**Analysis of changes in wave activity flows before and after the weakening of the stratospheric polar vortex in the middle of the winter season from 1981 to 2023**

A. S. Fadeev 1, E. N. Savenkova 1, A. V. Koval2

1Russian State Hydrometeorological University, St-Petersburg, Russia

2University of St-Petersburg, St-Petersburg, Russia

The relationship between increased wave activity and weakening of the stratospheric polar vortex in the middle of winter in the Arctic latitudes is investigated. The meteorological conditions are defined by reanalysis data from Modern-Era Retrospective Analysis for Research and Application 2 (MERRA2). The longitude-mean wind velocity and Eliassen-Palm flow fields is analyzed.

The main patterns in the change of wave activity parameters before and after the weakening of the polar vortex were reflected, and cases when these patterns were not observed were considered.

It is shown that the weakening of the mpolar vortex is facilitated by increased wave activity and high values of vertical wave flow. In most cases, with some delay after the weakening of the vortex, the vertical upward propagation of waves stops, however, there are cases when this does not happen. Such cases include, for example, January 2019.

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