



Changes in persistence of atmospheric circulation over the Northern Hemispheric during summer and winter

J. C. Moliba Bankanza, R. Huth

**0.1 Institute of Atmospheric Physics, Prague, Czech Republic
(moliba@ufa.cas.cz)**

The present study analyses daily series of 500 hPa geopotential height over the Northern Hemispheric in order to detect possible changes in persistence of atmospheric circulation during winter and summer. Daily series of 500 hPa geopotential height in winter (DJF) and summer (JJA) from 1950 to 2003 are used. The area of study covers 1080 grid points with resolution 5° x 5°, from 20° to 85° N. One-day (AC1) and five-day (AC5) autocorrelation of 500 hPa geopotential in both seasons is calculated separately in each season. Trends are calculated from the seasonal autocorrelation values using the least square linear regression. Their significance is estimated using *t*-test. On the one-day step the atmospheric circulation is globally more persistent in winter than in summer over the Northern Hemisphere. Positive and negative changes have affected persistence of atmospheric circulation during the second half of 20th century. These changes are significant for about 5 to 10 % of the whole Northern Hemispheric. Nevertheless changes are important and significant in some specific areas, for example positive trends are significant over the North Atlantic, North America, and Japan during winter. Negative trends in winter are significant e.g. in Siberia and eastern Pacific Ocean along California. In summer, positive significant trends appear in limited areas in central Pacific and Gulf of Mexico while negative ones are observed over the Himalayan mountains, Scandinavia, Gulf of Mexico, and Siberia. On the whole, negative trends seem to be more significant than positive in both seasons. The research is supported by the Grant Agency of the Czech Academy

of Sciences, contract IAA300420506.