

December 18 in saint-Petersburg branch of State Oceanographic institute ended the first numerical experiment on hydrodynamic modeling of Major Baltic Inflow occurred 18-26 January 2003 (Figure 1). This work was conducted by SOI in collaboration with scientists from the Institute of Numerical Mathematics. The model of the Major Baltic Inflow was implemented on the basis of hydrodynamic model INMOM adapted to the conditions of the North and Baltic Seas. Necessary high spatial resolution of the grid area of the model in the Danish straits has been achieved through the use of a non-uniform grid with two staggered poles (Fig. 2). It is allowed to reach the spatial resolution in the Danish straits 300-700 meters.

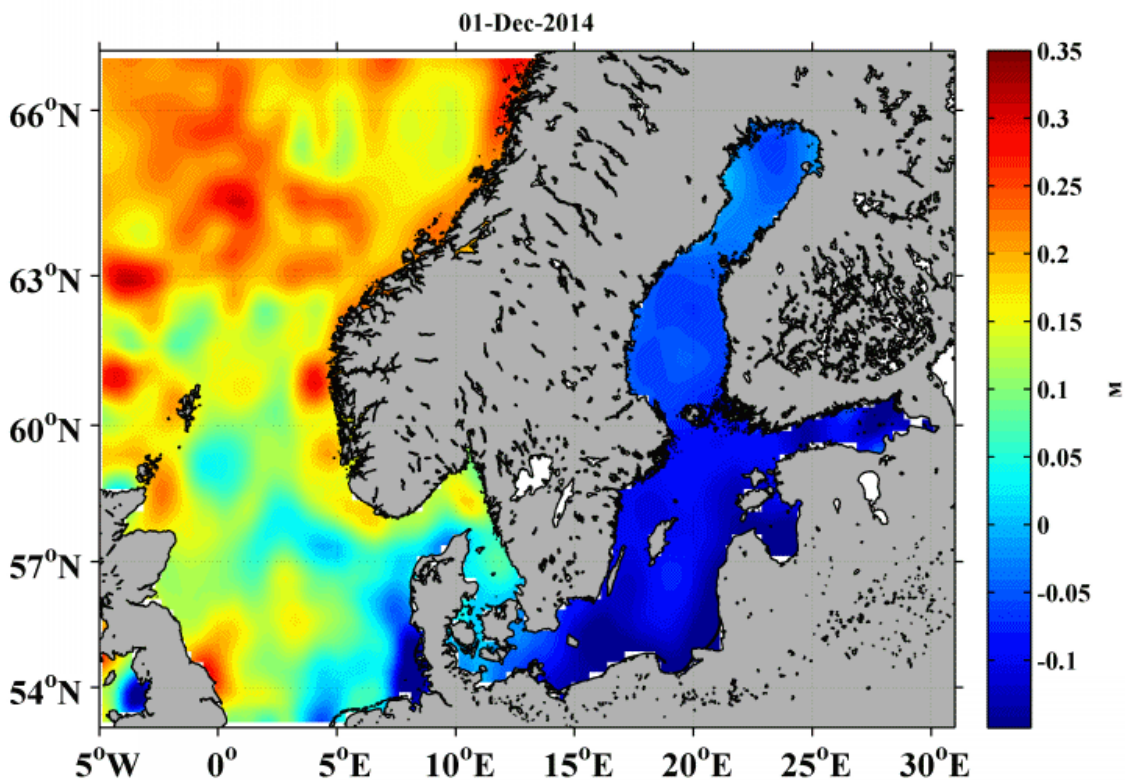


Fig. 1. The results of numerical experiment on the modeling big Baltic Inflow in January 2003

