EMS Annual Meeting Abstracts
Vol. 14, EMS2017-389, 2017

The regional analysis of dry spells in Croatia from the period 1961-2015

Ksenija Cindric Kalin (1) and Zoran Pasaric (2)

(1) Meteorological and Hydrological Service, Croatia , (2) Department of Geophysics, Faculty of Science, University of Zagreb, Croatia

Two models of extremes are applied to dry spell (DS) series in Croatia: the Generalized Extreme Value distribution is applied to the annual maxima (AM-GEV), and the generalized Pareto distribution is applied to peak-over-threshold data (POT-GP). Dry spells are calculated using the daily precipitation data from 132 stations in Croatia, spanning the period 1961-2015. DS are categorized according to the three precipitation-per-day thresholds (1, 5 and 10 mm). The corresponding parameters of the two distributions are estimated using the Bayesian approach which allows us to incorporate the fact that DS series actually consist of discrete values, since the dry spell duration is recorded as a whole number of days. When the GP model is applied to dry spells it is suggested to estimate all three parameters of the model. The results are discussed from the perspective of the end users: besides the parameters, the return values for different return periods are estimated and presented with an emphasis on the associated uncertainties. The Bayesian approach provides such estimates in a straightforward manner. Eventually, the regions with similar dry spell characteristics in Croatia are defined and characterized.