

## Response to reviewers

We thank reviewer 3 for his or her very careful and close reading of our manuscript and apologize for the oversights and errors. In most cases we have adopted the reviewers' corrections without comment. A few changes or lack thereof are worth noting:

*Figure 2 caption: the last sentence does not belong here. This is stated in the main text, where it is more appropriate.*

We acknowledge that the caption repeats material in the text; that's a deliberate attempt to get the most important points to less careful readers.

*L248-249: is there a reference showing that this product equals water path? It is not immediately obvious to me that multiplying these two things would yield a water path.*

Stephens (1978) noted that optical depth equals  $3/2$  times the liquid water path divided by the effective radius under certain assumptions; this result is widely known. Since our point is only the water path is derived from optical depth and effective particle size, rather than representing an independent measurement, we have added modified the text to add "appropriately-scaled product" and a reference rather than providing a more detailed explanation.

*-L274: Does the MODIS simulator also mimic the sampling of the Aqua/Terra satellites, or does it sample every geographic location at every timestep?*

We have added a phrase to highlight that orbital sampling is the responsibility of the host model.

*L277-279: I'm still confused about what your recommendation is here, and for whom it is directed. Does this mean that an end-user cannot compare this dataset directly to monthly mean COSP output available from, e.g., CMIP, and that one has to create monthly means from daily COSP output via the same aggregation strategy employed herein? Or is this a message to model developers implementing COSP in their models to ensure that the COSP fields are aggregated properly to produce monthly means in accord with this product? Please clarify.*

We have revised the text to emphasize that the time averaging to match these observations is the responsibility of model developers.