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Abstract :

The analysis of the occurrence of extreme events in Mazafran Watershed and their return periods is necessary in hydrological study. The rainfall series of the watershed and their modelizations using annual maxima series (AMS) and partial duration series (PDS) are executed by the classical method in three stations taken for an aggregation period ranging from 15 min to 1 day. For PDS, the analysis of the data showed that the two-parameter exponential distribution is the most adequate distribution related to the number of exceedance λ = 1.65. The maximum daily rainfall series corresponding to this number were selected to deduce the intensity-duration-frequency(IDF) curves characterizing the studied watershed. The climatic exponent of the selected stations (0.69, 0.59 and 0.62) was revealed by the graphical method, following the Montana model. The correlation is significant (97–99%). As for AMS, the adjustment results reveal the best adaptation of the log-normal(Galton) law to the data series as well as the doubly exponential law (Gumbel) presenting the values of climatic exponent: 0.67, 0.54 and 0.62 for Oued Zeboudj, Ouzera and Somaa respectively, following the same model with a correlation coefficient of 0.99, 0.97 and 0.98. The comparison between the two methods used revealed a very small difference in climatic exponent 'b' of the order of 0.02 to 0.05 for the stations of Oued Zeboudj and Ouzera respectively, whereas Somaa kept the same exhibitor. As for the climatic index '*a*', a considerable variation has been revealed. Both stations, Oued Zeboudj and Ouzera, have almost the same root mean square error (*RMSE*) values between 20% and 40%. The Somaa station represents larger values (up to 66%).

Keywords : Extreme events ; AMS ; PDS ; IDF curves ; Climatic exponent

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2-https://www.researchgate.net/profile/Habibi-Brahim/publication/354973771_Analysis_of_extreme_events_and_estimation_of_parameters_case_of_Mazafran_watershed_northern_Algeria/links/62556d8eb0cee02d69667414/Analysis-of-extreme-events-and-

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