



## **Changing of the atmospheric circulation over the Northern Hemisphere during the 20th century**

Vladimír Piskala (1) and Radan Huth (1,2)

(1) Charles University in Prague, Faculty of Science, Prague 2, Czech Republic (vladimir.piskala@natur.cuni.cz), (2) Institute of Atmospheric Physics, Czech Academy of Sciences, Prague, Czech Republic

The atmospheric circulation over the Northern Hemisphere has changed during the past century. We use the long-term reanalysis 20th Century and ERA-20C to find out how the winter circulation looked like at the beginning of the century and how it has been changing during the time. Both reanalysis cover a period longer more than 100 years. We identify the modes of low-frequency variability (i.e. teleconnections) by the varimax-rotated principle component analysis of monthly mean 500 hPa geopotential heights. We detect modes of variability in three separate periods 1871-1911, 1916-1956 and 1962-2002. The highest differences occurred between the 1871-1911 period and the following 1916-1956 period. This is probably due to lack of data assimilated to the 20th Century reanalysis over the North America, Siberia and oceans. We also apply a moving analysis with two years step to get more precise information about a geographical shift of modes. The circulation patterns vary even between chosen reanalysis due to various data assimilation processes and model settings. We hypothesize that the main detected changes are given by the different quality of assimilated data during each period.