

Atmos. Meas. Tech. Discuss., referee comment RC1 https://doi.org/10.5194/amt-2022-101-RC1, 2022 © Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.

Sogacheva et al. (2022) amt-2022-101

Anonymous Referee #2

Referee comment on "Extended validation and evaluation of the OLCI-SLSTR SYNERGY aerosol product (SY_2_AOD) on Sentinel-3" by Larisa Sogacheva et al., Atmos. Meas. Tech. Discuss., https://doi.org/10.5194/amt-2022-101-RC1, 2022

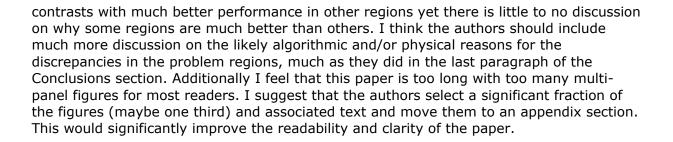
	Review 1	for	Atmos	pheric	Measurement	Technic	lues
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Title: Extended validation and evaluation of the OLCI-SLSTR Synergy aerosol product (SY_2_AOD) on Sentinel-3

Authors: Larisa Sogacheva, Matthieu Denisselle, Pekka Kolmonen, Timo H. Virtanen, Peter North, Claire Henocq, Silvia Scifoni and Steffen Dransfeld

General Comments:

This manuscript presents a very thorough and detailed validation of the SY_2_AOD and related Angstrom Exponent products by comparison to AERONET and MODIS data sets. This analysis provides the user community with the statistics that are required to intelligently utilize these datasets. What is somewhat lacking in many sections (see some specifics below) are explanations and/or reasons for poor performance in the satellite retrieval AOD products versus AERONET measured AOD in some specific regions. This



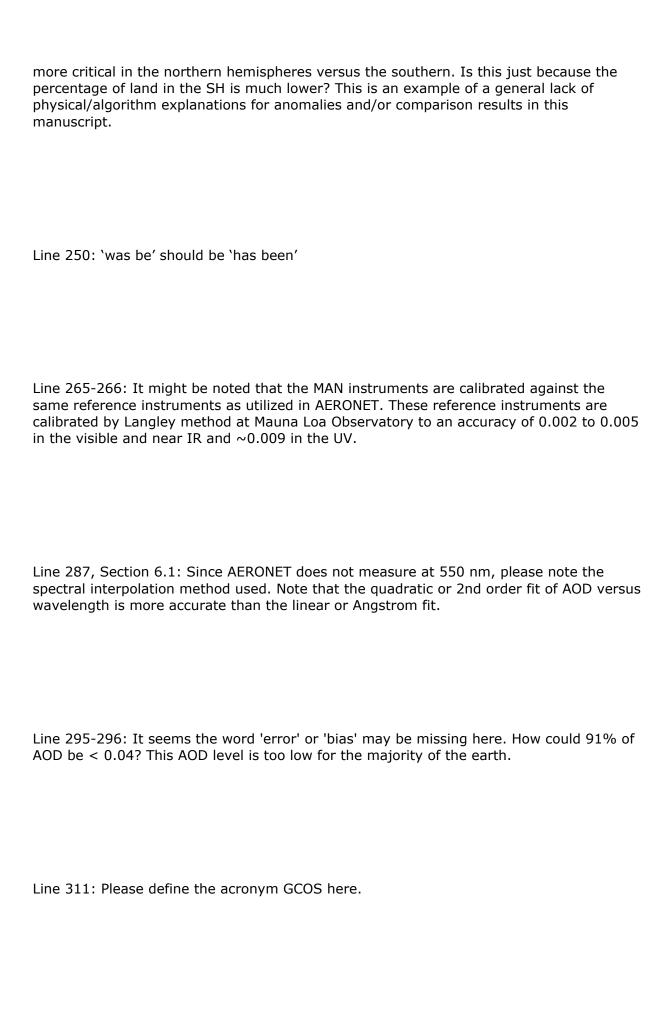
Specific Comments:

