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Atmospheric Chemistry and Physics Discussions

# *Interactive comment on* "The source of discrepancies in aerosol–cloud–precipitation interactions between GCM and A-Train retrievals" *by* Takuro Michibata et al.

**Anonymous Referee #1**

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This manuscript sheds light on the overestimate of aerosol effects on liquid water path simulated by GCMs. I particularly like the two-dimensional dependence on stability and reflectivity illustrated in Figure 4. The figures effectively illustrate the key points. The writing is generally lucid and concise. Only minor revision is needed before publication.

Minor comments.

Page 2, line 22. Replace "hydrometeor" with "geometric".

Page 5, lines 30-31. Couldn't the Sconv bias also be due to insufficient vertical resolution or biased cloud geometric thickness?

Page 6, line 4. "The response of cloud liquid water to aerosol perturbations deter-



mines the cloud lifetime". I think you mean cloud lifetime effect, although cloud fraction changes are also involved.

Page 8, line 32 – page 9, line 1. You might note that the overestimate in Sconv at low LWP might be partly due to insufficient dependence of autoconversion on LWP. See, e.g., Wood, JAS (2005).

Page 9, line 12. Replace "the assumption" with "assumptions".

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