



## **Variability of North polar stratospheric vortex parameters**

E.A. Dyukarev

Institute of monitoring of climatic and ecological systems SB RAS, Russian Federation  
(egor@imces.ru)

The variability of parameters of the north stratospheric polar vortex was studied using NCAR/NCEP reanalysis data on geopotential height, air temperature, U and V wind components at 10 hPa level. The climatic description of the vortex including vortex depth, position of the centre and vortex area was made. It was found, that the phase of maximal vortex development predominantly occurs in January. Average for 1948-2005 height of geopotential in the centre of vortex is  $28407 \pm 283$  m. The averaged position of vortex centre is located at  $82.03^\circ$  N,  $20.81^\circ$  E. Average are occupied by the vortex is  $1.21 \cdot 10^8$  km<sup>2</sup>.

Analysis of time series of vortex parameters have shown, that during 1948-2005 occurs shift of the vortex center toward lower latitudes with the rate  $0.66^\circ$  per 10 years. Correlation analysis of vortex parameters in the phase of maximal development and air temperature (geopotential height) at different isobaric levels have shown, that vortex has a significant influence in meteorological fields formation in the lower stratosphere and upper troposphere at high latitudes of the Northern Hemisphere. Vortex intensification (area increasing and center deepening) results in temperature rise in stratosphere and upper troposphere in winter in the Polar Regions and in middle troposphere above Atlantic Ocean, the Middle East and Pacific Ocean. The polar vortex strengthening related with weakening of zonal wind in the Polar Regions in lower troposphere.