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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Comparisons of observed and modeled OH and HO_2 concentrations during the ambient measurement period of the HO_xComp field campaign" *by* Y. Kanaya et al.

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We thank Dr. Taraborrelli for his careful reading and for giving useful comments on the chemical processes.

1. The first comment was on the following reaction where the OH yield could be over-estimated: (A17) IEPOXO2 + HO2 -> 1.125 OH + products We performed a sensitivity model run (on the basis of our base mechanism), where the OH yield was tentatively modified to zero. We found that the effect on the OH concentrations was negligible

(<1%). This is because 1) IEPOXO2 mainly undergoes reaction with NO under the typical HOxComp conditions ([NO] > 0.1 ppb) and 2) the reaction (A17) represents a minor pathway for the gross OH production.

2. The second comment was that the reactions (A60) and (A61) should produce reactive organic species in addition to OH, which will then contribute to OH reactivity. (A60) HPALD1 + OH -> OH (A61) HPALD2 + OH -> OH We agree that reactive organic species should be produced by the reactions and need to be taken into account when aiming at full representation. For application to HOxComp, however, where isoprene chemistry is assumed to be active only for a short period (12 min), the impact of the omission of the organic products is minor. We made another sensitivity model run (on the basis of our S1 mechanism), where HALD5152 (a species representing unmeasured and unspecified products from isoprene chemistry, which will be renamed in our revised manuscript upon comments given by Drs. Müller and Peeters) was tentatively assigned as a product from reactions (A60) and (A61). The model-derived OH reactivity only increased by less than 0.06 s**-1, which was too small to fill the gap between the observed and modeled OH reactivities (about 2 s**-1). This modification also had little impact on the modeled OH and HO2 concentrations (at maximum 1.3% for OH and 0.5% for HO2).

Overall, different assumptions on these reactions as suggested by Dr. Taraborrelli do not alter our conclusions drawn from the analysis. We acknowledge the comments again.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 28851, 2011.