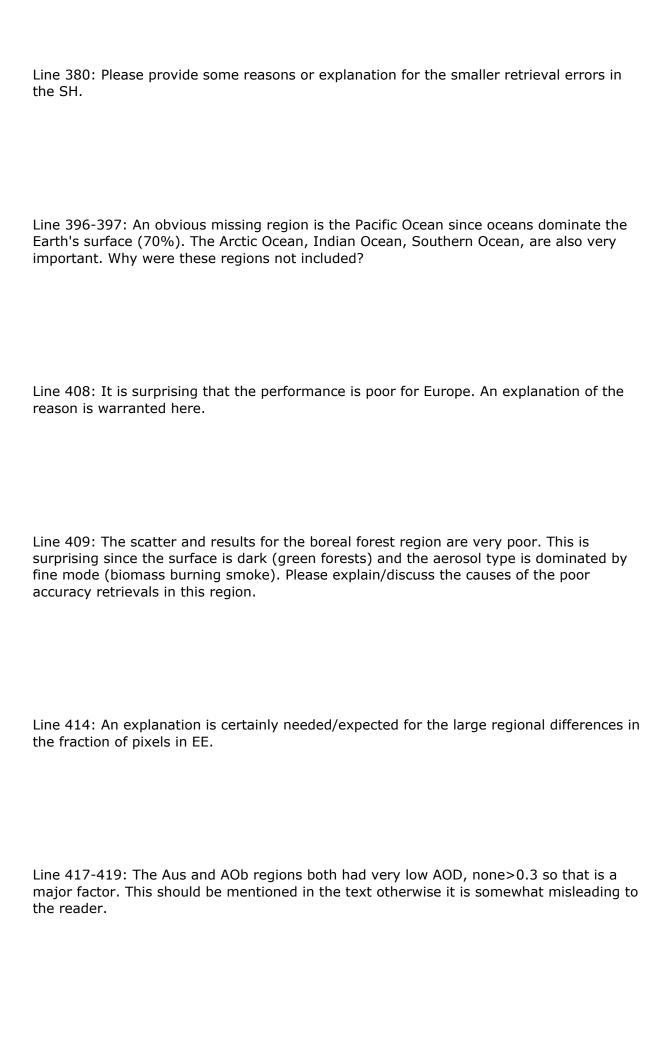
Lines 28-30, Abstract: "The retrieval of Angstrom exponent, related to aerosol size distribution, shows good spatial correlation with expected sources but generally overestimates AE for cases where AERONET Angstrom is low, resulting in overall high bias." I think this somewhat overstates the accuracy and utility of the satellite retrieved AE. The regional AE comparisons in Figure 24 show very poor accuracy for most regions in the satellite AE product. I suggest removing this sentence from the abstract or making a more quantitative statement on the retrieved AE accuracy. Similar comments can be applied to the poor retrieval accuracy of the satellite FMF in Figure 22, except for good agreement at the highest AOD levels.

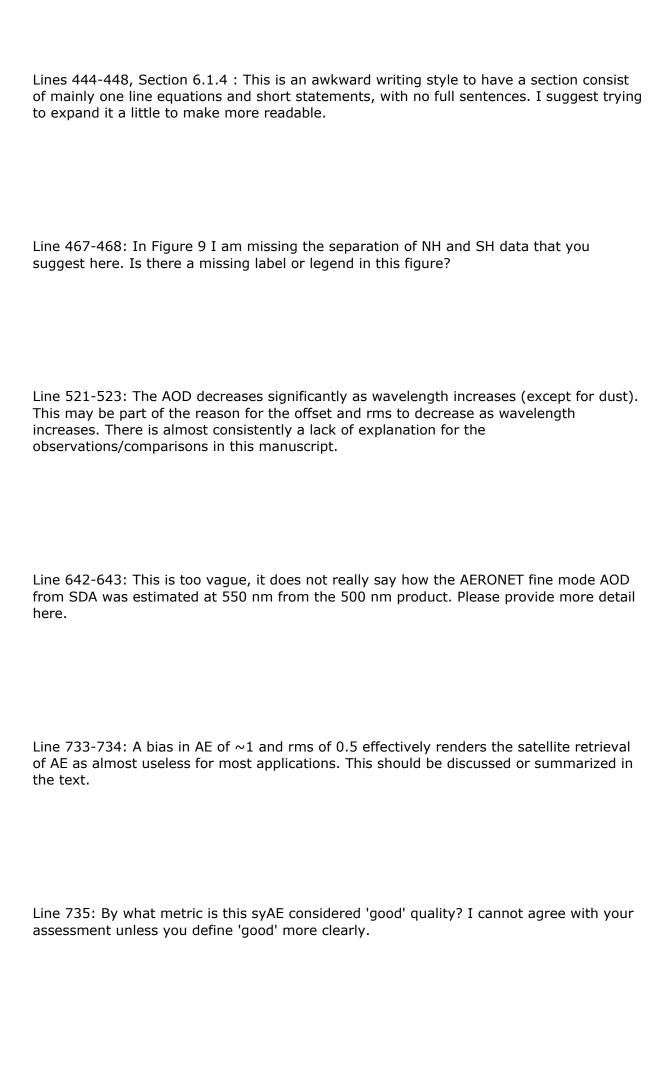
Line 172-173: Please describe somewhere in the text how is AE computed from FMF.

Line 176: Typo, I assume 'duct' is supposed to be 'dust'.

Line 196-197: Please provide a brief explanation as to why the back scatter at the TOA is







Line 740: Validation over ocean: Why are the AE retrievals not compared for over ocean? This would be a useful comparison/validation to include.
Line 793-794: Any ideas or explanation about this large difference between MODIS and Sentinel S3A retrievals over Nigeria? This is a striking gradient in large AOD differences, both positive and negative. Which one is more likely to be closer to reality? This is another example of the lack of analysis in giving some explanations in this paper.
Line 815-816: The way this sentence is written is confusing and does not make too much sense. Please rephrase and clarify.
Line 884-889: This type of analysis and reasons for biases and differences, while good, are mostly lacking in the main text of this paper. It is strange to wait until the Conclusions section to provide this type of analysis. These types of explanations should be significantly expanded throughout the paper in the revision of this manuscript.