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Atmospheric Measurement Techniques Discussions

Interactive comment on "Is a scaling factor required to obtain closure between measured and modelled atmospheric O_4 absorptions? ndash; A case study for two days during the MADCAT campaign" *by* Thomas Wagner et al.

Anonymous Referee #2

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Wagner et al 2018 address a very important topic of the need of scaling factor to bring MAX-DOAS measured differential slant column densities (dSCD) of oxygen collision complex (O4) retrieved from 352 – 387 nm in agreement with the radiative transfer modeled dSCD at 360 nm. An extensive and very thorough evaluation of the error sources in the DOAS analysis and RT modeling is presented. The authors analyzed data from two time periods (18 June and 8 July 2013) during MADCAT campaign in Mainz, Germany, when time and location coincident MAX-DOAS, aerosol (AERONET, Ceilometer) profile measurements were conducted with a support of additional surface

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Discussion paper

observations (PM2.5, PM10, temperature, pressure and relative humidity). They identified “standard” cases for DOAS fitting and for RT model simulations, and a number of potential scenarios deviating from the standard cases. The authors concluded that the agreement between the measured and modeled O4 absorption is almost perfect (within a large error of 16%) on 18 June 2018. On the other hand the measured O4 absorption had to be scaled by 0.71 ($\pm$0.12) to bring in agreement with the modeled absorption. The cause of the discrepancy was not identified.

This work is very important and is well suited for AMT publication. However, I think the article will benefit from some reorganization.

Please see attached file for details

Please also note the supplement to this comment:
https://www.atmos-meas-tech-discuss.net/amt-2018-238/amt-2018-238-RC2-supplement.pdf

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