



## **Climate variability in statistical properties of daily precipitation from European rain gauges**

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For 300 European rain gauge stations we analyse characteristics of the probability density functions of daily precipitation for the period from 1950s onwards. Characteristics of the probability distributions were derived for individual seasons from the Gamma PDF. In order to quantify the variability in extreme precipitation for each station and every year we derived the occurrence anomalies which were computed around the PDF fitted for the whole climatological period. For these anomalies we adopted the common EOF analysis, aimed on the quantification of the commonly shared patterns in different data sets. In our case this method has been applied in a way, when percentile classes played the role of spatial dimension and different stations stay as different data sets. Our analysis has shown that both first and second EOFs of occurrence anomalies can contribute to the variability of extreme and heavy precipitation. Application of the common EOFs allowed for the identification of locations whose contribution to the extreme precipitation variability was associated with either 1st or 2nd EOF. These groups of stations form different patterns of variability in extreme precipitation over European continent, exhibiting north-south and west-east dipoles and in a different ways associated with large scale circulation modes.