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***Faramarz Khoshakhlagh*[1]**
***Sajad Bagheri Sead Shokri*[2]**
***Taher Safarrad*[3]**

The Analysis of Severe Droughts Influences on Karst Springs Discharge in Kermanshah Province Case Study: Severe Drought of Year (1386-87)

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Abstract

Kermanshah Province is rich in karst water resources due to its geologic, geomorphologic and climatic features. The response of karst springs to drought is varied because of different characteristics of folded and fractured karst zones. The aim of this research is the recognition of discharge fluctuations and behavior of karst springs in folded and fractured Zagros zones when drought happens. Therefore, the year 1386-87 has been chosen as the year of severe drought by using SPI index. Then by analyzing the hydrograph and hyetograph, calculation of discharge coefficient variation, variation range alpha coefficient the type of the spring systems have been determined.

1- Assisstant Prof., Faculty of Geography, University of Tehran.
2- Ph.D. Candidate of Geomorphology, Faculty of Geography, University of Tehran.
3- Ph.D. Candidate of Climatology, Faculty of Geography, University of Tehran.

Eventually, the way that springs have been affected by drought has been investigated. The results of study show that the springs of fractured Zagros belong to conduit type and springs of folded Zagros belong to diffuse type.

The impact of the drought on all the springs has been occurred without any delay and nearly at the same time. Springs of fractured Zagros zone have a response to maximum rainfall with a three-month delay and then these springs have been dried near to complete. The only impact of severe drought on folded Zagros springs is limited to discharge decrease and no time can be exactly determined for folded Zagros springs reactions to the drought.

Finally, folded Zagros springs have been affected by the drought less than the fractured ones and these springs have greater potential for water resources sustainablity using and management.

Keywords: Severe Drought, Karst Springs of Zagros, Hyetograph, Hydrograph, Kermanshah Province.