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(E-mail: Sarvai@nrf.ut.ac.ir)

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- Mckee *et al*

- Hayes *et al*

- SPI: Standardized Precipitation Index

-Girux *et al*

-Bordi *et al*

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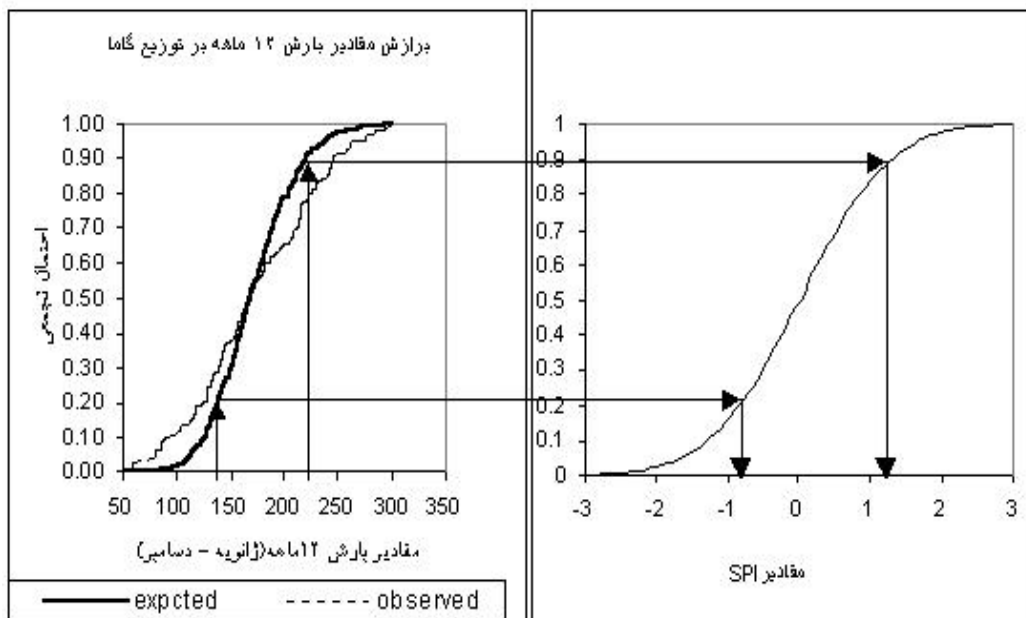
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-EQUIPROBABILITY TRANSFORMATION

-TDF (Time Scale – Duration – Frequency)
 -TMF (Time Scale – Magnitude – Frequency)



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Archive of

ArcView

GIS

ArcView

ArcInfo

ArcInfo

UTM

3D-Analyst

ArcView

Spatial Analyst

IDW

(SPI)

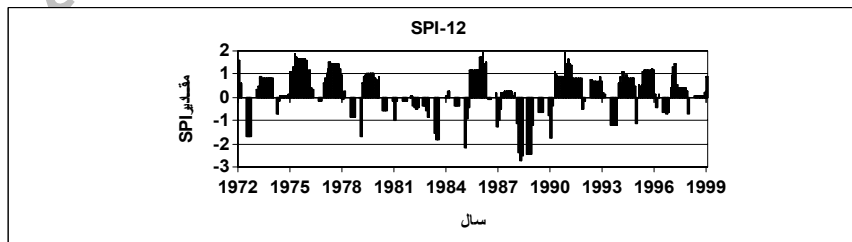
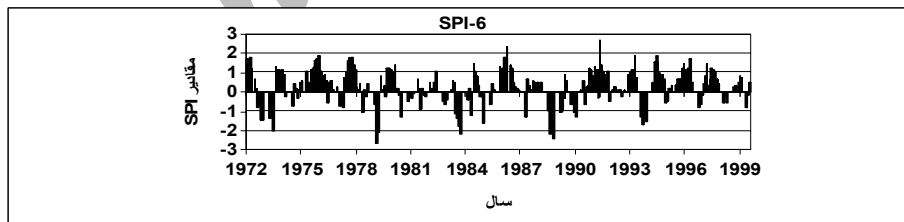
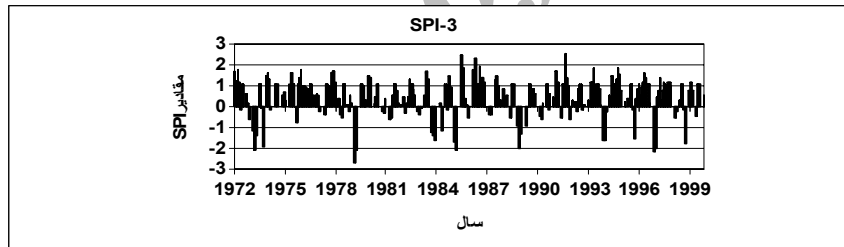
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-Extention

-IDW (Inverse Distanace Weighting with Power)

