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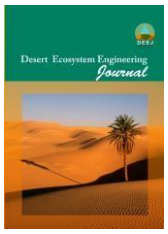

Modeling and prediction of seasonal drought, using RDI index and time series models (Case study: Tehran synoptic station)

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Abstract

Drought is one of the most important natural hazards that should affect Agriculture and water resources. The frequency of its occurrence, especially in arid and semi-arid areas of Iran is very high. Therefore, simulation and drought forecasting are necessary more than ever. This factor is importance in the planning and management of natural resources and water resources. In this study seasonal drought over the 5 next years (from winter of 2015 to autumn of 2019) in Tehran station was evaluated using RDI drought index, time series models and ITSM software. In this research climate data of Tehran station from 1967 to 2014 was analyzed (with average precipitation of 239.67 mm/year). Based on Hannan-Rissanen MA (5) model method was the best model fitted to the data. According to results coefficients of model (Z(t-1)) at 3 and 4 lags are insignificant (at the 95% level), Therefore, this coefficient set zero. According to p-value of Ljung - Box test (0.894) in different lags that is significant in 95% level can be said that the prediction is Reliable. Based on results seasonal drought condition in 50% of predicted seasons will be normal, in 45% of predicted seasons will be near normal and in 5% of predicted seasons will be moderately drought.

Key words: Time series, prediction, Drought, RDI index, Tehran station.

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