

## ***Interactive comment on “Collocation Mismatch Uncertainties in Satellite Aerosol Retrieval Validation” by Timo H. Virtanen et al.***

**Timo H. Virtanen et al.**

timo.h.virtanen@fmi.fi

Received and published: 11 January 2018

We thank the Referee for the positive feedback and constructive comments. The numbered comments are answered below and the changes to the manuscript are indicated in a separate pdf file.

1. *Figures in general have small text, which makes the legends difficult to read at the size they appear in the manuscript. Consider increasing the font sizes.*

We have increased the font sizes and line widths for the figures with many lines, and will consult the Editor about options for increasing the image sizes.

2. *Page 6, lines 20-33. How does the range of the parameters used for previous*

*work compare to the range used in this study?*

The range of sampling parameters employed in this study covers the range of parameters used in previous studies. This is now added to the manuscript (p. 7, line 1). We find that the previously used parameters are reasonable.

3. *Page 10, lines 6-7. Minimum sample number is another parameter that affects collocations. Do you know whether it's sensitive to the number of satellite pixels needed to form a match?*

The considerable effect of minimum sample number is discussed on p. 13, lines 10-14, and shown in Figs. S3 and S4 in the Supplement. The number of samples is a potential indicator of cloudiness in the area or in the time window close to the overpass and appears to affect the AOD (as discussed in the manuscript, p. 9). A more detailed study on the effect of the cloud proximity on the CMU would be interesting, but that is beyond the scope of this study.

4. *Page 14, line 11. The systematic positive bias in the MODIS data is specific to Terra, and discussed in Levy et al. (2013).*

We agree that the systematic positive bias for MODIS Terra is well known in the community. We have added the reference to Levy et al. (2013) to the sentence.

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Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2017-420, 2017.

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