

Attenuation Correction and Precipitation Estimates Using a Mobile X Band Polarimetric Radar for Hydrological Studies

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Precipitation is one of most important variables of global water cycle. Its adequate quantification requires information on the hydrometeor content. Radar polarimetric measurements can indicate drop size distribution and variability by differential reflectivity ZDR and reflectivity Z, though rainfall attenuation leads to incorrect rainfall estimation. This work deals with the application of attenuation-correction method developed by (Kim et al. 2008) and precipitation estimates using MXPOL (Pereira Filho, 2012), a mobile Dual X Band weather radar. It was used in a convective case occurred in 11 January 2010 in Metropolitan Area of São Paulo associated to a sea breeze and heat island effects. The attenuation correction method first obtain the specific attenuation AH from radial profiles of reflectivity Z and differential phase ϕ_{DP} , and then Z profiles are corrected using self-consistent principle. The rain rate is estimated using MP relationship and one from the drop size DSD measurements. Results indicate good agreement of radar rainfall rate estimates to DSD rain gauge measurements.