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Detection of outliers data (precipitation and flood) in Golestan Dam Watershed

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Outlier data plays a very important role in flood frequency analysis. In recent years, Golestan Dam watershed has experienced devastating floods. This watershed, with an area of 4802 sq. km, which is a part of Caspian Sea watershed, is located in North-East of Iran. Some of those floods was unpredicted and may be as a shock. Accordingly, the problem is that may be the measured data were not taking place all over again. The main objective of this research is detection of outliers data (precipitation and flood) in this watershed. For this purpose, for recorded flood and precipitation data of this watershed, the Shapiro-Walk test, skewness, kurtosis, standard deviation and RST values, were examined. Therefore, the Log-normal, Pearson III, Log- Pearson III and Gumble distributions applied for normalization transformation. This normalization was done for yearly maximum of precipitations and floods data in 5 hydrometric stations in this watershed. Then the outlier data have been detected for these stations. The results shows that outlier detection process highly depend on the type of statistical distributions. Meantime, two measured heavy rainfalls and floods during the last years have effected on the suitable previous statistical distributions and even change them. Furthermore, by omitting of any outliers data, type of statistical distributions and the value of their parameters, were changed.