



Reproduction of extreme temperature and precipitation events by two stochastic weather generators

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Stochastic weather generators are often used to provide synthetic weather series for hydrological and agricultural studies. The quality of the weather generator may be measured by its ability to reproduce various climatic characteristics. These should include extreme events, which are commonly misrepresented by the present-day generators. This contribution will assess ability of two different stochastic daily weather generators to reproduce extreme temperature and precipitation events with an emphasis on heat and cold waves and drought spells. The first generator is Met&Roll, which represents a parametric approach: Markov chain model is used to model precipitation occurrence series, precipitation amount is modelled by the Gamma distribution, the 1st order autoregressive model is used to generate solar radiation and daily extreme temperatures. The second weather generator is based on a nearest neighbours resampling technique, which is a non-parametric method making no assumption on the distribution of the variables being generated. The tests will be made using observed weather series from several European and U.S. stations. The characteristics of the extreme events will be derived from the synthetic weather series and compared with those derived from the observed weather series.

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