Geophysical Research Abstracts,
Vol. 11, EGU2009-2482, 2009
EGU General Assembly 2009

Seasonal Ensemble Forecasting with Ocean General Circulation Model in the Baltic Sea

P. Roiha, A. Westerlund, and T. Stipa
Finnish Meteorological Institute, Erik Palménin aukio 1, PO Box 503, FI-00101 Helsinki, Finland (petra.roiha@fimr.fi)

Ensemble forecasts are a promising new approach to numerous applications in oceanography. They have for long been an essential tool in meteorology. In marine environment, there is a possibility of even further development, in large part due to the longer predictability. This may, e.g., mean more accurate long-term forecasts for oceanographic parameters.

In this work we used the ensemble approach to seasonal forecasting of physical and chemical changes during spring bloom in Baltic Sea. We present results of an ensemble forecasting in the Baltic, and discuss the applicability of this method to operational biogeochemical ocean modelling.

FMI's operational 3-dimensional biogeochemical model was used to produce monthly ensemble forecasts for different physical, chemical and biological variables. The modelled variables were temperature, salinity, velocity, silicate, phosphate, nitrate, diatoms, flagellates and two species of potentially toxic filamentous cyanobacteria.

Ensembles were produced by running several 30 day runs of the biogeochemical model. The model was forced every run with different set of seasonal weather parameters from ECMWF's mathematically perturbed ensemble prediction forecasts. The ensembles were then analysed by statistical methods and the median, quartiles, minimum and maximum values were calculated for model output variables to gain insight into the applicability of the results. Validation for the forecast method was made by comparing the results against in-situ data.

The results of the model demonstrated that ensemble forecasting is a viable tool and it is indeed possible to forecast with useful accuracy the Baltic Sea with these time spans.