Evaluation of hydro-climatology drought using the Standardized Precipitation Index (SPI) in the High Ziz river Basin, Central High Atlas, Morocco

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One of the adverse impacts of climate change is drought, which occurs more frequently in the High Ziz river Basin, Central High Atlas, Morocco. The application of drought index analysis is useful for drought assessment to consider adaptation and mitigation method to deal with climate change. Byfiguring out the level and duration of the drought and the trend of precipitation in different time scale, we could address the climate variability and climate change over a specific area. In order to analyze drought in the study area, we used two different approaches for addressing the change in climate and particularly in precipitation, assess the variability change in over the years and assess the change with in the year timescale (monthly, seasonally and annually).
In first approach, we look for precipitation in long time scale, annual and more than one-year period. For this purpose, change in Standardized Precipitation Index (SPI) was considered to quantify the rainfall deficit for multiple timescales. For the second approach, we focus on the trend analysis of precipitation in different time scale within the year. For trend analysis, we used the Mann-Kendall (M-K) test in different time scale within the year to analyze the trend.
The results show there is no significant trend in annual rainfall, but in term of seasonal rainfall, the magnitude of Rainfall during summer shows positive significant trend in three stations. Significant negative and positive trend in monthly rainfall was observed only in April August respectively.

Keywords: High ZIZ basin, Drought, climate change, Standardized precipitation index (SPI).

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Abstract

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