

## RESPONSE TO THE EDITOR AND REVIEWERS

Thank you to the Editor and the reviewers for their final comments. We have made minor changes to the manuscript to address the reviewer' comments, as explained below. The referee comments are in black, and our responses are in blue text.

The authors addressed my previous questions and suggestions well. I only have a few minor suggestions, and support the manuscript's publication in Atmospheric Chemistry and Physics. I do not need to see the manuscript again. Please note that line numbers refer to the tracked-changes version of the manuscript.

### Minor Comments

Ll. 14 – 16: Based on Ll. 238 – 239, this statement should not refer to the adjustments (i.e., changes in LWP and  $f_c$ , which are both negative in the afternoon) but the overall sensitivity, combining the Twomey effect and the aforementioned adjustments.

The text in l. 14-16 says: *While the Twomey effect dominates the diurnal average albedo response, the diurnal variation in the competing cloud adjustments lead to a near-neutral net adjustment effect in the afternoon, highlighting the critical role of diurnally varying processes in aerosol-cloud interactions.*

There must be some confusion here as we only say here that the net effect is near-neutral, not mentioning the sign of the remaining cloud adjustments.

Ll. 245 – 246: Why is the Twomey effect constant? Typically, one assumes the Twomey effect to saturate for a higher cloud albedo, as expected for higher cloud droplet concentrations. What is the reason here?

Good question. We now explain it in the text (l. 227):

The fact that the Twomey effect remains comparable for both aerosol regimes results from the fact that the strength of the effect is dominated during mid-day hours when all simulations have similar cloud albedos which are significantly smaller than unity (Fig. 2 c).

### Technical Comments

L. 35: "cloud optical thickness" to " $\tau_c$ "

Changed.

L. 99: "cloud fraction" to "f<sub>c</sub>"

Changed.

L. 140: "cloud droplet number concentrations" to "N<sub>c</sub>"

We think it is better to keep it as is in this particular place.

LL. 170 ff.: State the LWP, CRE, etc. using upright (non-italic) characters.

Changed.

L. 244: Switch "N<sub>25</sub>" and "N<sub>50</sub>"

Changed.

Fig. 1: "COT" to " $\tau_c$ ", "Cloud fraction" to "f<sub>c</sub>", "CTH"

Changed. We left CTH as is as we are not sure what the suggestion was.

Fig. 3: Units in upright (non-italic) characters.

Changed.

Figs. 2, 4, 5: Panel labels overlap with the ordinate's title

Changed to fix the issue.