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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 $HO_x$Comp field campaign" *by* Y. Kanaya et al.

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Kanaya et al. presents an analysis of photo-oxidation of isoprene during the HOxComp field campaign. In the manuscript a simplified oxidation mechanism for isoprene is first revised blending some recent experimental data with other oxidation mechanisms. This model is then used as base model. Then, a simplified representation of the chemistry proposed by Peeters and co-workers has been added. Afterwards, the overestimation of OH and HO2 by the extended model, in contrast to the revised model alone, is presented as supporting the low bulk isomerization rate of ISO2 by Crounse et al. (2011).



The conclusions drawn from the analysis are dependent on the kinetic model that is used. A few potentially critical reactions of the model may weaken the conclusions the authors draw.

The (revised) base model assumes the following unrealistically high OH-recycling in:

(A17) IEPOXO2 + HO2 -> 1.125 OH + products

Taraborrelli (2010) commented on this reaction and on its representation of ISOPOOH chemistry introduced by Paulot et al. (2009).

In the updated model a potentially significant underestimate of the OH reactivity may originate from the following reactions

(A60) HPALD1 + OH -> OH

(A61) HPALD2 + OH -> OH

which are in line with what Peeters and Müller (2010) predicted with regard to OH-recycling. However, in A60 and A61 reactions represent a significant flux of reactive carbon that disappears without contributing to the modelled OH reactivity.

References

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