Protocol AMBER Kick-off Meeting

Date: 9. 1. 2009

Place: IOW Warnemünde

Participants: Michael Böttcher, Olaf Dellwig, Babara Deutsch, Joachim Dippner, Kari Eilola, Jari Hänninen, Susanna Hietanen, Jens Hürdler, Christoph Humborg, Frederike Korth, Lech Kotwiki, Markus Meier, Christian Möllmann Magnus Mörth, Dieter Opitz, Arturas Razinkovas, Frank Schäffer, Gerald Schernewski, Beata Szymezcha, Markus Venohr, Maren Voss, and Ilppo Vuorinen.

Invited, but not present: Thomas Neumann, Maria Schafmeister, Michael Schlüter

09:00 Opening and personal introduction

- Frederike Korth writes the protocol.
- The agenda was accepted
- Short presentation about goals and ideas of AMBER (Joachim Dippner)

09:30 Discussion on the consequences of financial budget reduction

- 23% reduction from Swedish funding agencies (Markus Meier)
- Also reduction of 30% for first year for Lithuanian scientists (Arturas Razinkovas)
- Reduction in B1, B5,6 and C6
- Short annual report of deliverables via BONUS website (Christoph Humborg)

10:00 M. Meier: Regional climate models and the coupling with marine biogeochemical models

- Four climate scenarios forced with two emission scenarios (A2, B2) and two GCMs and three nutrient load scenarios (BC, BSAP, BAU) has been performed
- But still a lot of uncertainties about processes, nutrient loads etc exists

11:00 C. Humborg: Baltic Sea catchment modeling

- Future plans: Forcing data update, type concentrations = f(soil types, specific runoff, crop type, livestock density, manure handling etc.) and riverine retention =f (TI, HL)

11:40 C. Möllmann: Introduction into EAM

- Future plans: Test indicators and decide on the ones to be monitored, early warning indicators need to be monitored, design EBFM monitoring programs, including physics & e.g. zooplankton and do Risk-Assessments of potential management actions

12:20 O. Dellwig: Groundwater impact on coastal ecosystems from a geochemical view

12:40 L. Kotwiki: Puck Bay – a discharge region, study area and COSA observations

- Future plans: Identification of Submarine Groundwater Discharge, Geochemical characterization, Quantification and for the first time Influence on biota
- Not only sampling the Puck Bay for Submarine Groundwater Discharge, also the other estuaries should be sampled (Joachim Dippner)

14:00 Markus Meier: General overview on existing regional climate change scenarios and the existing output available for AMBER (handouts)

- Future plan: 4 new scenarios of the Baltic biogeochemistry with better process descriptions (so far dissolved organic matter and food web is not included) and updated nutrient load scenarios will be performed

14:30 Split into working groups according to the WP clusters A, B, and C.

16:30 Christoph Humborg and Magnus Mörth left the meeting earlier

17:00 Presentation of outcome (group A)

Joachim Dippner: Methods used in Research Cluster A

- EOF Analysis, POP Analysis (prediction), Statistical downscaling (prediction), AMOEBA Model, Cury & Roy Model, Transfer function modeling, Threshold Generalized Additive Model (T-GAM)and Self organizing maps (SOM)
- Referent in Group A: Christian Möllmann (see Research Cluster A protocol)

Discussion

- Student workshop in September should be announced soon and also financial aspects for students should be managed soon (Susanne Hietanen)

17:30 Presentation of outcome (group B)

- Referent in Group B: Maren Voss (see Research Cluster B protocol)

Discussion: Sampling should be harmonized

18:00 Presentation of outcome (group C)

- Referent in Group C: Gerald Schernewski (see Research Cluster C protocol)

Discussion

- What do the modelers need from the field samplers? (Arturas Razinkovas)
- All models run, but there are still uncertainties like denitrification in lagoons, N_2 fixation and phosphate in sediments
- Frank Schäffer was defined to be the person that is responsible for data transfer between institutes (concerning modeling)