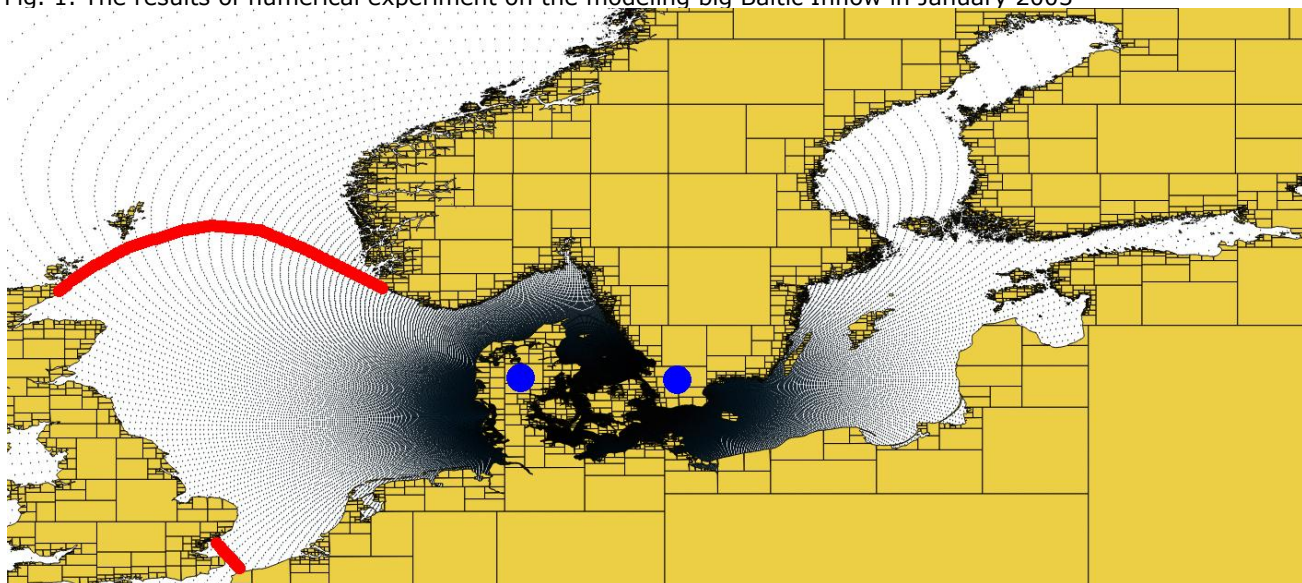


Fig. 2. Curvilinear grid with concentration in the Danish straits. The red line denotes the boundary of open liquid.

As bathymetry used three different arrays: North Sea bathymetry GEBCO, for these passages of the German Institute warnemuende with a resolution of 500 m, and for the Baltic Sea bathymetry of the same institute with a resolution of 1 mile. The initial conditions were formed from the reanalysis data myocean.eu site of two pieces of the North and Baltic Seas. On the liquid side boundaries in the North Sea were set amplitude and phase of 8 major tidal harmonics. For urtss used condition flow. The boundary conditions at the sea surface meteorological data used WRF model with a readability of 3:00 and spatial step 4.8 miles. The model is verified by comparing the calculated values of the temperature and salinity of the measured values on the German station Darss Sill (Fig. 3, 4).

