minimum plans for BRIDGE.
There were 6 proposals sent to EU, but only one got funded. Several others got the rating **'go'** but did not get funded, since EU has not enough money to spend.
All proposals with their main scientific goals and problem areas where briefly described and introduced by the respective coordinators or proposers:

a) BALTEX **C**loud **li**quid **wa**ter **net**work – CLIWA-NET, André van Lammeren
b) Climate Change and its impact on water resources for the BALTEX Area, Daniela Jacob with contributions by others
c) Winter Experiment WINCON, Sven-Erik Gryning

d) Baltic Sea Water and Energy Budgets BASEWEB, Anders Omstedt
e) Anchor Stations MOSAIC – Anchor Stations, Sven Halldin and others
f) Better exploitation of existing observation systems in BRIDGE BEOS, Ann-Sofi Smedman and others

b) National funding situation:

Denmark: There is no real BALTEX group in Denmark. The Danish funding agencies are recently supporting more basic research projects. At this time they have no backup funding for BRIDGE. It is possible that Denmark purchases a radar. Gryning needs to get DMI to the BALTEX community.
Finland: FMI has to scale down BALTEX activities, due to the partial commercialization of FMI and because FMI has lost important customers.
Germany: Some of the BRIDGE activities can be carried out from the base budgets of the participating institutions, others need further funding. The German ministry for Education and Research (BMBF) is interested to support at least some parts of BALTEX/BRIDGE and GEWEX related projects, beginning in 2001. The BALTEX Secretariat has been actively involved in making recommendations for a call of opportunities from the BMBF, which is supposed to come out late December this year. The BALTEX Secretariat will not be funded by the BMBF beyond February 2002. Other sources need to be explored.
The Netherlands: the national funding agencies do appreciate the participation in BALTEX. The Dutch are looking into some additional support of the project CLIWA-NET. KNMI also has some funds in its own budget.
Sweden: PEP and BASIS are funded for one more year. There is another proposal that will be sent to the EU called AUTOFLUX in order to get funding for additional measurements during PEP and BASIS. The Radar Data Center is nearly operational and can continue its work even without additional EU funding**.** The radiosonde launches from Visby, Gotland have already been started on a more frequent basis (two soundings per day). The HIRLAM modelling activities are funded until April 2000. A cooperation with the German modelling group is necessary to better coordinate their work. Sweden can go ahead with BRIDGE, even without EU funding, but on a lower level and if other BRIDGE partners do the same.

We need more hydrological input from Finland and Sweden may be in the form of a Ph.D. student program.

The situation in Russia, Estonia, Latvia, Lithuania, Belarus and Poland needs to be explored.

c) E. Raschke gave a brief overview about the link of BALTEX with the GEWEX and its main experimental and modelling phase Coordinated Enhanced Observing Period (CEOP), which will be conducted during the entire years of 2001 and 2002. All this information can be obtained from the GEWEX home page (http://www.cais.com/gewex/gewex.html). In order to contribute to the GEWEX-CEOP, it is necessary to obtain information about the socalled reference sites as soon as possible.

3. Role of this group in relation to BRIDGE

After some discussion the group determined its tasks as follows:

- to get BRIDGE running
- to coordinate and stimulate participation
- make the BALTEX Secretariat is the focal point for BRIDGE
- to review the performance in BRIDGE and decide on further actions

The basic tasks of this group had been defined during the last meeting of the BALTEX SSG in Helsinki (see minutes)

4. Possible plans for BRIDGE

After some discussion the group listed the following minimum requirements to successfully conduct BRIDGE, where it has been distinguished between operational activities (which do not need additional funding) and additional activities with the already defined baseline (for the entire BRIDGE period) and EOP activities.

a) Baseline activities (without the EOPs):

• Operational work	data networks and data collection, NWP model, routine data assimilation and satellite operation (no additional funding required)
• Additional measurements	radiosoundings (Visby, Utö) BALTRAD flux measurements (Lindenberg, Östergarnsholm, Marsta, Sodankylä, Nolanda, Cabauw, Risø)
• Data assimilation	(already underway in most operational weather services)
• Additional modelling	hydrology coupling of the atmosphere to both, the land and the Baltic Sea Danish Straits outflow

b) EOP activities:

- Coordinated research vessel activities (anyway planned within operational activities)
- Special field campaigns over sea (Östergarnsholm, include also operational components)
- Special field campaigns over land (Lindenberg, Cabauw, include also operational components)
- Special field campaigns over sea ice

- CLIWA-NET (EU funded)
- Enhanced satellite data analysis
- DIAMIX (turbulent ocean measurements)

Most of the baseline activities are already operational and running, the first coordinated research vessel activity was conducted during October 1999 with different types of oceanographic measurements in the Baltic Sea. It is up to the participants in BRIDGE to get funding for their proposed activities. One of the main open questions right now is whether they still can contribute their respective tasks as listed in the IMoU. The BALTEX secretariat will contact all IMoU parties in order to get the most recent status and to get a confirmation of their anticipated participation.

- **Other countries' participation in BRIDGE**

Baltic Countries, Belarus, Poland and Russia:
There are now severe problems in getting observational data from Russia even under agreed cooperations. The last data contracts with Russia ended after the test period of 1992/1993. We definitely need data from Russia for the BRIDGE period. There might be a chance to get funding for data handling in Russia from Sweden – Ann-Sofi Smedman is looking into it.
There is a Baltic Sea Conference (an official political body), which might help for a better cooperation with the Baltic countries. The national funding agencies have no additional funding possibilities for BRIDGE. The BALTEX data centers never got data from the Kaliningrad area, which had been requested for the 1986/1987 test period. No further contracts have been made.
The situation in Poland needs to be explored again (action: Raschke).

6. Miscellaneous
We need to find financial support for meetings like this for instance from EU scientific seminar programmes etc.
BALTEX needs to be promoted in Brussels (with respect to the planned MEDEX which might be a competitor to BALTEX in the future) by politicians from the participating countries.

Tentative schedule for further meetings:

Nov/Dec 2000	BRIDGE midterm meeting
July 2001	3. Scientific Conference on BALTEX with special sessions on BRIDGE
March 2002	End of BRIDGE

Summary of Action Items:

1) A.-S.Smedman:
   - look into the issue of financial support of handling and evaluation of Russian observations (there is a Swedish initiative for Russia).
2) A. Omstedt:
   - Gather more information about 'Baltic 2008' which is an industrial activity to support the Baltic countries. Please contact their office in Stockholm.
   - We also need more hydrological input from Sweden/Finland. Please look into whether it is possible to get at least Ph.D. students for hydrology.
3) E. Raschke:
   - Talk to Sven Halldin about 'Anchor Station' and its resubmission to EU on 15 Nov.
   - Inform the GEWEX newsletter, chairman Lennard Bengtsson, and the BALTEX SSG about the start of BRIDGE
   - Explore situation in Poland and recruit hydrologists for BRIDGE.
4) J. Meywerk:
   - Announce the official start of BRIDGE: contact all parties that have signed the ImoU and ask them for the status of their contribution and whether their contribution will go on. Any changes to the previous plans? Gather this information from all participants. Append list of baseline activities for BRIDGE and the list of tasks for the EOP's Redo the BRIDGE time-line plot and append it as well.
   - Inform everybody when the next call of opportunities from the EU is out, which is scheduled to be on 15 November.
   - Send BALTEX view graphs (from the BALTEX leaflet) to A. Lammeren.
   - Next meeting will be in Warsaw before the BSSG (7-9 Feb.). Arrange for accommodation for the BRIDGE team members with Kaczmarek.
   - Check with CEOP planning group about the requirements for a reference site and share this information with BRIDGE planning group members.
   - Create links to GEWEX home page from BALTEX home page.

Appendix 6: EXTENDED ABSTRACTS OF THE WORKSHOP ON HYDROLOGY

held before the BALTEX Science Steering Group Meeting
on 7 February, 1999 in Warsaw, Poland