

The Analysis of Spring Precipitation in Semi-Arid Regions: Case Study in Iran

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ABSTRACT

In this study, Zanjan from Iran has been chosen from among all the semi-arid regions of world, which has Synoptic station and statistical data since 1955. Spring and monthly precipitations are also provided in the period of 1956-2005. First, all data has been controlled by double mass method with the help of adjacent stations, and then it was normalized by the box-cox transformations method. The global SPI index was calculated for all months and spring, also drought and wet periods were determined and finally compared. In the drought category view, spring months have represented the great similarities. The moving averages are represented all months and spring' s precipitations such as three years, five years, seven years and nine years are shown. Statistical period was observed and analyzed based on five periods of ten years, and results precipitation with more than 5mm and 10mm has gradually decreased on April. However the number of days with precipitation has increased. The calculated spring precipitations and all of the atmospheric factors represented the dependence of this model to maximum average of spring temperature and relative humidity of spring and winter by the use of multi variable regression method. The predicted precipitation of spring also showed the gradual decline of precipitation in the next 30 years by the arima model.

KEYWORDS

Iran, Semi-Arid Regions, Precipitation, Drought, Box-Cox Transformations Method, Arima Model

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