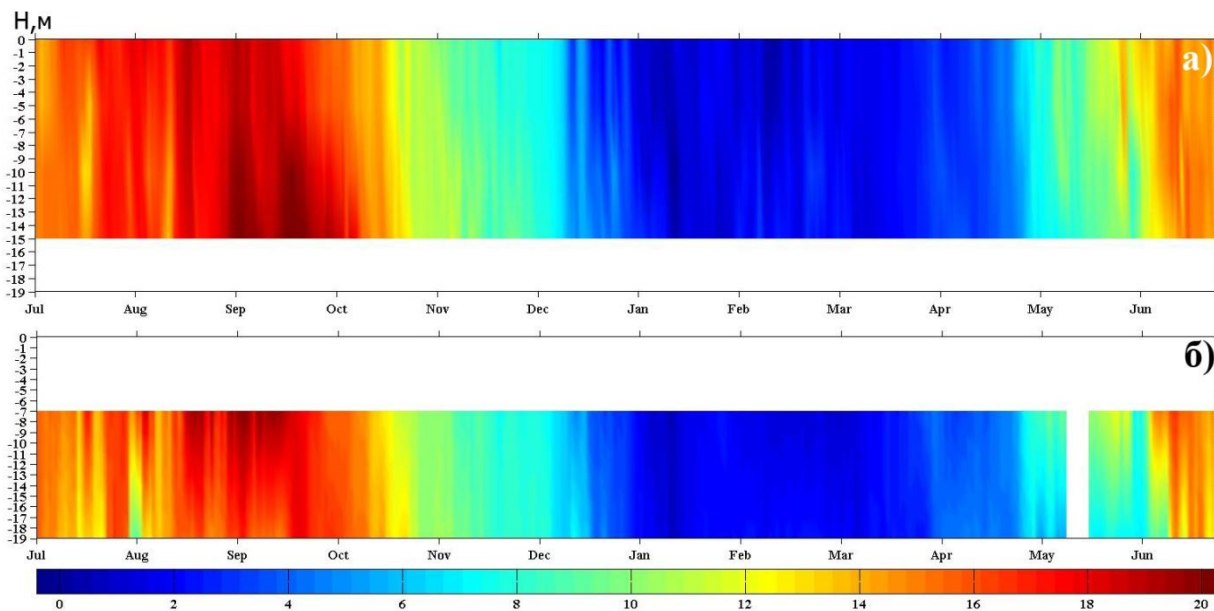


Fig. 3. Comparison of changes in time of the vertical distribution of water temperature, obtained by mathematical modeling (a) and its instrumental measurements Station Darss Sill (b)

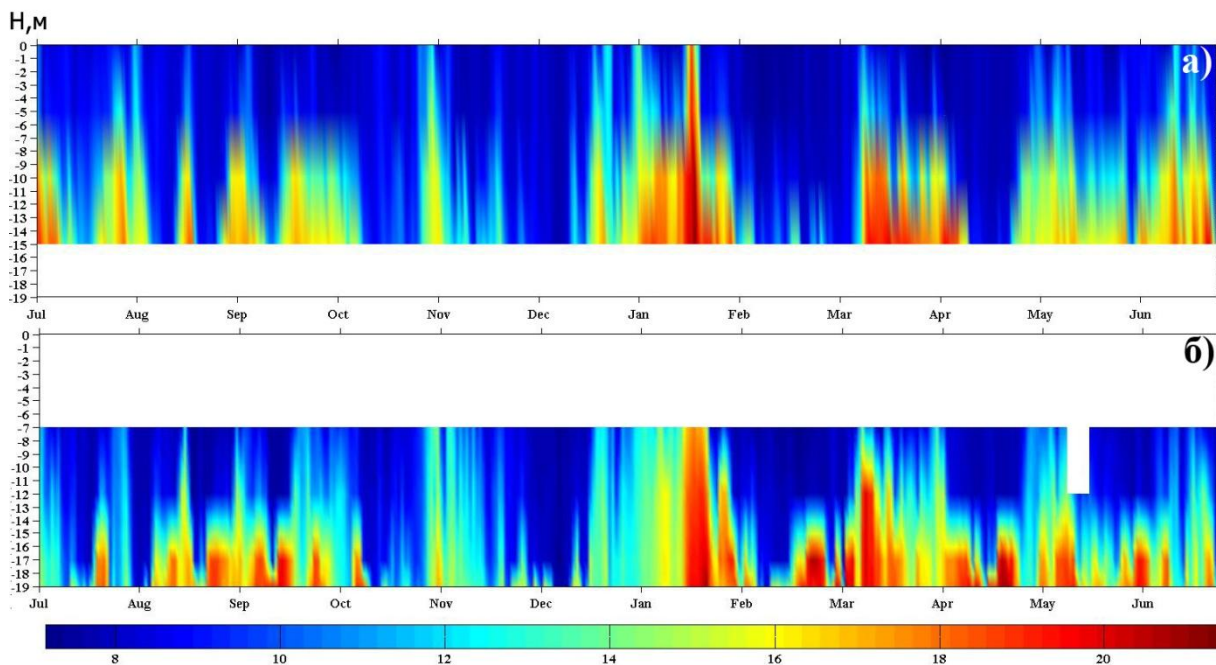


Fig. 4. Comparison of changes in time of the vertical distribution of water salinity, obtained by mathematical modeling (a) and its instrumental measurements Station Darss Sill (b)