

Dear Editor,

I would like to thank you again for coordinating the review process of the acp-2021-572 manuscript.

The revised text has been modified according to your recommendations. More specifically, we have added the following paragraph in the conclusions section aiming to highlight all aspects regarding the uncertainty of the MIDAS DOD product.

*“Concerning the DOD uncertainties presented here, in the MIDAS dataset, MODIS AOD retrievals, obtained based on different assumptions in the respective algorithms, and MERRA-2 products are mixed. Therefore, the AOD and MDF errors, combined in the DOD uncertainty and carried through spatial and temporal averaging, are more likely heterogeneous and quite difficult to be quantified. Actually, the evaluation of spaceborne retrievals and numerical outputs can be much more complex and definitely further work is needed towards optimizing the confidence margins of total (speciated) optical depth levels. Quantifying accurately satellite based aerosol uncertainties is still an open issue and it is among our priorities to minimize the impacts of the aforementioned drawbacks and misrepresentations in the future versions of the MIDAS dataset.”*

We hope that the revised manuscript addresses all the points raised by the two initial reviewers and it is suitable for publication in ACP in its current form. However, if you think that further clarifications or corrections are needed, then we can modify accordingly the text.

Finally, in the second round of comments, the Reviewer 3 mentioned that it is needed a much lengthier exchange regarding the calculation of the MIDAS DOD uncertainty. It would very useful if he/she would like to communicate with us in order to discuss further.

All the best,

Antonios Gkikas