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An evaluation of changes in the frequency of freezing precipitation in Russia in the 20th–21st centuries using the INM-CM5 model / Gibadullina A.I., Leonov I.I., Kislov A.V., Sokolikhina N.N. // Hydrometeorological research and forecasts. 2025, no. 4 (398), pp. 30-50.

The quality of simulating freezing precipitation by the INM-CM5 climate model is assessed for Russia. The modeling data were verified using main 3-hour observations and visual observations of atmospheric events during 1979–2014. The INM-CM5 climate model was used to obtain the spatial distribution of the average annual number of days with freezing precipitation for this period. Forecasts of changes in the frequency of freezing precipitation in Russia were prepared for 2015–2100 and 2071–2100 based on three possible socioeconomic climate scenarios: SSP1-2.6, SSP2-4.5, and SSP5-8.5. The greatest changes in the frequency of freezing precipitation are expected under the SSP5-8.5 scenario. It is predicted that the frequency of freezing precipitation in Russia in the northern European part of Russia, southern and central Western Siberia, and the eastern part of the Chukotka Autonomous Okrug will increase by more than five times by the end of the 21st century. A decrease in the frequency of freezing precipitation is predicted in the areas of the islands and coasts of the Arctic Ocean, as well as the Bering and Okhotsk seas.

Keywords: climate change, climate forecast, severe weather events, freezing precipitation, glaze ice, icing, reanalysis, INM-CM5 model, CMIP6

Fig. 7. Ref. 36.