

Interactive comment on “Mobile MAX-DOAS observations of tropospheric trace gases” by T. Wagner et al.

Anonymous Referee #2

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‘Mobile MAX-DOAS observations of tropospheric trace gases’ by Wagner et al. describes a new analysis technique for MAX-DOAS measurements made from mobile platforms. The technique is discussed in detail and then applied to measurements made from a car driven from Brussels to Heidelberg. The standard MAX-DOAS technique usually applied cannot be used here since the airmass can change rapidly during a typical MAX-DOAS scan (elevation angle sequence) and therefore using e.g. the 90 SZA measurement of each scan as a reference becomes very problematic. Instead the authors propose to use a single reference spectrum for the whole measurement period and to correct for the reference and stratospheric contribution by deriving the necessary correction from the measurements themselves. As far as I am aware, this is a new and innovative approach for the analysis of MAX-DOAS observations. The

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paper is well written and the material clearly suitable for AMT.

Specific comments:

Abstract, 1 sentence: either needs a comma after '... DOAS observations' or should start with 'Information on ... can be obtained from Multi-Axis (MAX-) DOAS observations'.

Page 2853, line 22: Suggest to replace 'Besides ...' with 'Apart from ...'

Page 2859, Eq 10: should be DSCD_trop and not DSCD_trops

Page 2865, line 24: I assume LT stands for local time, should be mentioned somewhere

Page 2865: The tropospheric NO₂ VCD time series measured at 22 deg elevation angle: what altitude range is the VCD calculated for? This would be helpful to know to be able to convert to mixing ratios.

Caption of Fig 2: 'driving route': either delete 'driving' or change to 'road route'.

Caption of Fig 4: words after Eq. (11) should not be capitalized.

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