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Rain heterogeneity studies and specific Z-R relationships determination with x-band and k-band radars to improve rain rate retrieval over urban basins

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In this work, using the combination of an X-band high time and spatial resolution local area weather radar (typically 30 seconds and 60 meters in range up to 20 kilometers), a K-band vertically looking Micro Rain Radar and a network of rain gages and optical disdrometers, we study the temporal and spatial heterogeneity of rain and its corresponding drop size distribution within precipitating systems. Then, using simple classification criteria (based on rain intensity, trend, time variability, etc...), we attempt to define separate rain regimes for which we can derive specific Z-R relationships. Hence, applying these relationships to the X band reflectivity measurements will allows us to improve rain rate restitutions over the size of a small urban basin after adequate correction for the attenuation effects. Finally, we outline the prospect of new research within the framework of the fore coming HYMEX campaign.