Author response to review comments

We sincerely thank the Editor and the reviewers for their valuable comments. Based on the comments we received, careful modifications have been made to the manuscript. Our point-by-point response to the review comments are given below. The comments are marked in bold blue text and our responses are marked in normal black text below each comment. The changes made in the revised manuscript are also provided.

Comments

Dear Nair Krishnan Kala,

please respond to the comments of one referee who is requesting the following minor changes:

We express our sincere thanks to the Editor for the email notifying the review comments and decision for our manuscript.

Please cite the material in the supporting document in the main manuscript at appropriate locations. As it reads this hasn't been done and you should link to supporting material some of the arguments you made in the manuscript in reference to zonal gradients and comparisons to previous work.

Complied with. Thank you for the suggestion.

The following sentences have been added to page 13 at line number 389 (Sect 3.3) in the revised manuscript.

"Aerosols and Chemistry Model Intercomparison Project (AerChemMIP) simulations of k_{ext} for the same location and time period, presented in detail in supplementary section (S1), revealed a similar zonal gradient with an increasing gradient from the west to the east, a maximum in the centre and a reduction thereafter towards the east. Even though the model simulations are in good agreement with the zonal gradients and the magnitudes of k_{ext} in Fig. 3 on a larger scale, our results reveal that the AerChemMIP6 simulations are underestimated over finer spatial scales."

The following sentences have been added to page 14 at line number 434 (Sect 3.4) in the revised manuscript.

“A previous study by Feng et al. (2016) has shown the profiles of dT/dt estimates over Indian landmass and oceanic region separately using Rapid Radiative Transfer Model (RRTM) for radiative transfer calculations in the WRF-Chem model. dT/dt in their study showed higher values over land than over the ocean, with land exhibiting an exponential decrease vertically from high values at the surface. A detailed comparison of our results with Feng et al. (2016) can be found in the supplementary section (S2). These observations are consistent with the present work.”