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The analysis of the Atlantic-European blockings

Márk Iván, Zsuzsanna Dezső, Judit Bartholy, and Rita Pongrácz
Dept. of Meteorology Eötvös Loránd University, Budapest, Hungary (ivanmark90@gmail.com)

The aim of this paper is to examine all kinds of blocking phenomena in the Atlantic-European region and their effects to regional scale processes, especially for the Carpathian Basin (e.g., long lasting droughts, storms, with extreme precipitation, etc).
Blockings are anomalous features of the upper tropospheric flow. During these events the usual zonal westerly flow is interrupted by strong and persistent meridional flow causing quasy-stationary, stationary or retrograde synoptic motions in the troposphere. These atmospheric formations are generally associated with extreme weather events.
In general, two main approach can be used to examine blockings, (1) the analysis of the 500 hPa geopotential height field anomalies, and (2) the analysis of the upper tropospheric isentropic potential vorticity anomalies. Based on the spatial distribution of these anomalies four types of blocking patterns can be identified: (1) Blocking Highs, (2) Cut–off Lows, (3) Rex-Blocks, and (4) Omega-Blocks. In this paper, the frequency and persistence of different blocking types over the Atlantic–European region are examined using daily averaged gridded ECMWF ERA-Interim and ERA-20C reanalysis data from 1979 to 2005. During the analysis results obtained from several methods are compared.