

## **Response of the winter tropospheric storm tracks on the stratospheric dynamics**

Yulia Zyulyaeva (1), Natalia Tilinina (1,2), and Sergey Gulev (1)

(1) P.P. Shirshov Institute of Oceanology, RAS, Laboratory of Ocean-Atmosphere Interaction and Monitoring of Climate Change, Moscow, Russian Federation (yulia@sail.msk.ru), (2) Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, Bremerhaven, Germany

There is a growing interest to the observed dynamics of mid-latitude storm tracks and its links to the ocean signals and stratosphere processes. During Northern Hemisphere winter changes in the intensity of the Polar Night Jet may affect the tropospheric dynamics changing the locations of the storm tracks and also influencing their poleward deflection. We consider intensity and locations of the mid-latitude storm tracks in the Northern Hemisphere using different modern era global reanalyses for the period 1979 onwards. For identification of the storm tracks we used band-pass statistics of geopotential heights of different levels and the results of the numerical storm tracking algorithm applied to sea level pressure fields. Regimes of the stratospheric vortex were quantified using temperature and zonal wind at the upper layers. This allowed for identification of the periods of the so-called “cold” and “warm” stratospheric vortices for which characteristics of the intensity and poleward deflection of the storm tracks in the North Atlantic and North Pacific were estimated. Analysis provided robust relationships between the characteristics of tropospheric cyclone activity and stratospheric dynamics with, however, differences in the Atlantic and Pacific basins. Dynamics of the storm tracks has been further considered in a view of strong anomalies of continental climate over Europe and the North America.