18:30 General discussion

- Next AMBER meeting will be linked to a BONUS general meeting
- Cruise calendar of AMBER exists
- Logo competition: Best Logo suggestion for AMBER will win a bottle of champagne (Joachim Dippner)
- 4 students workshops will take place in AMBER and should be announced soon
    - Non-linear time series analyses – September 2009 in Seili
    - Stable isotopes as bio-indicators – Maren Voss in Warnemünde or Stockholm
    - Climate modeling – Markus Meier
    - Lagoon management using ECOPATH – Arturas Razinkovas
    - Short overview about topics etc. should be send to Joachim Dippner
- Webpage of AMBER will be hosted in the IOW, responsible person: Joachim Dippner

20.01.2009

- No further program , only some discussions in smaller groups

Frederike Korth

Protocol Research Cluster A

Participants: Joachim Dippner, Jari Hänninen, Markus Meier, Christian Möllmann, Ilppo Vuorinen.

Joachim Dippner presented his ideas concerning POP modeling, statistical downscaling, and the AMOEBA and Cury & Roy model.

Ilppo Vuorinen informed that a group from Technical University Helsinki will support AMBER with the techniques of Threshold Generalized Additive Models (T-GAM) and Self Organizing Maps (SOM) Models.

Jari Hänninen will contribute with Transfer Function Modelling.

Markus Meier will provide the group output from climate change scenarios and present climate run.

Christian Möllmann will organize data transfer from ICES and HELCOM of biological data and environmental parameters.

Joachim Dippner

Protocol Research Cluster B

Participants: Michael Böttcher, Olaf Dellwig, Barbara Deutsch, Susanna Hietanen, Frederike Korth, Lech Kotwiki, Magnus Mörth, Arturas Razinkovas, Beata Szymczycha and Maren Voß

The practical work was discussed along the WPs in the Cluster B:

B.1 "Estimate of N-removal in contrasting estuarine systems" PI Susanna Hietanen

Sediment IP from Susanna's group in the following places:

2009 Oder – Pomeranian Bay (Penck cruise in March 2009)

2009 or 2010 Curonian Lagoon, needs clarification with Arturas on the possibilities of how and when samples can be taken in co-operation with the national monitoring programme. This will be achieved by email exchange.

2010 Kalix River IP measurements will not be possible due to sediment characteristics (coarse and sandy!)

B.2 "DOM input and transformation" PI Christoph Humborg

DOM compounds and isotopic signatures are most important focus of the work

estuarine gradients will be investigated along estuaries and the whole Baltic Sea during the Merian cruise in 2009

Kalix sampling also Merian 2009

seasonal samples from Kalix River (organised by Barbara and Christoph in Stockholm)

B.3 "Isotopic signature of nitrate for source identification" PI Maren Voss

Seasonal sampling in Curonain lagoon – will be organized in detail via email (Rike Korth –Arturas Razinkovas)

One full seasonal cycle of samples from Kalix River (organised by Barbara Deutsch, Magnus Mörth and Christoph Humborg)

Oder River will NOT be sampled seasonally because it cannot be organised by any project partner. Moreover, Nemunas as a eutrophied River and Kalix as a pristine River serve the purpose for the project to sample two contrasting systems.

Nitrate uptake will be studied in Oder estuary in March 2009 and Kalix in June 2009

B.4 “Identification and quantification of SDG discharge” PI Michael Böttcher
Penck cruise along the Baltic German and Polish coast in June 2009
Rn measurements of samples – cooperation with M. Schlüter

B.5 “Geochemical composition of groundwater seepage” PI Michael Böttcher
Sampling of biota Penck cruise in June 2009
Polish colleagues participate in the cruise
Sampling in the Puck Bay in March 2009 by Polish colleagues only

A cruise plan was agreed upon. It is assured that enough samples can be taken to satisfy all researchers in Cluster B in 2009 and 2010. Co-operations for everyone are settled and will facilitate the work. Linkages to the other WPs were only briefly touched upon.

