Regional Flood Frequency Analysis of Fars Rivers in Iran Using New Statistical Distributions (Case Study for Ghareaghaj and Kor Rivers)

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Estimate of river floods with different return periods is extremely essential for designing hydraulic structures. Statistical distributions are used to estimate floods in watersheds which have statistical data. In Iran some common statistical distributions such as Gumble, Log-PearsonIII, PearsonIII, Normal and lognormal are used for the study floods. Previous researches in Fars province indicated that maximum Instantaneous floods in most of Fars rivers closely matches Log-PearsonIII and Gumbel distributions. In this study, using Mathwave (Easy fit 5.2) software, which is able to analyze 65 different statistical distributions, the functions of some advanced statistical distribution in estimating flood amounts in Ghareaghaj and Kor River in Fars province were studied. The results showed that a few new generalized distributions like Gneralized extreme Value, Generalized Gama, Generalized logistic and Generalized Pareto and also Johnson SB, Wakeby and Log-Logestic distributions, had better functions than Gumble and Log-pearson distributions. Based on some criterion such as Kolmogorov-Smirnov, Anderson-Darling and Chi-SB the function of each distribution was compared and the best statistical distributions were distinguished. Wakeby, Generalized pareto and Johnson SB were considered to be the best statistical distributions.