



Drought Risk Assessment and Zoning Using the Standardized Precipitation Index (SPI) (Case Study: Karkheh Basin)

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Abstract

Drought monitoring is one of the key factors in drought risk management and the use of drought indices such as the standardized precipitation index (SPI) is a useful tool in this regard. The aim of this study is to evaluate and zone drought risk in different years and return periods in Karkheh basin. For this purpose, Standardized Precipitation Index (SPI) as a selected index was used to assess drought in 33 stations inside and outside the basin in five timescales. The results showed that the lowest values of SPI, the most severe drought continuity of the large and the longest continuity were related to Govar stations of Kermanshah province, Biderood station of Khoozestan province and Jokar station in Hamadan province, respectively. Extensive drought risk maps for different return periods showed that in return period of 5 years, northern (Bavane station of Kurdistan province), northeast (Hamadan station) and northwest (Kermanshah) areas were more at risk of drought. This condition for a return period of 10 years was mostly related to northern (Bavane station of Kurdistan province), northwest (Kermanshah) and central areas. Drought risk for 20-year return period affected the northern (Bavane station of Kurdistan province) and Northwest (Kermanshah) areas more, while for 50-year return period, in addition to northern (Bavane station of Kurdistan province) and northwest (Kermanshah), it also affected the northeast (Hamadan station). The overall result showed that the periphery areas, especially areas of northwest, north, northeast and some parts of eastern and southeastern areas are the most susceptible areas affected by drought and with increase in the return period, the severity of drought risk can be reduced.

Keywords: Drought, Standardized Precipitation Index, Karkheh, Risk Management.

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