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River discharge regimes in mainland Portugal studied with scale invariant approaches

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The scaling structure present in many hydrological processes allows for a characterization of these processes over a range of scales. Although this type of behaviour has been reported in some studies of river discharges, the governing scaling laws are not yet sufficiently characterized. This process is known to be extremely variable, depending much on climatic regimes (namely the rainfall input) and complex rainfall-runoff processes occurring at a variety of scales in time and across the catchments basin. The use of scale-invariant and multifractal approaches to deal with river discharge data can help clarifying some of the problems that arise from the genesis of this hydrological process and lack of data.

This work discusses results of scale invariant and multifractal analyses of river discharges from Mainland Portugal. The data are from drainage basins having different geometric, geological and climatic characteristics, as well as land use. The drainage area varies from about 5 to 62000 km2. The time span of the records is more than 70 years for some of the data sets.