

Interactive comment on “Influence of entrainment of CCN on microphysical properties of warm cumulus” by J. W. B. Derksen et al.

Anonymous Referee #1

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The paper is very well structured and addresses important questions of shallow convection and microphysics. Also the figures are clear and easy to read. Nevertheless there are two fundamental comments on the paper.

Comments =====

- The paper should be better integrated in existing literature.
- The interpretations of the results should as possible be expanded. The topic is very interesting but sometimes I have the impression that the interpretation could go further to gain some new insight and not only confirm what can be expected already before doing the simulations.

I have additionally some few suggestions and technical comments.

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Specific comments =====

p. 8793, l. 4-5 The sentence “The initial CDNC...” interrupt in my opinion the thread and is not well embedded in the text.

p. 8794, l. 12-16 The problematic of the entrainment parameter is a delicate topic. Eventually it would be interesting to write some sentence more about existing literature on it (here or in chapter “model description”).

p. 8794, l. 17-19 Some few sentence more on limitation using 1D instead of 2D or 3D and for using homogeneous mixing (which effects can be expected on results?) would be useful (again here or in chapter “model description”).

p. 8798, l. 1-2 The last sentence is not well embedded in the text. Eventually shift it somewhere before.

p. 8798, l. 15-19 Although sensitivity analysis are done afterwards, it would eventually be interesting to write why 1.5 m/s and not for example 1 m/s.

p. 8800, l. 3-5 Are there some more hypothesis why there is a disagreement between observed and simulated range in LWC?

p. 8802, l. 11 Eventually write in parenthesis that the base case has $\alpha=0.4$ and $w=1.5\text{m/s}$.

p. 8802 l. 15 The sentence “For a smaller...” is not well embedded in the text.

Technical comments =====

Fig. 2,3,5 Differently from Fig. 4, the units for N is written in $(/\text{cm}^3)$, without #.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 8791, 2009.