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Small-scale variability of the raindrop size distribution and predictability properties of Mediterranean Storms

R. Checa (1), L. Durán (2), L. Molini (3), A. Parodi (3), and F.J. Tapiador (4)

(1) ICAM. University of Castilla-La Mancha. Spain (ramiro.checa@gmail.com), (2) INTERMET, Madrid, Spain, (3) CIMA Research Foundation, Savona, Italy, (4) Environmental Sciences Insitute. UCLM. Spain.

A deeper understanding of the spatial and temporal variability of the raindrop size distribution (RDSD) is of great relevance for various hydro-meteorological applications like cloud/precipitation microphysical processes, numerical weather modeling, estimation of rainfall using remote sensing techniques, and predictability studies of severe rainfall processes. Along complementing lines, some recent research results support the idea that the notion of convection in equilibrium or non-equilibrium may shed some light on the predictability properties of Mediterranean Storms. Validating this hypothesis requires of tailored measurements. A growing amount of dense networks of disdrometers is now available for different hydrometeorological areas of the Earth and provide an estimate of the variability range at spatial scales relevant for spatial radars such as TRMM-PR and GPM-DPR. In this study we report some preliminary findings aiming to quantify the relationship between the fine-scale properties of RDSD and the predictability features of the corresponding storms. The empirical data of the study consists in eight dual instruments (16 Parsivel disdrometers) that were used to record the RDSD from October 2009 to January 2010 in Central Spain.