



Numerical simulation of feedbacks in climate-processes in GIN seas

Sergey Moshonkin (1), Anatoly Gusev (1,2), Nikolay Diansky (1,3), and Alexey Bagno (1)

(1) Institute of Numerical Mathematics RAS, Moscow, Russian Federation, (2) Shirshov Institute of Oceanology RAS, Moscow, Russian Federation, (3) State Oceanography Institute, Moscow, Russian Federation

The simulations were performed using the model of North Atlantic (northward 20°S) – Arctic Ocean – Bering Sea joint circulation with spatial resolution 0.25° for 1958-2006. The results are compared with observational data and simulation results of other models. By analyzing modal structure of motion and mass fields in Greenland, Iceland and Norwegian (GIN) seas we first time revealed the feedback system responsible for Arctic-Atlantic water exchange regulation. The primary driving dynamical mechanism of these feedbacks is joint effect of baroclinity and relief (JEBAR). The feedback of baroclinic and barotropic velocity components takes place that stabilizes Arctic-Atlantic water exchange at large time scales and supports them at some climatic level.