

Interactive comment on “MAXDOAS formaldehyde slant column measurements during CINDI: intercomparison and analysis improvement” by G. Pinardi et al.

Anonymous Referee #1

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The paper by Pinardi et al. is a thorough assessment of state-of-the-art remote sensing of atmospheric HCHO abundances by ground-based multi-axis differential optical absorption spectroscopy. The study evaluates the performance of remote sensing instrumentation and data reduction techniques among various research groups who made a joint effort of a dedicated comparison campaign. Further, the paper provides an in-depth analysis of potential error sources including correlations between the retrieval parameters, systematic and random errors. A recipe how to improve the retrieval setup is proposed.

The paper is very well written, the employed methods are well thought and well documented. The topic will be of interest to AMT readers, in particular to the DOAS community. Therefore, I recommend publication with only minor modifications according to some of my comments listed below.

Comments:

p.6681,l.9: molec cm2 -> molec cm⁻². This error occurs several times in the manuscript, in particular in section 5. Please check the whole manuscript.

p.6681,l.21: integration time -?-> exposure time. To my knowledge the correct term would be “exposure” not “integration”. If so, please check the whole manuscript.

p.6684,l.15: evaluations -> retrievals.

Paragraph 3: Later in the manuscript, the authors mention that others (Roscoe et al.) found that the accuracy of the pointing information plays a crucial role for the NO₂ and O₄ comparison study and when converting DSCDs into VCDs. Pointing errors would also affect the comparison between the different instruments. Please shortly comment on this issue.

p.6690,l.20: as it's the information used -> since this the information used

p.6691,l.12: The general reader might not be aware of the AMF concept. Explain shortly.

p.6692: What is the physical difference between the methods for calculating the Ring effect, why is there such large differences in in the Ring baseline?

p.6692,l.22: polynomials -> polynomial

p.6695,l.24: details -> detail

p.6697, l.16: as it's the main parameter -> as these are the main input parameters for retrieving profile information

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Fig.2: Explain the panels and the two colors in the upper panel.

Fig.5: The black circles are too big. In my printout, there is only a big black blob visible. The units of the regression parameters might be obvious, but for completeness one could consider mentioning (likewise Fig.6, Fig.7).

Fig.8, caption: “after straight line fits of each instrument’s data . . .” I do not understand this comment. Isn’t it just subtracting the respective data from the reference data?

Fig.9, 10, 11, 16: Units not explicitly mentioned.

Interactive comment on Atmos. Meas. Tech. Discuss., 5, 6679, 2012.

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