



Drop-size distribution of rainfall events in Coimbra, Portugal

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Rainfall events are typically characterized by high variability; therefore, the understanding of their properties at small time-scales, such as rain rate, duration and drop size and velocity distributions is of great importance. The purpose of this study is to analyse different rainfall events during the year, dedicating a particular attention to raindrop size distributions. The rain data inspected were collected in Coimbra (Portugal) by two rainfall continuously-recording instruments developed by Thies and Vaisala. The raindrop characteristics, which include the drop diameter and fall velocity, and the total number of drops were obtained at one-minute resolution by the Thies Laser Disdrometer. This work reports results of the analyses of 30 selected independent intense rainfall events. Average and event-based rainfall properties were investigated. For both cases descriptive statistics, such as mean, standard error, skewness, kurtosis and percentiles were determined and the type of raindrop diameter and velocity distributions was examined. For this purpose, the gamma and lognormal distribution were tested. The data was further inspected for different rain-intensity classes, searching for intensity-dependent event properties.