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Winter Rainfall Prediction Based on climatic large scale signals by Using Artificial Neural Network

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The aim of this research is investigation of the relation between climatic large scale signals with winter rainfall of Khorasan-e Razavi province.
In this research, we have analyzed 38 years of rainfall data in khorasan-e Razavi province, located in the north-eastern part of Iran. We attempted to train Artificial Neural Network based on climatic large scale signals with 38 years of rainfall data. For performance evaluation, network predicted outputs were compared with the actual rainfall data. In this study, at the first step, the relationships between synoptically pattern variations including Sea Level Pressure (SLP), Sea Surface Temperature (SST), Sea Level Pressure Gradient, Sea Surface Temperature Difference, Air Temperature at 700 hPa, Thickness between 500 and 1000 hPa level, Relative Humidity at 300 hPa, Outgoing Long wave Radiation (OLR), zonal wind and meridional wind are investigated .in the second step, model was calibrated from 1970 to 1997. Finally, rainfall prediction is performed from 1998 to 2007. Simulation results reveal that Artificial Neural Network (ANN) is promising and efficient.