



General circulation and water, heat and salt balance of the Arctic ocean in eddy-permitting model

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The results of numerical modelling of intra-annual variability of thermohydrodynamic water processes and the state of sea ice in the Arctic Ocean are presented.

We used the Arctic ocean model with a $1/10^\circ$ horizontal resolution and 49 vertical levels. The model based on INMIO4.1 ocean model, which was developed at the Institute of Numerical Mathematics of the Russian Academy of Sciences (INM RAS) and the P.P. Shirshov Institute of Oceanology (IO RAS), coupled with sea ice CICE5.1 model. The performance of coupled INMIO – CICE model on parallel computer is governed by Compact Modelling Framework CMF2.0.

The temporal evolution of the atmospheric effect was determined by the normal annual cycle according to the conditions of the international Coordinated Ocean–Ice Reference Experiment (CORE-I). At the southern boundary of the area and at the confluence of the main rivers of the Arctic basin the liquid boundary conditions were established.

The main elements of large-scale ocean circulation have been analysed and compared with the observed data and the results of other models. We validate the Arctic annual mean water, heat and salt budgets. A passive tracer experiments was done to examine the pathways of the Atlantic and Pacific waters as well as the of Siberian rivers in the Arctic ocean.