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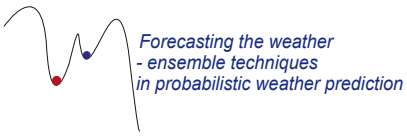

A new look at 24-hr precipitation quantiles

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The statistical properties of 24-hr accumulated precipitation records from 16039 rain gauges, mainly from the U.S.A, were analysed based on a set of properties that they would have if they belonged to the exponential distribution family. The quantiles were compared in a quantile-quantile plot against $q_p = -\ln(1-p)\mu$, where μ is the wet-day mean precipitation. The quantiles of 24-hr precipitation could to a large extent be specified by the wet-day mean, and hence the bulk of the statistical distribution. Similar analysis on a number of RCM results show the same pattern. The data exhibit a thicker upper tail compared to the exponential distribution. The bias with respect to the exponential distribution, and the scatter of quantiles, can be described by leading modes of PCA. Much of the bias can be associated with variations in the geographical situation of the rain gauges.