**Atmospheric
Chemistry
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Discussions**

Interactive
Comment

Interactive comment on "The impact of cirrus clouds on tropical troposphere-to-stratosphere transport" *by* T. Corti et al.

T. Corti et al.

Page 1733, line10: ISCCP vs. LITE. We agree with the referee that LITE detects clouds with lower optical thickness than ISCCP. However, the stated occurrence frequency of profiles with total optical depth below 1.27 includes clear sky situations. We state this more precisely in the revised manuscript.

Page 1733, line 24: The effective diameter of 13 micron used in our analysis is consistent with aircraft observations of tropical high altitude cirrus clouds (McFarquhar et al., 2000). The heating rates are barely sensitive to the particle size, because the cloud information in the data sets used is given as optical depth, which is by far the most important factor influencing the heating rate. Changing the particle size influences the heating rate in the cloud layer by a few percents only and even less outside the cloud.

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We agree that this should be mentioned in the paper and have done the corresponding amendment.

Page 1734, line 23: The referee is right stating that the relevant coordinate for radiative transfer is optical thickness. The crucial point here is that we had to combine the atmospheric and cloud extinction profiles, which can be done using geometrical altitude or potential temperature. A combination based on potential temperature might have led to different results. We have clarified this in the revised manuscript.

Page 1739, line 10: We thank the referee for spotting this typo.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 1725, 2006.

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