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## Multi-year variability in hydrological extremes in Africa: what are the main drivers?

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Africa is affected by a high-level of temporal and spatial variability in climate, with large impacts on water resources, human lives and economies. Due to data scarcity, the impact of multi-year climate variations on hydrological variability and extremes, i.e. flood and drought, as well as how catchment properties could modulate those impacts, are generally poorly understood across the African continent. In this study, we first use machine learning algorithms to develop a new complete reconstructed daily streamflow dataset using more than 1500 stream gauges between 1950 and 2018, and covering most of Africa. We then examine historical trends and variability in hydrological extremes over the entire African continent, focusing on different hydrological characteristics, such as the timing, frequency and duration of high- and low-flow events, based on the peaks-over-threshold method. Following an assessment of the relative sensitivities of hydrological extreme indices to interannual (2-8-years) and decadal (>10-years) variability in the different regions of Africa, we analyze the respective contribution of different rainfall, temperature and soil moisture indices (e.g. frequency, duration and intensity of wet/dry or warmer/colder days) at both timescales, using relative importance analysis. We finally discuss how catchment properties (e.g. area, topography, land use/ land cover, drainage path lengths) modulate the relationship between hydrological extremes and climate.