



## **Stratosphere-troposphere coupling during SSW events in the Northern Hemisphere**

Ekaterina Suvorova, Alexander Pogoreltsev, Alexander Ugrjumov, Elena Savenkova, Maksim Motsakov, and Evgeniya Ulyanets

Department of Meteorological Forecasts, Russian State Hydrometeorological University, Saint-Petersburg, Russian Federation (ev-suvorova@yandex.ru)

The study of the influence of the large-scale disturbances in the stratosphere during the SSW events on the tropospheric dynamics using the results of simulation with the Middle and Upper Atmosphere Model (MUAM) and the analysis of the UK Met Office data is performed. Results of numerical simulation with the MUAM show an increase in the southward wind in the troposphere at high and middle latitudes after the SSW events in the longitudinal sectors over Europe and Siberia. Latitude-height distribution of Eliassen-Palm flux shows a substantial downward reflection of planetary waves at high latitudes in the stratosphere and divergence of the 3D wave activity flux demonstrates an increase of wave activity density in the troposphere during and especially just after the SSW. Analysis of UK Met Office and sea-level pressure data supports the results of simulation and shows that after the SSW events there exists an increase of the southward flow in the troposphere and invasions of anticyclones from polar region into the middle latitudes over Europe and Siberia. The time-scale and time-delay of extratropical stratosphere-troposphere interaction events suggest that stratospheric conditions could be used for middle-range weather forecasts.