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Interactive comment on "Isoprene oxidation mechanisms: measurements and modelling of OH and HO_2 over a South-East Asian tropical rainforest during the OP3 field campaign" *by* D. Stone et al.

D. Kubistin

kubistin@mpch-mainz.mpg.de

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- **Concerning page 10362, line 15: "A simple, but chemically unlikely, recycling scheme in which OH is produced directly by isoprene+OH ($C_5H_8 + OH \longrightarrow ISOPO_2 + n\,OH$) was investigated as one explanation for the model discrepancy found for the GABRIEL campaign (Kubistin et al., 2010). The best fit between the observation and the model required n = 1.3 (Kubistin et al., 2010). However, the mechanism for recycling was not specified."**

  Kubistin et al., 2010, is cited to have introduced the reaction $C_5H_8 + OH \longrightarrow$

$ISOPO_2 + OH$ for the GABRIEL campaign as an explanation for a direct additional OH recycling. This is misleading as this reaction was chosen only to investigate a possible OH recycling inside the whole isoprene oxidation scheme. This sole reaction should only be understood as a proxy for additional recycling within the subsequent oxidation scheme. The factor n = 1.3 shows that at some point or points within the oxidation process a total of 1.3 OH have to be produced for each OH destroyed in the initial step.

- **Concerning page 10363, line 2: "Our optimal value of n = 3 is significantly higher than the values found in the GABRIEL study (n = 1.3, Kubistin et al., 2010). However, details of how this value was derived by Kubistin et al. are not provided.".**

  The factor n in the reaction $C_5H_8 + OH \longrightarrow ISOPO_2 + n\,OH$ was determined by Kubistin et al. for the GABRIEL campaign by modifying the reaction $C_5H_8 + OH \longrightarrow ISOPO_2$ to $C_5H_8 + OH \longrightarrow ISOPO_2 + n\,OH$ inside the chemical reaction scheme. The reaction constant used was $k = 2.54 \cdot 10^{-11} e^{\frac{410}{T}}$. By varying the factor n in the range of 1.0 to 1.5 (0.1 steps), best agreement between observed and modelled OH concentrations during GABRIEL was obtained with the factor n = 1.3 (OHobs / OHmod = 1.4 $\pm$ 0.5).

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