

Interactive comment on “Comparison of OH concentration measurements by DOAS and LIF during SAPHIR chamber experiments at high OH reactivity and low NO concentration” by H. Fuchs et al.

Anonymous Referee #2

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This is a very nice analysis of challenging laboratory studies performed at SAPHIR comparing OH observations by DOAS and LIF. The results are clearly of interest as such measurements are critical to the ongoing discussion of alkene oxidation in the low NO regime. It should be published in AMT after the following issues are addressed.

1. I find it difficult to understand how the concentration of NO is determined. In Fuchs, 2010, I understand that NO was measured by chemiluminescence. Here (at least in the low NO regime) it is suggested that NO is determined by photostationary state calculations using NO₂ and O₃. Is this correct? If so, is the reaction of organic peroxy

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radicals not an important source of NO₂? In either case, please provide a statement on the NO measurement and its uncertainty. 2. Related to 1 (above). In the low NO regime, if [NO] is ~150 ppt and [HO₂] is ~20 ppt, then only ~2% of the organic peroxy radicals are reacting with HO₂. This should be noted, as while it is similar (I believe) to PRD, it is a different environment than BearPex, where ~40% of the peroxy radicals are calculated to react with HO₂ (e.g. [NO]~65 ppt; [HO₂]~20 ppt). 3. Were any measurements made using chemical removal of OH to evaluate backgrounds in the LIF system? If so, please describe. 4. If the NO measurement is correct, the measurements described here do not rule out the possibility that interference from HO₂ + RO₂ reaction products may produce LIF interferences in this (or other) instruments.

Interactive comment on Atmos. Meas. Tech. Discuss., 5, 2077, 2012.