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Application of GEV and GP distributions on annual maxima and partial duration series of dry spells in Croatia

K. Cindrić (1) and Z. Pasarić (2)

(1) Meteorological and Hydrological Service of Croatia, Zagreb, Croatia (cindric@cirus.dhz.hr), (2) Geophysical Department, Faculty of Science, University of Zagreb, Croatia (pasaric@mail.irb.hr)

In attempt to establish the basis for the drought risk assessment in Croatia, the feature of extreme dry spell distributions are investigated. Daily rainfall data with 1 mm/day threshold at 25 meteorological stations in Croatia are used. Both annual maxima and partial duration series (PD) of dry spells are modeled by generalized extreme value distribution (GEV) and by generalized Pareto distribution (GP). The method of L-moments is used for estimating the parameters of applied models, while the quality of fit is assessed by comparing the empirical and theoretical skewness and kurtosis. The focus of the present paper is on sampling strategies used to define the PD series. A general methodology for selecting the truncation value above which a dry spell can be considered as an extreme one has not yet established. Therefore, changes in parameter estimations resulted from different sampling methods are discussed. Finally, spatial distributions of dry spell lengths for the return periods of 2, 5, 10, 25 and 50 years are given.