



Quasi-stationary and blocking anticyclones in the Euro-Atlantic sector: characteristics, prognostic capacity, and their relationship with snow cover

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Catalog of quasi-stationary and blocking anticyclones through analysis of daily synoptic maps for the period from 1949 through 2009 for blocking anticyclones over the territory of the Euro-Atlantic sector was created. Spatial and temporal characteristics of quasi-stationary and blocking anticyclones were investigated on the basis of created catalog data. Test experiments with hydrodynamical model PLAV of Hydrometeorological Centre of Russia and INM RAS were conducted to verify the ability of the model to reproduce the main synoptic processes which are responsible for formation of long duration anomalous weather conditions. Preliminary results showed that the predictability of the model has been increased during blocking period and 10-20 days afterward under condition of persistence of intensive and long-life, more than 10 days, blocking anticyclones over 1st naturally synoptic region. Simulation of short-life anticyclones in the model is not successful. Using a composite analysis, the relationship between characteristics of snow cover and the conditions of blocking processes was examined. Statistical significance test was applied to composite difference maps at each point of grid with purpose of identification statistically significant anomalies of SWE. This analysis identified the areas in which the snow cover characteristics are sensitive to the occurrence of the blocking anticyclones. Long-term variability of snow cover characteristics versus variability of duration in days blocking situations during winter season have been analyzed as well. Comparative analysis of location of the snow cover southern border on the territory of the first synoptical region for periods of high and low anticyclonic quasi-stationary circulation activity during winter season has not revealed statistically significant difference in location of the snow cover border.

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