

The following is a point-to-point response to the editor's comments. We have studied comments carefully and have made correction which we hope meet with approval. Revised portion are marked in red in the revised paper.

The paper is an important contribution to the aerosol community.

Response: Thank you for your positive comments on our article. We have revised it in accordance with your comments or suggestions. For detailed revisions, please refer to the following sections

Comments

1. I think it has to be mentioned in the case that of Merra-2 and aeronet comparison that the data sets are not independent. I agree that "it is difficult to disentangle the influence of each assimilated data set alone on the overall accuracy of MERRA 2" but still the above basic feature has to be mentioned.

Response: According to the editor's good suggestions. We have added some appropriate descriptions for this basic feature, as shown below:

"Strictly speaking, we need to point out that MERRA-2 and AERONET are not independent of each other (after 1999). Nevertheless, we hope that this assessment will still provide some reference for other studies using the MERRA-2 AOD dataset."

2. Not all references mentioned in the authors answer to the reviewers have been included in the final manuscript.

Response: All references have been added to the revised version.

3. A few lines about the Aeronet, MODIS, Merra-2 uncertainty has to be included with a comment with their effect on the trend and AOD statistics.

Response: According to the editor's good suggestions. We have added some comments on the effect of uncertainties in different data sets on trend assessment results, as shown below:

"It should be noted that different data sets may have a certain effect on global and regional trend assessment due to their own uncertainties. Nevertheless, we include them for completeness but exercise with caution when interpreting the differences in trend values between different data sets."