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Abstract : It is important to investigate the response of hydrological drought to meteorological drought and its influencing factors, which might help better to understand drought evolution mechanisms and facilitate its monitoring and forecast. For example, in the western part of Algeria, the frequency of droughts events increased with considerable impact on local water resources. To investigate the response behavior in this region, the Pearson's correlation between both droughts is analyzed using the drought index method. Four drought indices deviated from the period 1970 to 2010 based on a comprehensive dataset of hydro-meteorological measures are employed for this purpose. In the light of the obtained results, a high variability in hydrological drought response over the study area was found depending on the paired indices and the time scales considered. Using the base flow index (BFI) results, it revealed that hydrological drought evolution is affected by a combination of meteorological conditions and basin properties, but not in a similar way. Besides, the analysis of this relationship using the Relative Operating Characteristic (ROC) showed that it can be used to distinguish between events and non-events as the correlation is stronger.

Key words : Meteorological drought, hydrological drought, Western Algeria, drought indices, BFI, ROC

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