Geophysical Research Abstracts
Vol. 12, EGU2010-8338-1, 2010
EGU General Assembly 2010

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

Lidia Dzierzbicka-Glowacka, Jaromir Jakacki, and Maciej Janecki
Institute of Oceanology, Polish Academy of Sciences, Sopot, Poland (dzierzb@iopan.gda.pl)

The goal of this research is to construct a three-dimensional, physical-biological model to simulate the biological and chemical processes of the plankton system that are most important to quantify the annual primary production for the Baltic Sea.
This model is used to estimate the annual phytoplankton biomass under circulation and solar radiation forcing conditions. The time scales of the atmosphere are governed by ERA 40 (ECMWF). The most prominent feature of the Baltic Sea dynamics for annual productivity studies is the seasonal stratification in deeper parts and for regions of low tidal currents.
The basis for any ecological simulation is a three-dimensional, time-dependent hydrodynamical model, POPCICE for the Baltic Sea (see ECOOP WP 10.1.1), that provides the velocities, diffusion coefficients and the temperature on a temporal and spatial scale that resolves the atmospherically induced variability mentioned above.
This three-dimensional model is the first step towards a Polish ecosystem model of the Baltic Sea that is being developed at the Institute of Oceanology PAS, called 'Coupled Ecosystem Model of Baltic Sea, Version 1' (CEMBS1). This work was carried out in support of grant (No N N305 111636 - the Polish state Committee of Scientific Research) and project SatBaltic.