

Interactive comment on “AerGOM, an improved algorithm for stratospheric aerosol extinction retrieval from GOMOS observations. Part 1: Algorithm development” by Filip Vanhellemont et al.

Anonymous Referee #2

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Overall Comments: The paper is poorly written. One gets the impression that a project report has been hastily converted into a scientific paper. The material is poorly organized and the sentences are poorly structured. It seems most of the changes described in the paper constitute routine clean up of a computer code rather than significant scientific advance. Most of the material can be deleted, put in an appendix, or provided as a supplement to the paper. I do not think that there is enough material in this paper for it to be a separate paper. My suggestion is to combine this paper with the proposed follow-on paper that discusses results.

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Detailed Comments: 1. The entire text is written in passive voice. Rewriting the sentences in active tense will make the paper lot easier to read. 2. In the title change “development” to ‘description’. 3. The abstract doesn’t provide much information other than to say that previous algorithm had some problems, some of those problems have been fixed. Abstract should provide key results rather than just an outline of the paper. 4. Introduction is verbose, repetitive, and too self-congratulatory. I do not know what is meant by, “The GOMOS instrument has de facto become the reference spaceborne stellar occultation instrument”, since not many stellar occultation instruments have flown in space. 4. There is far too much detail in section 2. If the paper has already been published why not provide just short summary that is relevant for understanding section 3. 5. Section 3.1: It is best not to bulletize the text in a scientific paper. They could be shortened and combined into a paragraph. In what way these changes are “fundamental”. To me they appear to be fairly routine clean up of a code in which several approximations were made that are now being improved. 6. Section 3.2: I have no idea whether this constitutes significant improvement or it is just a minor issue. 7. Section 3.4: The text is verbose. Most of what is in there could be said in fewer words. Fig 3 is interesting but it would be useful to provide details of the models that were used in deriving these spectra in a tabular form, including altitude, refractive indices and size distributions. 8. Section 3.8 is too brief. It is very hard to conclude anything from it. 9. Results shown in Fig 6 look strange. I find it difficult to believe that spectral dependence of aerosol extinction in the stratosphere has such large variability, particularly at 30 km. Aerosols at these altitudes mainly consist of fine mode particles. So I would have expected the log of aerosol extinction to be more or less linear with log of wavelength. It seems that the quality of data is poor below 500 nm, which is not surprising given rapidly decreasing ratio of aerosol/molecular extinction. In any case, I see no clear justification that the new algorithm is doing better.

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