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***Fatemeh Dargahian*[1]**
***Bohlul Alijani*[2]**
***Hossin Mohammadi*[3]**

The DEtection and Study Climatology of Blocking Systems Affecting the Climate of Iran

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Abstract

Blocking event can lead to economic losses at the macro level and be effective on health on a large scale. Blocking is one of the Mid-latitude systems and Iran due to the situation is affected by this phenomenon. In order to investigate the blocking systems affecting the climate of Iran, daily geopotential heights of 500 hPa of grid points within the 0– 90N and 90W–100E windows were extracted from the NCEP reanalysis data for the 1953-2012 period at 2.5 degrees resolution. By using the two dimensional index, the blocking systems were defined within these geopotential data. The whole process was programmed and modeled in the MATLAB environment. In the second step the

1- Ph.D. Student of Climatology, Science and Research Branch, Islamic Azad University, Tehran, Iran.
2- Professor of Climatology and Director of the Center of Excellence for the Spatial Analysis of Environmental Hazards, Kharazmi University, Tehran, Iran.
3- Professor of Climatology, Tehran University, Tehran, Iran.

characteristics of blocking systems such as central location, intensity, spatial structure, and duration were extracted.

The results showed that the most frequent occurring place for these systems is the area between 10W to 20E; while Iran was the second center for these events. The developing location of the most blockings affecting the climate of Iran is the Scandinavian Peninsula. The medium blockings were frequent and the mean duration of these systems was 6 days. The application of the non-parametric Mann-Kendal test revealed no significant trend of the frequencies of blocking systems over the study period.

Keywords: Blocking Systems, Climate of Iran, Characteristics of Blocking Climatology.