

Interactive comment on “Improvement of stratospheric aerosol extinction retrieval from OMPS/LP using a new aerosol model” by Zhong Chen et al.

Anonymous Referee #3

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General: Article compares the retrieval results using two different assumed aerosol distributions with OMPS/LP limb scatter radiance profiles. Comparisons are shown to be more consistent with the spectral dependence of OMPS/LP data as well as correlative aerosol extinction data from SAGE III/ISS. This information is worthy of publication. However, the contents of this manuscript seem similar to another submission by the same author to AMTD (doi.org/10.5194/amt-2018-4). For example, both papers compare the degree to which two aerosol size distributions (bi-modal vs. gamma) match OMPS/LP radiance spectra. And, three figures in amt-2018-221 are “from amt-2018-4”. What is new here? So, this document should do a much better job of clearly conveying the information that is unique to this manuscript. Otherwise, I do not support

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Specific comments: 1. Page 3, line 20: need to italicize λ . Section 2, especially page 4 is confusing. Are you describing V1.0 or V1.5? If the only difference between V1.0 and V1.5 is the phase function, then you need to clearly state that. As is, page 4, line 5 reads as though the use of Chahine's method is unique to V1.5 and was not used for V1.0. Furthermore, line 16 describes the number of iterations used for V1.0. How does that compare to V1.5? 3. Page 5, line 27, "(with some probably large uncertainty)" is conjecture that serves no purpose. Suggest deleting it or supplying evidence to prove your claim. 4. Page 5, 29: suggest "...well, the..." 5. Page 6, why not use the CARMA bins directly? 6. Page 7, line 5: What values of r_{min} and r_{max} are used here? 7. Page 7, line 15: Was the solution for the BD case determined using the method given earlier in line 6? Appendix X, indicates there is sufficient freedom to fit a wide range of size distributions. 8. Page 7, line 16: Fig. 1 leads me to believe that point at 0.015 μm is used in the fit, but the text states that values "between 0.01 μm and 0.1 μm " were not used. Need to correct the figure caption or the text in the body. 9. Page 7, line 24: I must be missing something, but I do not see how for the bimodal ASD has "the smallest $dN/d\log r$ value at $r = 0.3 \mu m$. On the figure the lowest $dN/d\log r$ is at $r = 0.015 \mu m$ and $1 \mu m$. Similar comment for the caption in Fig. 2. 10. Page 11, line 13: The doi for the SAGE III/ISS V5 data is: 10.5067/ISS/SAGEIII/SOLAR_BINARY_L2-V5.0 for the binary, and 10.5067/ISS/SAGEIII/SOLAR_HDF4_L2-V5.0 for the HDF version. 11. Page 14, line 16: suggest "...all having similar Angstrom exponents..." 12. Figure 2: What data do you have to make the claim at the end of the paragraph?

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