

P8 Comparison of forward operators for polarimetric radars aiming for data assimilation

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Five forward operators for polarimetric radars, focusing on warm rain region, are compared with actual radar observations to evaluate their accuracy from the viewpoint of data assimilation with WRF. Two of the operators convert rainwater in the models to polarimetric parameters. The first operator utilizes the T-matrix, and the second one is based on fitting functions against scattering amplitudes.

Comparisons with the observations show that the first operator has a tendency to overestimate reflectivity (ZH). In contrast, the fitting function have a fairly good agreement with those obtained by the observations.

On the other hand, the rest of three operators convert observed polarimetric parameters to rain parameters. The third one utilizes of both ZH and differential reflectivity (ZDR), the forth is a unique function of specific differential phase (KDP), and the fifth is determined both from KDP and ZDR. Comparisons showed that the accuracy of the third and fourth operators are superior to that of the fifth. The evaluation also showed that both the first and second operators have slightly higher threat scores than the rest of the three. In conclusion, the fitting function and the operator only based on KDP are most suitable for data assimilation.