USING THE MODIFIED BARTLETT-LEWIS MODEL AS A TOOL FOR RAINFALL DISAGGREGATION. SCALING PROPERTIES.

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Certain hydrological applications require rainfall definition at minor scales (i.e. hourly series), while most of the available rainfall information consists on daily series. Therefore, disaggregation methods can provide important practical benefits in applied hydrology.
In the present study, a 54-year series of 1-min rainfall intensities registered in Barcelona, Spain, was investigated. The Modified Bartlett-Lewis Rectangular Pulses (MBLRP) model was fitted to this series in order to generate synthetic time series. Only statistical properties from 24-hr and 48-hr series were used in the fitting process.
As precipitation is a strongly intermittent and non-linear process, multifractal analysis shows that rainfall fields are characterised by anomalous scaling laws. Models like MBLRP does not explicitly incorporate scaling. A research has been carried out to investigate to which degree this model is able to reproduce the empirical scaling properties when it is used in disaggregation mode. The main differences were found at scales below the typical cell duration (15 –30 min).