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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Detailed flow, hydrometeor and lightning characteristics of an isolated thunderstorm during COPS" *by* K. Schmidt et al.

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We are grateful for the thoughtful comments of the reviewer. The positive tone of the general comments is reassuring for our work.

The reviewer raised several issues in his specific comments, which we address here. We agree to most of them, and this will lead to improvements of the paper.

These were our chief motivations for the study:

1) to drive the data evaluation by multiple Doppler analysis to the limit of spatio-temporal resolution for the given observational network which in parts has to follow op-

erational schedules and to put the observations of the deployed research radar Poldirad in perspective;

2) to complemented radar data by other remote sensing instruments (geostationary satellites, photography, lighting detection network) with the aim to provide a syn-optic (technical term of Greek roots meaning 'together-viewing'; not to be confused with the 'synoptic-scale' of cyclones which got its name from conventional combined or syn-optic analyses of a variety of observations, e.g. pressure, temperature, cloud types and heights, pressure tendencies) description of the isolated thunderstorm;

3) to demonstrate by a purpose-applied numerical simulation with a four-fold nested run of Meso-NH (to achieve a comparable spatial resolution) the relevance of the observed datasets as cross-validation material.

We will attempt to provide in the revised version an improved argumentation concerning the multiple triggering process which eventually induced the deep convection by a closer inspection of the three-dimensional simulation in the light of the published enhanced-resolution idealized ensemble runs of a cloud model and our in-cloud observations at relatively long 15-min-intervals. However, we remain convinced that only more systematic sensitivity-studies will provide the chain of prerequisites for the generation of the isolated COPS thunderstorm with sufficient certainty. These are seen beyond the scope of the present study. We also consider the possibility to extend the electronic supplement by providing the horizontal flow information of Fig. 3 (radar) and Fig. 14 (simulated) also for the 3, 7 and 9 km levels. In this fashion consistency as well as discrepancies between both approaches for a mutual cross-validation will become still clearer.

The technical corrections mostly concern lingual issues. We are grateful for the hints by an experienced and native-speaker author and will follow them during the production of the revised manuscript.

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 9717, 2012.