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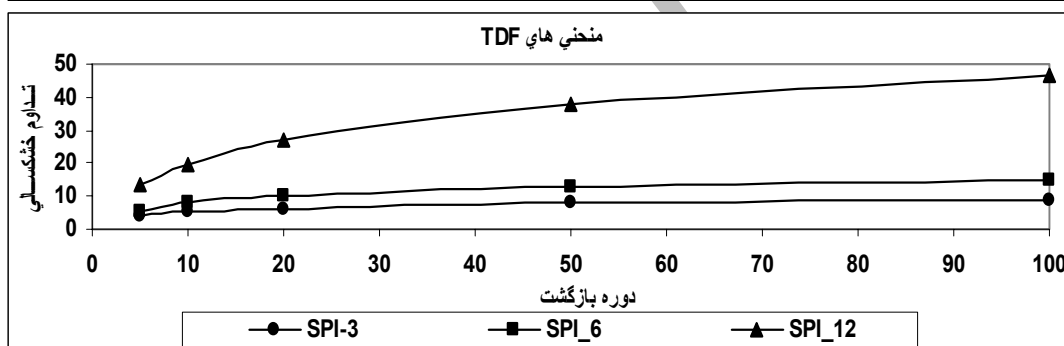
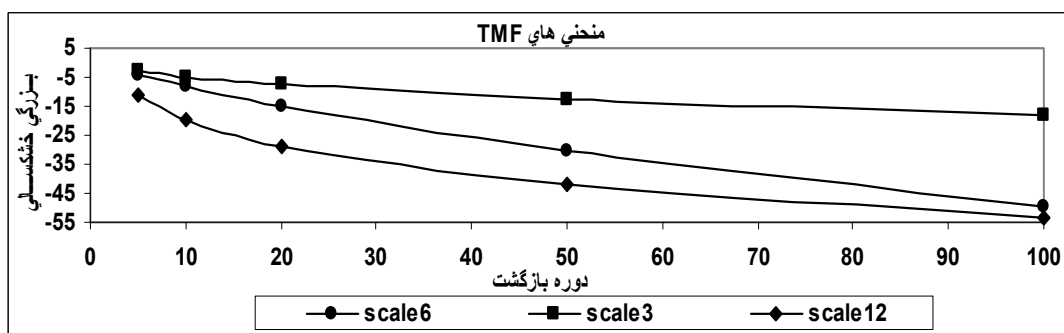
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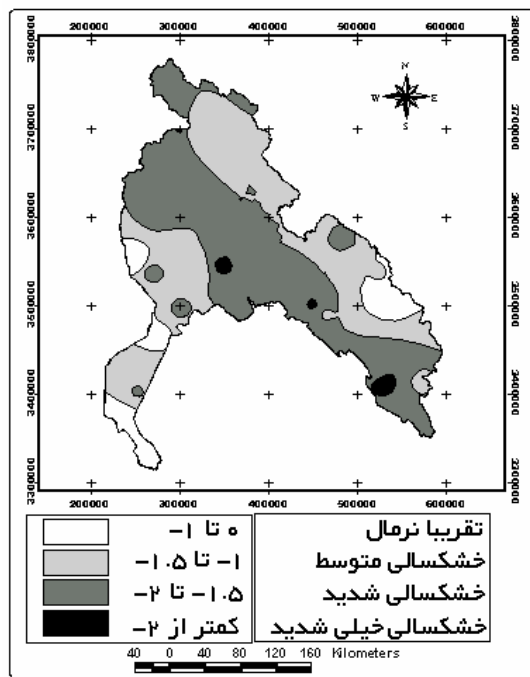
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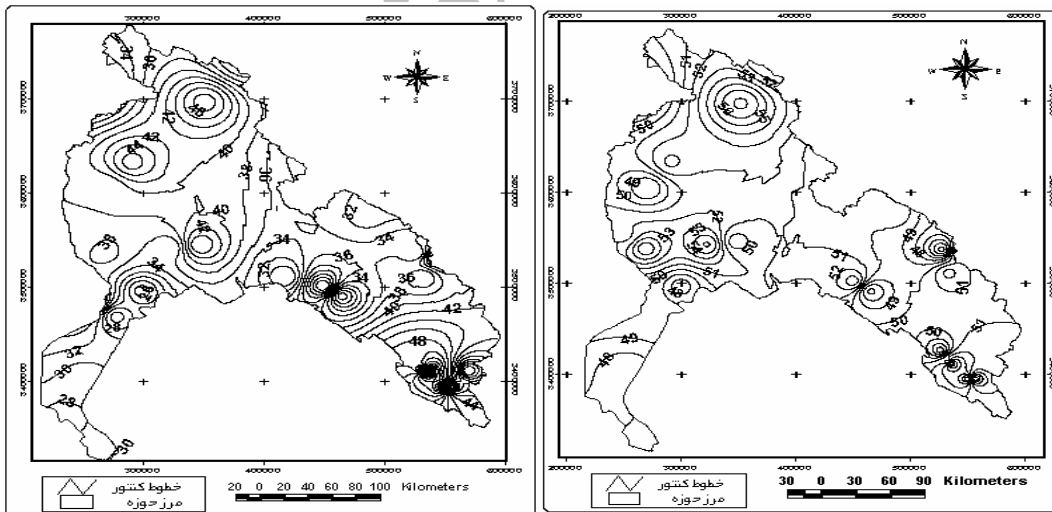
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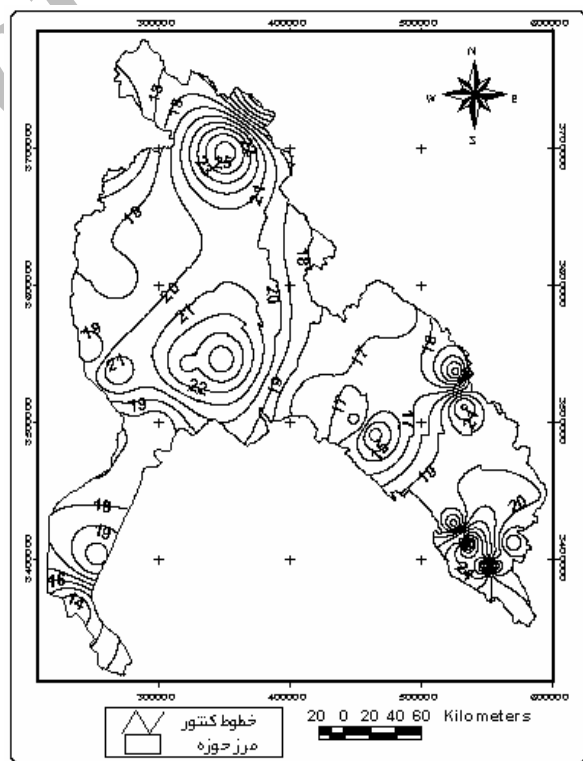
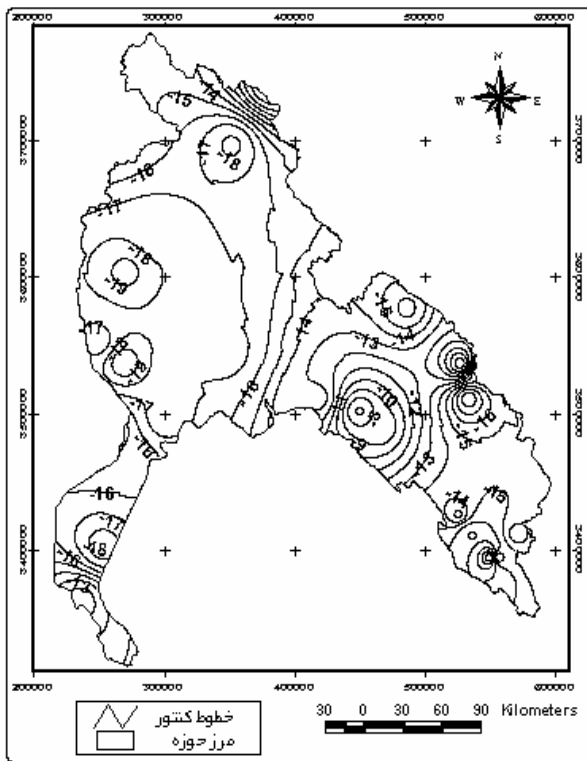
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Severity, Frequency, Duration and Area Analysis of Karoon Basin Droughts Using the Standardized Precipitation Index(SPI).

