Atmos. Meas. Tech. Discuss., 5, C2321-C2322, 2012

www.atmos-meas-tech-discuss.net/5/C2321/2012/ © Author(s) 2012. This work is distributed under the Creative Commons Attribute 3.0 License.



AMTD

5, C2321–C2322, 2012

Interactive Comment

Interactive comment on "Comparison of N₂O₅ mixing ratios during NO3Comp 2007 in SAPHIR" *by* H. Fuchs et al.

Anonymous Referee #2

Received and published: 24 September 2012

This paper presents results from an intercomparison of NO3 instruments capable of measuring N2O5 by thermal decomposition to NO3. The intercomparison took place on the SAPHIR chamber, where a range of N2O5 concentrations were generated under various conditions: different humidity levels, aerosol loading, solar radiation, etc. Accurate and precise measurements of N2O5 and NO3 are important for developing an understanding of nocturnal chemistry and its impact on oxidant budgets and SOA. Such intercomparisons are efficient ways for elucidating and understanding the capabilities and deficiencies of current state-of-the-art instrumentation. The paper is well written, the conclusions are clear and supported by the data and analysis. The results are of great interest to the atmospheric chemistry community and thus I recommend publication in AMT. I only have a few minor comments.





Perhaps the most important striking result, beyond the generally good agreement between the various instruments, is the need to carefully evaluate the impact of inlet systems and particle filters on the transmission of reactive trace gases, and how readily apparent that became under the right experimental conditions. Moreover, while all investigators likely spent significant time evaluating such issues, it is often difficult to evaluate for all possible scenarios. Thus, correction factors and/or methodology that work for common sampling conditions can "fail" for those rarer events. Those rarer events, however, can often be of great interest scientifically and as such a well understood response function is needed to avoid misinterpretation. In the context of this paper – the marine boundary layer is often characterized by high aerosol loading and low NOx, a situation that proved challenging for inlet/filter transmission. Hopefully this paper will be carefully read by many other investigators who measure other reactive trace gases in such situations.

I have only one other minor comment. In Figure 2, the distributions of point-to-point differences are characterized with a "width" labeled (1-sigma) in the caption, and compared with mean errors labeled as <sigma> appearing on the plots as a black bar. I think a +/- in front of sigma is required to make the meanings correct in terms of the width drawn.

Interactive comment on Atmos. Meas. Tech. Discuss., 5, 4927, 2012.

AMTD

5, C2321-C2322, 2012

Interactive Comment

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

