

**Kilsby C.G., Moaven-Hashemi, A., O'Connell, P.E., Simulation of rainfall extremes: fitting to observed annual maxima Presented at the First International Conference on Flood Risk, Institute of Mathematics and its Applications, University of Bath, UK, 7-8 September, 2004
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Abstract

Synthetic rainfall series are often used in flood risk estimation and urban drainage system modelling. Whilst low-order properties of the rainfall (mean, variance) can be well reproduced, a remaining difficulty is in reproducing extreme value statistics which are crucial for these applications. The use of third-order moments (skew) in parameterising a Neyman-Scott Rectangular Pulses model is considered, using observed hourly and daily rainfall data. An objective method of fitting using variable weights for different sample statistics is demonstrated. The application is intended for generating long hourly rainfall series, which are assessed by how well the rainfall frequency curves (annual maxima) match those observed. Complications with seasonality and variability in observed data are described, and the paper concludes with suggestions for further developments in the area, in particular for applications involving future climate scenarios.