

How often precipitation records break?

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How often precipitation records break? Are there any factors that determine the average time needed for the next maximum to occur? In order to investigate these simple questions we use several hundreds of daily precipitation records (more than 100 years long each) and we study the time intervals between each successive maximum precipitation value. We investigate if the record breaking time interval is related (a) to the autocorrelation structure, (b) to probability dry, and (c) to the tail of the marginal distribution. For the last, we first, evaluate which type of tail is better fitted by choosing among three general types of tails corresponding to the distributions Pareto, Lognormal and Weibull; and second, we assess the heaviness of the tail based on the estimated shape parameter. The performance of each tail is evaluated in terms of return period values, i.e. we compare the empirical return periods of precipitation values above a threshold with the predicted ones by each of the three types of fitted tails.