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			Difference from TRUE	
	AVG	STD	AVG	STD
TRUE	0.08	0.14	—	—
Q(Z_{H_FIT}, Z_{DR_FIT})	0.12	0.24	0.048	0.11
Q(K_{DP_FIT})	0.08	0.16	0.009	0.05
Q(K_{DP_FIT}, Z_{DR_FIT})	0.14	0.28	0.063	0.15

Table 1. Averages and standard deviations of TRUE, Q(Z_{H_FIT}, Z_{DR_FIT}), Q(K_{DP_FIT}), and Q(K_{DP_FIT}, Z_{DP_FIT}), and their differences with TRUE. The values are in kg m^{-3}. It is clear that Q(K_{DP_FIT}) is closer to TRUE than the other two.

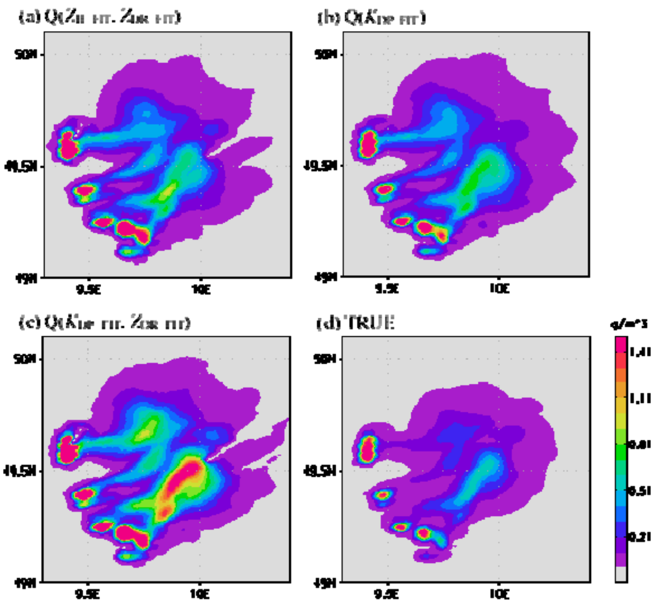

Figure 1. Simulated rain water content by (a) Q(Z_{H_FIT}, Z_{DR_FIT}), (b) Q(K_{DP_FIT}), (c) Q(K_{DP_FIT}, Z_{DP_FIT}), and (d) the true field. The attenuation effect is not seen in (b) and (d).

- Four forward operators for C-band dual polarimetric radar data are compared with both each other and actual observations from the view point of utilization in data assimilation.
- The first operator derives polarimetric parameters from the models and the other three converters estimate the mixing ratio of rainwater from the measured polarimetric parameters. The second converter uses both the horizontal reflectivity (Z_H) and the differential reflectivity (Z_{DR}), the third uses the specific differential phase (K_{DP}), and the fourth uses both K_{DP} and Z_{DR}, respectively.
- Comparisons with modeled measurements show that the accuracy of the third converter is superior to the other two (Table 1). Another evaluation with actual observations shows that the first converter has slightly higher fractions skill scores than the other three.
- Considering the attenuation effect (Fig. 1), the first operator and the third converter only with K_{DP} are found to be the most suitable for data assimilation at C-band.