



## **Multifractal parameters and extreme behaviour of high resolution rainfall time series**

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Reliability of precipitation statistics drastically depends on the quality of available data. The measuring and recording techniques may introduce statistical biases that have been somewhat discussed in the literature. We showed that most of the tipping-bucket time series have a lower recording frequency than that is assumed. This leads to spurious estimates, e.g. spurious scaling breaks, which may have drastic consequences for operational hydrology.

It is therefore essential to quantify the data quality before use. We have presented a SERQUAL procedure which allows to do it and to extract sub-series that have the required quality, and which can be safely used to calibrate and/or validate hydrological models.

In this presentation, we use data selected by the SERQUAL procedure to investigate the multifractal properties of long high-resolution rainfall series of a France database within the framework of universal multifractals. We discuss the uncertainties of the estimates of multifractal parameters  $\alpha$  and  $C_1$  which characterize the intermittent behavior of rain field, and how to reduce them. We focus on the question of multifractal phase transitions that are associated either with sample size limitation or fat tailed probability distributions, i.e. extreme rain behaviour. We discuss how to improve their exponent estimates and to use them to assess hydrological impacts of climate change in the region of Ile-de-France.