Estimation of regional intensity-duration-frequency curves for extreme precipitation - DTU Orbit (13/01/2019)

Estimation of regional intensity-duration-frequency curves for extreme precipitation

Regional estimation of extreme precipitation from a high resolution rain gauge network in Denmark is considered. The applied extreme value model is based on the partial duration series (PDS) approach in which all events above a certain threshold level are modelled. For a preliminary assessment of regional homogeneity and identification of a proper regional distribution L-moment analysis is applied. To analyse the regional variability in more detail, a generalised least squares regression analysis is carried out that relates the PDS model parameters to climatic and physiographic characteristics. The analysis reveals that the mean annual number of extreme events varies significantly within the region, and a large part of this variability can be explained by the mean annual rainfall. The mean value of the exceedance magnitudes can be assumed constant for intensities with durations less than one hour. For larger durations a pronounced metropolitan effect is evident, the mean intensities in the Copenhagen area being significantly larger than found in the rest of the country. With respect to second and higher order moments the region can be considered homogeneous for intensities with durations less than 24 hours. A regional parent distribution is identified as the generalised Pareto distribution. (C) 1998 Published by Elsevier Science Ltd. All rights reserved.
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