Regionalized design rainfall curves for Greece

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We perform a large-scale assessment of the probabilistic behaviour of rainfall extremes over the Greek territory aiming to construct a national model for design rainfall. To this aim, we employ multiple sources of rainfall data: from long-term daily records to samples of multi-scale annual maxima, reanalysis rainfall products and satellite information. We identify suitable probability distributions for the multi-scale rainfall extremes useful for design rainfall estimation and regionalize their parameters over Greece using two-dimensional multivariate smoothing techniques. Unique insights are derived regarding the spatio-temporal variability of extreme rainfall over the Greek area, notable for its highly variable topography and climate.