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Stochastic investigation of rainfall and runoff series from a large hydrometeorological dataset

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We investigate the recently published CAMELS dataset, which is one of the most comprehensive large-scale datasets in terms of river flow timeseries and attributes of catchments minimally impacted by human activities. We examine the stochastic properties of daily river flow and rainfall series and investigate the links between the two at various lags, through climacogram-based stochastics tools (i.e. the climacogram and cross-climacogram) examining the variance versus spatio-temporal scale. We also explore the impact of various climatic and geophysical catchment attributes such as seasonality and timing of precipitation, aridity, mean catchment slope and soil conductivity, on the identified rainfall-runoff stochastic relationships.