

Evaluation of OMPS/LP Stratospheric Aerosol Extinction Product Using SAGE III/ISS Observations, by Zhong Cheng et al.: Review of the revised version

General Comments

The authors improved significantly the quality of the paper by adding uncertainties, by being more accurate and specific in their argumentation, and by removing some uninformative statements. The new sub-section 4.5 “Wavelength impact on OMPS/LP Aerosol Sensitivity” brings an interesting insight, especially for readers less familiar with the field of limb scattering and with the OMPS instrument in particular.

Overall, I believe they address successfully the comments expressed by the reviewers. I formulate some additional minor issues that should be addressed before publication.

Specific comments

L. 5, p.10: It is not clear to me what the relationship is between Figure 5 and the selection of the “before” and “after” cases.

Title new sub-section 4.5: I am wondering if the choice of the word “impact” is optimal, since “impact” has a connotation of “result of an action”. The use of “dependence” or “influence” might be more appropriate.

L. 7, p.15: “both” instead of “the both” ?

L. 22, p.15: As already mentioned in the previous referee report, the expression “differing good agreement” sounds strange to me and might need revision.

P. 1-16: As already mentioned in the previous referee report, in many places, the authors use the word “SAGE” and should be more specific (i.e. use “SAGE III/ISS”) to avoid any confusion.

L. 16, p.16: The quantity “60%” is mentioned for the first time here, in the conclusions. The authors should either mention from where they inferred this estimate (maybe Figure 3?) or better, should provide this estimate also in the text at the place it comes out from the discussion.

Figure 13: The mention of the latitude for the right panel is not consistent in the picture (62°N) and in the caption (59°N).

Reply to comment on Figure 3 and L. 1, p6: In Bingen et al., 2004, the median radius found in the lower stratosphere is larger than at higher altitudes (see Figure 2). Concerning the case of other aerosol types, a suitable reference is Brühl et al., Atmos. Chem. Phys., 18, 12845–12857, <https://doi.org/10.5194/acp-18-12845-2018>, where the authors investigate the radiative forcing of different kinds of aerosols including dusts and organics, and mention the importance of sea salt increasing the particle size in the UTLS due to water uptake.

Reply to comment on L. 8-9, p.7: I am not sure that the authors interpret rightly my comment. The point is that a volcanic plume probably only covers a very limited area of the corresponding bin of 5° latitude x 360° longitude. Therefore, the measurement locations found in the bin for SAGE III/ISS and OMPS-LP may either be situated inside, or outside the area covered by the plume. If, as an example,

the events corresponding to one instrument fall by chance inside the plume and the ones corresponding to the other instrument fall by chance outside the plume, no relevant information will be available to assess the agreement between both sensor measurement datasets. It is this adequation of the coverage that has to be checked before comparing the data from SAGE III/ISS and OMPS-LP.