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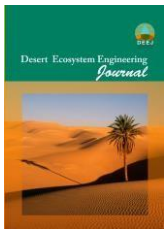

A time series analysis of drought for the last five decades in Central Iran

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Abstract

Widespread and long-term effects of droughts have caused it to be known as the worst natural disaster that causes water and food deficiency in affected areas. One of the popular indexes in recognizing and monitoring of drought is Standardized Precipitation Index (SPI) that its efficiency has been approved in the world. Trend detection is very important to manage water resources. The MannKendall estimator non-parametric tests are used in climatological factors trend. The SPI has been extensively applied for spatial drought analysis in various regions. Central Iran has been located among the Alborz Mountains in the north, the Zagros Mountains in the south and west, and the scattered mountains of Khorasan in the east. Because of special conditions the average annual rainfall within this area is less than 300 mm. In this study, the monthly precipitation data were obtained from Iran Meteorological Organization and after calculating SPIs in different time series (1, 3, 6, 9, 12, 24 and 48 monthly) precipitation and drought trends were investigated in all station. An investigation of precipitation and SPI drought trend was done in central Iran using Man-Kendal. The results show a significant negative trend in all station except in two stations, so it can be said that aridity in Central Iran has been increased during past five decades. Also based on achieve result in this study, long term time series can show more significant trend rather than short ones.

Key words: Central Iran, drought, Mann–Kendall statistics, SPI.

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