



## **Arctic and Antarctic polar vortices as seen from the ECMWF reanalyses**

**A. Karpechko** (1), E. Kyro (1), and B. M. Knudsen (2)

(1) Finnish Meteorological Institute, ARC, Sodankylä, Finland, (2) Danish Meteorological Institute, Copenhagen, Denmark

(alex.karpechko@fmi.fi / Fax: +35816619623 / Phone: +35816619625)

The polar vortex is a distinctive feature of the wintertime stratospheric circulation in both hemispheres. It comprises a strong circumpolar westerly circulation, which isolates the polar and mid-latitude stratosphere. The goal of the present study is to update previous findings to the recently appeared ECMWF 40-year reanalyses (ERA40). We have studied the climatological structure, interannual variability and interrelationship of characteristics of Arctic and Antarctic stratospheric vortices at several isentropic levels based on the ERA40 reanalysis (1957-2002). Due to suspicious data in pre-satellite period in Southern Hemisphere, only data from 1979 are used to study the climatology of the Antarctic vortex. Mainly, the climatological structure of vortices in both hemispheres is consistent with previous climatologies obtained from other data sets. A study of interrelationship between vortex characteristics suggests that, in the Arctic, a larger vortex is usually colder and stronger whereas in the Antarctic such relationship is not established. Using ERA-40 data for the period 1957-2002 and the ECMWF operational analysis afterwards, the long-term changes in the vortex characteristics until recent winter are calculated and discussed.