# Correction of C-band radar observation for propagation effects based on the self-consistency principle

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An algorithm for rain attenuation correction of reflectivity factor and differential reflectivity measured with C-band polarimetric radar to retrieve rainfall rate will be presented. The algorithm is developed based on the self-consistency principle, describing the interrelation between polarimetric measurements along the rain medium. Because this algorithm retrieves rain attenuations from the interrelation, no reference data such as 2DVD is needed to correct the propagation effect. The performance of this algorithm was evaluated by comparing with optical disdrometers and a weighing precipitation gauge. Evaluation of the algorithm shows fairly good agreement between retrieved microphysical parameters of raindrops in addition to reflectivity and differential reflectivity and those obtained by surface measurements. In addition, the algorithm shows significant improvement in performance of rainfall rate estimations compared with a current operational Z-R algorithm particular in heavy rainfalls.