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B. Saghafian³

M. Mahdavi⁴

Abstract

Drought, which is one of the most injurious and chronic natural disasters, is defined as the continuous and abnormal moisture deficit. The term of continuous means continuation of deficit and the term abnormal means deviation of favorite index of natural condition from the mean. In every drought study four main characteristics are considered: Severity, Duration, Frequency or Return period and Areal Extent. The objective of this study was to analyze these characteristics of droughts and to use them in plotting drought maps over Karoon basin. For this purpose, the Standardized Precipitation Index (SPI) as a selected index, was used for an evaluation of drought inside and outside the basin. Records from 29 stations within the same period of 28 years (1972-1999) in 3 time scales of 3, 6 and 12 months were used. After computing drought and wet period time series using the SPI, several characteristics of droughts were considered and areal extent maps of droughts plotted using Arcview software. The result of stationary analysis, while with considering above characteristics show that the least observed SPI and the severest duration due to drought Magnitude has happened in Menj station while Darshahi station has experienced the longest duration as well as the highest frequency during the record period. Drought maps show that southeast of the basin, near Darshahi, Batari, Pataveh, Yasooj, Shahmokhtar and Menj stations has experienced severer drought as compared with the other areas. It seems that this area is potentially more prone to droughts than other sites.

Keywords: Drought, SPI, Drought characteristics, Time scale, GIS, Interpolation, Karoon river basin

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