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Probability distribution of flood flows in Tunisia

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Abstract. L (Linear) moments are used in identifying regional flood frequency distributions for different zones Tunisia wide. 1134 site-years of annual maximum stream flow data from a total of 42 stations with an average record length of 27 years are considered. The country is divided into two homogeneous regions (northern and central/southern Tunisia) using a heterogeneity measure, based on the spread of the sample L-moments among the sites in a given region. Then, selection of the corresponding distribution is achieved through goodness-of-fit comparisons in L-moment diagrams and verified using an L moment based regional test that compares observed to theoretical values of L-skewness and L-kurtosis for various candidate distributions. The distributions used, which represent five of the most frequently used distributions in the analysis of hydrologic extreme variables are: (i) Generalized Extreme Value (GEV), (ii) Pearson Type III (P3), (iii) Generalized Logistic (GLO), (iv) Generalized Normal (GN), and (v) Generalized Pareto (GPA) distributions. Spatial trends, with respect to the best-fit flood frequency distribution, are distinguished: Northern Tunisia was shown to be represented by the GNO distribution while the GNO and GEV distributions give the best fit in central/southern Tunisia.

Final Revised Paper (PDF, 354 KB)   Discussion Paper (HESSD)

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