Dominant hydrometeor type distributions within brazilian tropical precipitation systems inferred from X-band dual polarization radar measurements

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Short Abstract

Topic: Microphysical Studies with Radars

The present paper aims at investigating for the first time the 3D evolution of the hydrometeor distributions within brazilian tropical convective systems retrieved by dual-polarization radar in the frame of both CHUVA and SOS-CHUVA projects. Since such description within tropical precipitation systems is pretty rare or even nonexistant especially over the Brazil, hydrometeor dominant type distributions are determined by applying a new clustering based algorithm from research X-band dual polarization measurements. Unlike "classical" Hydrometeor Classification Algorithms (HCA) such as fuzzy logic, this clustering approach allows to directly make the use of the radar measurements without making any first assumptions about polarimetric observable boundaries for each one of the microphysical species.

After a description of the clustering methodology and an evalutation of HCA outputs, this paper will present the evolution of the retrieved microphysics through precipitation events oberseved during both dry and wet seasons. HCA outputs would be then combined with other observation (lightning, satellite) and numerical model outputs (BRAMS, WRF) to determine/identify physical key-parameters for improving nowcasting of severe weather events that crossed especially southeast of Brazil.