



Statistical models for drought indices

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The estimation of return periods of hydrological extreme events and the corresponding risks connected to such events are important aspects in many water resources studies. The aim of the study is to develop and evaluate statistical model for drought indices using extreme value theory and index-flood method. Deficit volumes for sixty-five catchments in the Czech Republic are considered. Catchment data consists of simulated monthly discharges with data-sample length varying from fifty to a hundred year long time time-series. Annual maximum deficit volume a three-parameter generalized extreme value (GEV) distribution is used within the study. The idea behind the index flood method is that the variables within a homogeneous region are identically distributed after scaling with a site-specific factor. A consequence of the index flood assumption is that the coefficient of variation of given variable should be constant over the region of interest. In the present paper the coefficient of variation for the considered catchments, Gumbel plots as well as Anderson-Darling statistic are used to check the homogeneity of the region and the suitability of the GEV distribution for the annual maximum deficit discharges.