**Atmospheric
Measurement
Techniques
Discussions**

Interactive comment on "Assessment of diverse algorithms applied on MODIS Aqua and Terra data over land surfaces in Europe" *by* P. Glantz and M. Tesche

Anonymous Referee #2

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General comments. This paper is aimed at verifying the performances of the MODIS SAER and Collection 5 algorithms in deriving the aerosol optical depth and Angstrom exponent over land surfaces in Europe. The aerosol products for these two algorithms are compared with AERONET measurements obtained at different locations in Europe. The main results of this paper indicate that the MODIS Collection 5 algorithm better agree with AERONET observations compared to the SAER algorithm. Instead, larger differences are found for the Angstrom exponent comparison for both MODIS products. I found the paper potentially interesting and useful, despite several other studies have been performed on this topic, especially for the analysis of the Collection 5 algorithm, while a lower number of studies have focussed on the SAER algorithm. However, I have

a major concern regarding the significance of the comparison mainly because of the very limited time period covered by this study (only few weeks). My main suggestion is to extend the comparison to a larger time period in order to improve the representativity of the results.

For this reason I would recommend major revisions of the paper. Specific comments are reported in the following.

Specific comments

Page 2364: the abstract is not fully self-consistent and clear, see for example the last two sentences.

Page 2365, lines 12-14: I suggest to rewrite this sentence, because in the present form is not very clear.

Page 2365, line 15: I suggest to add a comma "for satellite retrievals,"

Page 2365, line 18: I suggest to replace "with" with "from"

Page 2365, lines 23-24: I suggest to replace "situated aboard" with "onboard"

Page 2366, line 1: replace "extend" with "extent"?

Pages 2368 and 2369: it seems there are few errors in formulas 2 and 4; please, correct them.

Page 2369: you have to add a minus sign in formula 7.

Section 2.1: in some points the discussion appears quite confusingly mainly because of the different wavelengths used when comparing Collection 5/AERONET and SAER/AERONET products.

Page 2371, line 9: I think you should refer to the 469 nm wavelength (instead of 459 nm) for the MODIS Angstrom exponent retrieval.

Page 2372, line 23: please add a reference for the AERONET cloud screening.

Page 2373, line 8: "long-range transport of particles from the east"

Page 2374, lines 21-23: for AERONET, you consider the mean for 60 minutes measurements (4 consecutive observations); however, in certain cases the aerosol optical depth may rapidly vary over this time interval. Thus I suggest to calculate also the RMSD for the 4 AERONET observations and, in case, to exclude cases with high aerosol optical depth variability, if they are present.

You missed the plot for the SAER/AERONET comparison of the Angstrom exponent.

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