



Scaling analysis tools applied to high-resolution rainfall time series

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The impact of precipitation on society and the environment, in particular of extreme events, are strongly determined by regional specificities. This makes it mandatory to investigate local precipitation regimes due to the existing diversity of climatic and meteorological conditions. However, many models have difficulties in adequately describing the large variability in precipitation, in space and time, which involves a huge dynamic range. Thus, this is still a task that is in need of further insight. Aiming at contributing to clarify the temporal structure of precipitation in Portugal, in particular at small time scales, high-resolution rainfall data have been analysed using scaling tools. The data analysis have been conducted in a multifractal framework that has the potential to handle large rainfall dynamic ranges, brings together the behaviour of rainfall observed at different scales and overcomes the problem of using different models to describe data of different resolutions. Results are reported in this work that highlight the multifractal behaviour of rainfall over wide ranges of scales, and the need to carefully appraise the characterization of extremes in hydrology, which typically involves small time scales for design purposes.