



An observing system simulation experiment for the study on attenuation on C-band radar measurements

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A new radar simulation model based on a three-dimensional polarimetric radar simulator model (RSM-POL) coupled with a very high resolution cloud resolving model is presented. RSM-POL is able to model reflectivity measurements by using some numerically-generated meteorological fields as input: temperature, pressure, water vapour content, cloud water content, cloud ice content and rain, snow and graupel sedimentation fluxes and the number density intercept parameter N_0 for each precipitating species. In this study, the radar simulation model is applied to assess the influence of attenuation on radar measurements at C-band and its effect (i) in the computation of rainfall rate, (ii) vertical profile of reflectivity and (iii) in the retrieval of microphysical parameters. At the present time, the importance of radar data assimilation in numerical weather prediction models is continuously growing, the latter two points appear to be a fundamental research issue and a rigorous approach able to separate the contribution of different causes is needed as a starting point for developing correction algorithms. Results obtained on an idealized deep convective meteorological scenario, run at very high horizontal resolution (500 m), are presented.