Hydrologic Processes As Distributions

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Abstract. A deterministic geometric procedure capable of encoding complex information as a projection, i.e., transforming simple multifractal measures via fractal interpolating functions is reviewed. It is illustrated via case studies and simulations that such an approach yields faithful representations of hydrologic processes (both in time and in space) that capture not only the relevant statistical information of the data sets (i.e., correlation, power spectrum, multifractal spectrum, chaotic properties etc.) but also their specific details such as their overall shapes and major peaks. It is also argued that such a procedure, or an extension based on similar ideas may lead to dynamic models of hydrologic processes that, by capturing wholistically the intricate geometries found in nature, may not require usage of (stochastic) partial differential equations.