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Assimilating NOAA SST data into BSH operational circulation model for the North and Baltic Seas: What can we learn about the model and data

Svetlana Losa (1), Jens Schröter (1), Sergey Danilov (1), Lars Nerger (1), Tijana Janjić (1), and Frank Janssen (2)

(1) Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany (Svetlana.Losa@awi.de), (2) German Maritime and Hydrographic Agency (BSH), Hamburg, Germany

Within the DeMarine-Environment project- as a part of the European Global Monitoring for Environment and Security (GMES) initiative,- a data assimilation (DA) system has been developed for the operational circulation model of the German Maritime and Hydrographic Agency(BSH). In order to improve forecast of hydrographic characteristics in the North and Baltic Seas, Singular Evolutive Interpolated Kalman (SEIK) filter algorithm has been locally implemented for assimilating NOAA sea surface temperature (SST) over the period 01.10.2007 - 30.09.2008. Significant error reduction has been achieved for SST forecast (will be shown here) and, since 01.10.2010, the data assimilation system has been running at BSH in pre-operational phase. Some aspects of the system implementation however remain a challenge. The forecast quality is found to be dependent on the assumption about model and data error statistics which are not always if ever a priori known. However such a combination of the information from two different sources- the model and the data,- which one gets with a data assimilation, might itself improve our understanding of both these sources and help to optimize the system. Here we discuss SST data assimilation results obtained with several different (with respect to timing, period, frequency) forecasting schemes and initial error statistics. The Maximum Entropy Approach (Kivman et al, 2001) is considered as an additional criterion of the analysis performed.