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Parameterization of multifractal cascade models based on their breakdown coefficients

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Breakdown coefficients of multifractal cascades have been shown, in various contexts, to be ergodic in their (marginal) probability distribution functions, however the necessary connection between the cascading process (or a tracer thereof, such as rainfall) and the breakdown coefficients of the measure generated by the cascade, was missing. This work presents a method of parameterization of certain types of multiplicative cascades, using the breakdown coefficients of the measures they generate. The method is based on asymptotic properties of the probability distributions of the breakdown coefficients in “dressed” cascades, as compared with the respective distributions of the cascading weights. An application to rainfall intensity time series is presented.