Report on AMBER workshop

„ Lagoon Ecosystem Modelling (ECOPATH/ECOSIM):

From Hydrodynamics to Fisheries"

The AMBER workshop took place from June 21–23, 2011 in Klaipeda/Lithuania. 11 students (6 female & 5 male) from Latvia, Lithuania and Russia (see list of participants on AMBER webpage) were educated by five teachers from Germany, Italy, Lithuania and Turkey (see list of teachers on AMBER webpage). In the following a short description of the course is given. Details of the complete teaching programme can be found on the AMBER homepage.

The director of CORPI, Professor Zita Gasiūnaité opened the workshop and wished the participants a successful course. In a short introduction round, the students introduced themselves and explained what their research field and why this course is important for them. The coordinator of the BONUS+ project AMBER Joachim Dippner from the Leibniz Institute for Baltic Sea Research Warnemünde gave a short overview on the AMBER activities and results obtained so far.

The course started with an introduction to numerical modelling given by Joachim Dippner in which he presented the philosophy of modelling, how to construct a model and typical problems of a model developer with finite differences and introduced different types of ecosystem models.

Georg Umgiesser (CNR Venice, Italy) introduced into finite element method and demonstrated various possibilities in constructing horizontal and vertical grids. In a second part he showed how a model can be used as a tool for impact assessment and management of coastal lagoons.

The lecture of Petras Zemlys (CORPI) covered in detail the topic of coupling physical circulation models with biogeochemical models. One aspect among others was the creation of a fast computer code for a parallel machine using message passing interface (MPI).

Ali Etürk from Istanbul Technical University presented the derivation of the transport equation in three dimensions and the definition of advective and dispersive fluxes. These fluxes are considered for conservative and non-conservative substances. In a second lecture, he showed how it is possible to link an NPZD model to ECOPATH. Here the model philosophy behind is that NPZD model makes primary production and ECOPATH is considered in this configuration as an ecological model for the higher trophic levels of foodweb.

On the second day, Arturas Razinkovas–Baziukas (CORPI) introduced in two lectures the model philosophy behind ECOPATH / ECOSIM and how to apply.

The Latvian students Ivars Putnis and Gunta Rubene gave a short presentation how to construct from Latvian monitoring data sets an ECOPATH model for herring recruitment.

In the practical part chaired by Ali Etürk, the students applied ECOPATH/ECOSIM to data sets provided on a common shared data point. The first exercise was to balance a model output with ECOSIM to a steady state. In the second exercise they should run an NPZD model and in the third step they should import these results into ECOPATH and analyse the model output. In a final step different model realizations created with an NPZD model are analysed, e.g. a model which considers optimal growth conditions for cyanobacteria.

The workshop ended with a very nice barbeque evening in the lovely Botanical Garden of Klaipeda. The workshop was carried out in a very friendly atmosphere. All students and teachers wish to thank the local organizers Arturas Razinkovas and Rasa Uznyté and the staff of CORPI for their perfect organisation and their technical support during the computer labwork.

Klaipeda, June 23, 2011

Joachim W. Dippner