



## Analysis of the spatial variability of rain drop size distributions during rain events

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Pludix, a rain-gauge disdrometer in X-band (9.5 GHz), has been installed in September 2007 in three different sites in the area of Rome (Italy). The instruments have been installed in the La Sapienza University area, in the Tor Vergata research area and in Castel Porziano. La Sapienza and Tor Vergata sites, located in the urban area of Rome, are about 10 Km apart, and they are about 20 Km far from the Castel Porziano site, located near the Thyrrenian coast. In the Castel Porziano site has also been installed a classical Joss-Waldvogel disdrometer, while the Tor Vergata site was also equipped with a tipping bucket rain gauge. An extended database of precipitating events has been created, for about 600 mm of cumulated rain for each site until September 2008, with a total of 90% of rain events with maximum rainfall rate lower than 20 mm per hour. First, the rain microstructure has been evaluated in terms of drop size distribution and rainfall integral parameters and the rain events have been characterized and classified in microphysical terms. Moreover, through the analysis of the drop size spectra in different meteorological situations, the spatial variability of the rain drop size distribution and of the precipitation field has been analysed. In particular, we investigate the spatial variability of drop size distribution moments and their characteristic parameters using disdrometric measurements from the three Pludix.