Geophysical Research Abstracts,
Vol. 10, EGU2008-A-11043, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-11043
EGU General Assembly 2008

Interanual and decadal variability of the currents in the Baltic Sea.

L. Dzirzbicka, R.Osinski, J. Jędrasik, W. Maslowski, J.Jakacki

Institute of Oceanology PAS, Sopot, Poland

Naval Postgraduate Scholl, Monterey, CA, USA

University of Gdansk, Gdynia, Poland

A three dimensional z-coordinate hydrodynamical model coupled with sea ice model was used to investigate a mean water circulation, transport and its variability in the Baltic Sea. The model is based on the Bryan-Cox-Semtner model and was configured at the horizontal resolutions 1/12˚ (∼9-km) and 21 vertical levels. It consists of a regional adaptation of the Parallel Ocean Program (POP), developed at the Los Alamos National Laboratory, coupled to the parallel version of the dynamic-thermodynamic model with a viscous-plastic rheology.

The model was forced by daily-averaged reanalysis and operational atmospheric data (ERA-40), derived from European Centre for Medium-range Weather Forecast (ECMWF). Results from the 42-year (1960-2001) simulation are presented.

The period 1960-2001 is extremely interesting due to NAO index, describing large-scale atmospheric circulation state above the North, goes from negative value in the sixties to positive in the nineties. The changes of the water circulation in Baltic during those four decades are shown. Areas of the highest variability of the currents in the Baltic Sea are investigated. Results from numerical experiments describe some distinguished areas on which remote forcing influence stronger then in other areas.In the 42-years integration we have found the highest correlation, up to 0.4, coefficient between basin averaged mean kinetic energy and the NAO index in winter. During other seasons the correlation is below significance level (95%). The highest variability are

found in costal jets