The title (العنوان):

Spatiotemporal characterization of the annual rainfall variability in the Isser Watershed (Algeria)

APA Citation (توثيق APA):

Benali Khodja Malia, Metouchi Abdenacer, Djoudar Hallal Dahbia, and other (2022). *Spatiotemporal characterization of the annual rainfall variability in the Isser Watershed (Algeria)*. Arabian Journal of Geosciences.VOL 15(n°2), p. 190. DOI ou URL : https://link.springer.com/article/10.1007/s12517-021-09408-x

Abstract : Wadi Isser watershed (4149 km^2), located in the North of Algeria, has experienced a significant rainfall variability during the last four decades. In order to characterize this variability and determine its spatial extension, by means of the analysis of the rainfall data measured in twenty-seven (27) stations, the following study was conducted. The analysis of the long rainfall series of the reference stations of Bni Slimane (1920–2014) and Djebahia (1923–2014) through the application of three statistical tests (Pettitt, Buishand and Lee and Heghinian) revealed an episode of low rainfall from 1973 to 2001 for the Djebahia station and from 1975 to 2001 for the Bni Slimane station. This period was characterized by a decrease in annual rainfall varying between 14 and 43%, followed by a rainy phase in the watershed with an increase in annual rainfall (35.8%) at the Khebouzia station. The analysis of the kriged maps, developed by geostatistical modeling of the spatial structure of precipitation (1975–2014), supported and corroborated the results of the statistical tests. Indeed, the spatial interpolation based on decadal averages of rainfall from 1975 to 2014 illustrates a well-contrasted spatial variability for the four decades. The northern part of the watershed is characterized by a higher rainfall than the central and southern parts of the watershed. In the light of the results obtained by applying the two approaches mentioned above, a decreasing trend in rainfall is clearly evident from the beginning of the decade 1985–1994. A double rainfall gradient is highlighted with an increase in rainfall from east to west and from north to south. At the same time, there was a surplus towards the end of the third decade and the fourth decade. A return of precipitation is thus highlighted as well as the different breaks in the series. Through this research, the statistical study and the geostatistical mapping have enabled the elaboration of a relevant tool for decision support to the managers in the field of environment and hydraulics, in a general way, and in a context of global warming. In fact, it will allow them to better understand the developments of wadis, the integrated management of water resources in order to guarantee current and future needs for drinking, industrial, and agricultural water in this semi-arid region.

KEYWORDS : Isser ; Watershed ; Rainfall ; Variability ; Evolution ; Break ; Geostatistical approach ; Kriging

Available from : https://link.springer.com/article/10.1007/s12517-021-09408-x