



Advancing Data assimilation for Baltic Monitoring and Forecasting Center: implementation and evaluation of HBP-PDAF system

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The potential of an efficient data assimilation (DA) scheme to improve model forecast skill was successfully demonstrated by many operational centres around the world. The Baltic-North Sea region is one of the most heavily monitored seas. Ferryboxes, buoys, ADCP moorings, shallow water Argo floats, and research vessels are providing more and more near-real time observations. Coastal altimetry has now providing increasing amount of high resolution sea level observations, which will be significantly expanded by the launch of SWOT satellite in next years. This will turn operational DA into a valuable tool for improving forecast quality in the region. This motivated us to focus on advancing DA for the Baltic Monitoring and Forecasting Centre (BAL MFC) in order to create a common framework for operational data assimilation in the Baltic Sea. We have implemented HBM-PDAF system based on the Parallel Data Assimilation Framework (PDAF), a highly versatile and optimised parallel suit with a choice of sequential schemes originally developed at AWI, and a hydrodynamic HIROMB-BOOS Model (HBM). At initial phase, only the satellite Sea Surface Temperature (SST) Level 3 data has been assimilated. Several related aspects are discussed, including improvements of the forecast quality for both surface and subsurface fields, the estimation of ensemble-based forecast error covariance, as well as possibilities of assimilating new types of observations, such as in-situ salinity and temperature profiles, coastal altimetry, and ice concentration.