The AERONET Version 3 aerosol retrieval algorithm, associated uncertainties and comparisons to Version 2" by A. Sinyuk et al.

Reply to reviewer #4.

The authors would like to thank the reviewer for his/her diligent reading of the manuscript and useful comments.

Comments:

1. Even recognizing the importance and the accuracy of the present work, the general impression is that most of the results need a deeper discussion, while most if the times the compression is left to the reader. On the other hand, the manuscript is already very long and its extension not desirable. One solution could be to split it into 2 parts, the description on the algorithm and the evaluation of uncertainties.

Answer:

The main objective of this paper is to present a description of V3 AERONET **aerosol retrieval algorithm** including all the changes and new additions. In this respect, the estimation of retrieval uncertainties is a part of the V3 aerosol retrieval algorithm and should be a part of this manuscript rather than a separate publication. We understand that combining all the parts of V3 aerosol retrieval algorithm in one manuscript does not allow for discussion of every detail and nuance. However, we did our best to provide a reasonable number of details in describing each part of the algorithm. It might well happen that during further research some more details of uncertainty estimates and other parts of the V3 algorithms may be included in future publications. At this point, however, we believe that separation of the manuscript in two parts is not appropriate.

2. The length and the amount of material presented in the manuscript is so high that it also makes necessary to better organize the tables and figures. In general, I suggest the following:
* Tables 1.1 to 4.3 could be grouped in some way, by parameter of by site. Same for Table 6.1 to 6.3.
* The same apply for figures 9-10, 13 to 16, 17-18 and 26 to 29.

Answer:

The suggestions in these comments are very general which makes it unclear what specific changes are meant. In particular, the tables and figures are already grouped by parameters and sites and, as we believe, give a rather clear and detailed illustration to the discussions in the text of the manuscript.

3. In order to facilitate comparisons, all the panels in the same figure should have the same y range when showing the same variable.

Answer:

The corresponding plots were modified.

4. Also, it is desirable to use a color scheme for the different wavelength throughout all the figures.

Answer:

The same color scheme is now used for different wavelengths.

5. The caption of the tables 1.1 to 4.3 speaks of statistic, without specify that the shown values are averages.

Answer:

The captions to corresponding tables were corrected, for example:

Table 6. Statistics, average values and standard deviations (in parentheses), of the difference in volume median radius (VMR) and width of particle size distribution (STD) retrievals of V2 and V3 for GSFC site. The difference is defined as V3 -V2. The numbers in parentheses are standard deviations.