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Atmospheric Measurement Techniques Discussions

Interactive comment on "The Ozone Mapping and Profiler Suite (OMPS) Limb Profiler (LP) Version 1 Aerosol Extinction Retrieval Algorithm: Theoretical Basis" *by* Robert Loughman et al.

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Dear Robert,

the paper is very interesting, and it is contributing a lot to the stratospheric aerosol science. I just would like to draw your attention to some issues which might help to avoid a possible misinterpretation of the notations you have used in the paper. To my opinion your formula defining the particle size distribution as well as definition of the mode radii might be slightly confusing. First, it should be unambiguously communicated to the reader that the log-normal distribution is defined as probability distribution of a variable whose NATURAL logarithm is normally distributed. As I understand log(x)

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is a common notation for the natural logarithm in the US literature, it could however be misinterpreted as a decimal logarithm in some other countries. My suggestion is to use $\ln(x)$ in equation (1) of the paper instead, to avoid a possible confusion. Furthermore, in accordance with several publications, e.g., SPARC, 2006: SPARC Assessment of Stratospheric Aerosol Properties (ASAP). L. Thomason and Th. Peter (Eds.), SPARC Report No. 4, WCRP-124, WMO/TD - No. 1295, available at www.sparc-climate.org/publications/sparc-reports/ (Sec. 1.4.1), a common notations for r_1 and r_2 in the log-normal particle size distribution (equation (1) of your paper) is the median radii of the fine and coarse modes, respectively, rather than the mode radii as is given in the line 5 on the page 7. The same issue is encountered in the line 24 on the same page, line 22 on the page 3, Table 1 and further in the text. According to the mathematical statistics, the mode radius of the log-normal distribution is obtained as $R_{mod} = r_{med}/\exp(\ln(\sigma)^2)$. See for example in Johnson, Norman L.; Kotz, Samuel; Balakrishnan, N. (1994), "14: Lognormal Distributions", Continuous univariate distributions. Vol. 1, Wiley Series in Probability and Mathematical Statistics: Applied Probability and Statistics (2nd ed.), New York: John Wiley Sons. It would be nice if you could consider the suggested corrections before final publication of the paper.

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