

Manuscript for AMT:

Aerosol optical depth determination in the UV using a four-channel precision filter radiometer

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Responses to Anonymous Referee #1

(Reviewer comments in *italic.*)

Comments/suggestions: Sensitivity analysis for SO₂ and NO₂ suggested.

Comments about sensitivity to NO₂ and SO₂ under more polluted atmosphere have been added.

Page 5, line 15-16: On V₀ results using Eq. 3 found less sensitive to errors in V₀:

An explanation has been added.

Page 5, line 22: Add V₀ results from 2016 in Fig. 1.

It was suggested to add also V₀ results from 2016 to Figure 1. When doing so, the main purpose of the figure, showing the different sensitivity to (measured) ozone change during Langley events at different wavelengths, becomes less clear due to the change in sensitivity from 2015 to 2016, especially at the two longer wavelengths. Therefore, we think showing V₀ values only for 2015 is a better choice and the results from 2016 have not been added to the figure.

Page 7, line 9: Specification of average conditions during Langley calibrations requested.

Numbers on average conditions of air mass range and TCO during Langley calibrations have been added.

Page 8, line 1: Specify Rayleigh scattering coefficients.

It is assumed that this comment is for page 9, line 1. The Rayleigh scattering coefficients have been specified.

Page 8, line 10: Modifications of the Alexandrov (2004) cloud screening should be reported.

It is assumed that this comment is for page 9, line 10. The modifications of Alexandrov et al. (2004) cloud screening have been described.

Page 16, line 23: Reference for the traceability limits for absolute AOD differences should be given.

Reference has been added.

Technical comments

Errors at page 1 (line 29), page 2 (line 17) and page 8, supposedly page 9 (line 18):

Errors have been corrected.

Missing citations: The missing references have been added. (De Bock et al., 2014 and Meleti et al., 2009, were already in the first manuscript.) More references have been added during the manuscript revision process.

References not cited in the manuscript: References not cited in the manuscript have been removed. Eck et al. (1999), Fioletov et al. (2005), Nicolet (1984) and Redondas et al. (2014) are now referred to in the text.

Figure 1. Suggested corrections applied.

Figure 2. Suggested corrections applied.

Figure 5. Suggested correction applied. While working on this figure it was realized that the data plotted in the left panel of figure 5, as well as in figure 4, was of the wrong version. This has been corrected. Unfortunately, this had the effect that, especially at very low AODs, often AOD at 305 nm became smaller than AOD at 332. Part of text in the result section therefore had to be revised.