A climacogram estimator adjusted for timeseries length; application to key hydrometeorological processes by the Köppen-Geiger classification

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We present a climacogram estimator (variance of the scaled process vs. scale) that employs all the available information through a pooled time series estimation approach. This method does not discard time-series of short length or of high percentage of missing values; a common practice in hydrometeorology. Furthermore, we estimate and compare the second-order dependence structure (overall and classified by the Köppen-Geiger system) over the last two climatic periods (60 years) for several processes (temperature, dew-point, wind, precipitation, river discharge and atmospheric pressure) using worldwide surface stations. This analysis is performed based on the standardized climacogram, which shows numerous benefits compared to the autocorrelation and standardized power-spectrum.