



Global investigation of Hurst-Kolmogorov behaviour in river runoff

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Long-term persistence or Hurst-Kolmogorov behaviour is a well-studied property of river discharge. Here, we use a large dataset (GRDC international archive), which counts over 2100 records above 60 years, 450 of which are also above 100 years, to examine the dependence structure of the monthly mean, and annual maxima and minima. We estimate the Hurst coefficient H , using Maximum Likelihood and Climacogram-based estimation methods for record lengths between 60 and 208 years, and investigate the sample size effect on the estimation (in subsets of 60-80, 80-100, 100-120 and above 120 years). We further extend our investigation by exploring the roles of catchment size, runoff mean values, altitude of gauge, location (zonal: tropical, mid-latitude, high-latitude), climatic type (Köppen classification) to H estimates. Finally, we investigate whether or not there are any links between H and the statistical properties of regional precipitation and temperature (including mean, coefficient of variation, auto-correlation and H coefficient of the latter processes).