

Final corrections for “The Ozone Mapping and Profiler Suite (OMPS) Limb Profiler (LP) Version 1 Aerosol Extinction Retrieval Algorithm: Theoretical Basis” by Robert Loughman et al.

We appreciate the recommendations made by the reviewer and editor. In most cases, these were typographical corrections, etc. that we have accepted. We list below a few other cases that require a more detailed response:

Comments from Anonymous Reviewer #1:

We have removed the equation that refers to the gain matrix from the manuscript (rather than adding a more detailed discussion of this point).

Associate Editor's Comments:

- We have changed the SO (solar occultation) acronym to SOT (solar occultation transmission).
- We have updated the reference to SAGE accuracy and precision to clarify the point made by Thomason et al. (2010).
- We have corrected the number of occultations per day to 30, as recommended.
- Regarding the terminology associated with equation (1): I believe that the current usage is correct, and consistent with the text in Sect. 2.2.2 of the Grainger reference: That is, r_i corresponds to the median radius for the function dN/dr (which we give as equation 1), and the mode radius is given by $r_i * \exp(-\sigma^2)$. This is also consistent with the comment submitted by E. Malinina on Oct. 10, 2017, which motivated us to correct the initial version of the paper's terminology that called r_i the "mode radius" for this function. She refers to other references to support her argument (although I did not check those references for consistency with Grainger's presentation).

If I'm reading the Grainger reference correctly, the mean, median and mode of the function $dN/d \ln r$ are all identical (unlike the function dN/dr , for which $\text{mode} < \text{median} < \text{mean}$). I suspect that this difference accounts for the muddled terminology associated with "log-normal distributions" in general, since various authors choose different functions to express a "log-normal distribution." The situation reminds me of the "Planck function", which has a different shape, mode, etc. depending on whether you express it in terms of "energy per unit of wavelength interval" or "per unit of frequency interval."

- We have included reference to the variation of Angstrom coefficient with altitude.
- As noted above, we have removed the reference to the gain matrix for this algorithm.
- We have added definitions for I_m and I_c
- We have removed the former Figs. 1-2 (instead simply referred to them in their original context).

- We have updated the caption for the former Fig. 16 (now Fig. 14), and corrected the axis labels for the former Fig. 19 (now Fig. 17).

- We noted another inconsistency in the current Figs. 20-22 (replaced the former x-axis label "Mode radius" with "Median radius", consistent with the earlier discussion).