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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Technical Note Formal blind intercomparison of OH measurements: results from the international campaign HOxComp" *by* E. Schlosser et al.

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We thank referee #1 for the positive evaluation and for his/her suggestions. Below we address the referee's comments in detail.

page 14093, lines 28+

As mentioned in the manuscript the reason for the observed variable background signal of the MPI instrument during measurements without light is not yet understood. For the revised version we will change the text accordingly:

A significant and variable OH signal, however, was observed at periods without daylight, which if real would have been detected by the other instruments as well. The reason of this effect is not yet understood. Studies have verified though that the interference is not due to laser-induced OH generation. Therefore, all OH measurements at times without daylight were submitted as not valid.

page 14099, lines 24+

After the submission of the data to the referee the FZJ-LIF group discovered the incorrect calibration of a mass flow controller having a significant effect on the calibration of the instruments. The calibration difference between CIMS and LIF could of course be of similar simple nature, but we suspect it is more complex. We plan to change the wording of this paragraph:

The group operating the two FZJ-LIF instruments became aware of a systematic error within their calibration after the submission of their data to the referee. The reason was technically simple but the error was not obvious and it had a significant effect on the calibration of the instruments. A mass flow controller ....

Last paragraph (page 14117, lines 23+)

According to the referee's comments this paragraph will be extended as follows:

The ambient air part of this study was performed under moderately polluted conditions while the chamber part, without CIMS, covered a higher variability of chemical conditions. Also we focussed here on daytime measurements. This study explored only a subset of possible conditions where ambient OH measurements are needed. Nonetheless, this OH intercomparison provides evidence for the high quality standard of the current DOAS-, LIF-, and CIMS-based OH measurement techniques. All participating

instruments provided highly time-resolved OH data without significant interferences and offsets. Generally, water photolysis is a suitable OH source for the calibration. However, the stability and accuracy of the current calibration devices is still a major source of uncertainty in OH measurements. Thus, we encourage the development of a robust portable OH calibration standard fitting the majority of current OH instruments to overcome this problem. Intercomparisons under well controlled conditions are the best way to ensure the quality of atmospheric OH radical measurements. Future intercomparisons should cover a larger range of parameters, e.g. measurements at nighttime or with high VOC load, i.e conditions where the present understanding of the HOx chemistry is under discussion (Lelieveld et al. 2008, Hofzumahaus et al. 2009).

References

Lelieveld, J. et al., Atmospheric oxidation capacity sustained by a tropical forest, Nature, 452(7188), 737-740, doi:10.1038/nature06870, 2008.
Hofzumahaus, A. et al., Amplified Trace Gas Removal in the Troposphere, Science, 324(5935), 1702-1704, doi:10.1126/science.1164566, 2009.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 14081, 2009.