



## **Estimates of perspectives of Northern Sea Route in the 21st century from model simulations**

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Analysis of sea ice characteristics in the Arctic basin affecting the condition of the Northern Sea Route and the development of the polar regions of Russia was performed. The ability of modern climate models to reproduce the average duration of ice season, and their changes for the past decades was evaluated. The duration of the navigation season on the Northern Sea Route in the 21st century was estimated for the ensemble of climate models with moderate anthropogenic scenario SRES-A1B.

To determine the current changes in the Arctic sea ice cover we used satellite data for the concentration of sea ice at high spatial (25x25 km) and temporary (day) resolution during 1979-2007 in comparison with other observational data. To estimate the possible changes in the Arctic basin in the 21st century we analyzed results of simulations with the IPCC-AR4 ensemble of global climate models under the moderate scenario of anthropogenic emission SRES-A1B.

The multi-model averaged values of the ice season duration for the present period are in a good agreement with observations. The models can adequately reproduce not only the average values of ice season but also its changes. The changes of the ice season duration for the past decade 1997-2006 (relative to the period 1979-1988) are generally consistent with observations. Some model underestimations of the ice season changes are noted in the eastern Arctic.