



Use of a meso-scale disdrometer network to evaluate radar rainfall estimation errors caused by Z-R relationship variability

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Drop Size Distribution (DSD) is a key element for studying rainfall processes and their hydrological impacts. DSD observation is necessary both for the understanding of factors modifying rainfall properties (e.g. orographic influences) and for development and/or validation of microphysical schemes in meteorological models. DSD observation is also useful for understanding issues in radar-based estimates of rainfall rates; this is the topic of this communication.

A DSD observation network has been set up throughout the HyMeX's Long Observation Period and in the framework of the Cévennes-Vivarais Mediterranean Hydrometeorological Observatory (OHM-CV) at meso scale. A climatology of rainfall properties at the ground has been established over 5 years (2012-2016). The influence of several factors were analyzed: locations (distance from the sea, orographic environment), seasons, daily synoptic weather situations (derived from geopotential heights, at 700 and 1000 hPa), rainfall types (analyzed from 5 min radar data), as well as some combinations of these factors.

The aims of this communication are: 1) to present briefly the main results of the climatological study finalized recently (Hachani et al., 2017) and which was extended to other Mediterranean contexts thanks to observations available in South-Alps, Corsica and Tunisian sites; 2) to exploit the dataset to evaluate radar rainfall estimation errors caused by Z-R relationship variability independently of the others sources of error, in particular during extreme rainfall events.

Reference: Hachani, S., Boudevillain, B., Delrieu, G., Bargaoui, Z.: Drop Size Distribution climatology in Cévennes-Vivarais region, France. *Atmos.*, 8, 233, 2017. DOI: 10.3390/atmos8120233