Frederike Korth / Maren Voß

Protocol Research Cluster C

Participants: Kari Eilola, Christoph Humborg, Dieter Opitz, Jens Hürdler, Arturas Razinkovas, Frank Schäffer, Gerald Schernewski, Markus Venohr

Topic: Major steps towards a harmonization in work-packages C and agreement on joint future scenarios. The scenarios shall be suitable and provide data for

- for the entire Baltic Sea Region and the and the Baltic Sea (SMHI and Nest approach)
- for the detailed focus regions “Oder” and “Nemunas”
- for all river basin, lagoon, coastal water and Baltic Sea models

Climate Change Scenarios:

We agreed to pick up **4 Climate Change scenarios** covering the range of possible changes according to the approach of Markus Meier

- Model ECHAM4, Szenario A2
- Model ECHAM4, Szenario B2
- Model HADAM3, Szenario A2
- Model HADAM3, Szenario B2

Reference period are the years 1961 until 1990 (until 1998 for loads).

Tasks & timetable:

- In agreement with M. Meier, C. Humborg provides the discharge data by Graham and makes it available for the AMBER community and all models until February.
- M. Meier provides aggregated 6 hourly (for ERGOM) and daily (for MONERIS) meteorological data (precipitation, temperature, evapotranspiration for all 4 Scenarios covering the entire Baltic Sea region until June 2009. Data for the river basins of Nemunas and Oder will be provided separately by M. Meier.
- Comment M.Meier: “We will also check the possibility, whether transient model runs (1960-2100) can be used instead of the old time slice scenarios (1961-1990, 2071-2100). We will test the quality by the end of June. The only disadvantage would be that there would be no volume inflow available. However, this would be no problem according to Christoph. His group will calculate them. I wouldn’t use evapotranspiration.“
- F. Schäffer takes care of the data management (provisoon finally in ASCII, GRIB or EXTRA format) and defines the geographical coordinates for Nemunas and Oder.

Socio-economic-land use Scenario:

In the beginning, only one **socio-economic-land use Scenario** will be used, the load reduction approach of the **Baltic Sea Action Plan.** This scenario is very simple, but from a practical and political point of view highly relevant and important.

Tasks & Timetable

- C. Humborg updates the present load data for the Baltic Sea Action Plan (reference year 2004?) until June and calculates the necessary annual N and P loads (or the load reductions) for the entire Baltic Sea region and the two focus rivers, Nemunas and Oder/Odra.
- M. Venohr updates the river basin model MONERIS until June (unification of versions and extention of the years until 2005). MONERIS is applied to show the spatial pattern of nutrient emissions in the two river basins of the reference year 2004 and calculates the necessary sets of management measures in the Oder and Nemunas river basins to meet the N and P load reduction according to the updated BSAP.
- The collection of data for the Nemunas river basin might not be finished until summer. In emergency case, estimated data and/or data of the Nest-model might be used to calculate the present and scenario loads.
- M. Venohr provides monthly N and P load and water discharge data for the Curonian and Oder lagoon for the years 2000 until 2005 (better 2006 or 2007, if possible). He further provides this data for the reduced nutrient load according the BSAP for the years 2000 until 2005 (better 2006 or 2007, if possible) until July.
- This data serves as input for the for the coastal water and lagoon model ERGOM. With ERGOM, the years 2000 until 2005 (better 2006 or 2007, if possible) shall be simulated with and without load reduction. Until summer, ERGOM will include a new grid with an improved spatial resolution of about 500 m and cover the Oder and the Curonian lagoon. A separate model for the Curonian lagoon will be applied.

Further co-operation

The performance and results of the Nest model will be compared (M. Venohr and C. Humborg)

- for additional scenarios like point source reduction etc. and
- for 2004, MONERIS load calculations shall be compared to monitoring data and the Nest model.

Additional possible scenarios and especially the co-operation between the river basin groups will be discussed in **September in Stockholm** (invitation by C. Humborg)

Input from WP B concerning N-fixation, denitrification and P-release from the sediment to improve the coastal model would be appreciated.

Gerald Schernewski