# Supporting Information to "Atmospheric photo-oxidation of myrcene: OH reaction rate constant, gas phase oxidation products and radical budgets"

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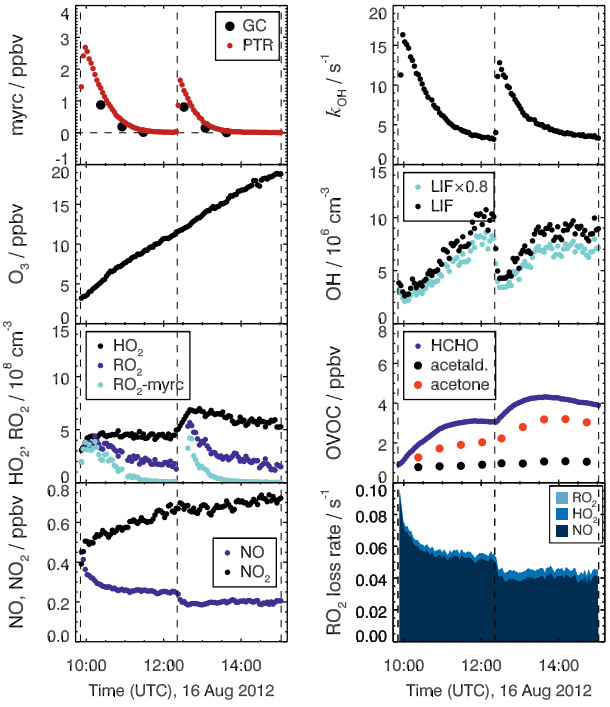


**Figure S1.** Overview of time series of trace gas and radical concentrations in the chamber experiment investigating the OH oxidation of myrcene (myrc) for medium NO mixing ratios on 16 August 2012. Total organic peroxy radical ($RO_2$) concentrations and $RO_2$ from the reaction of OH with myrcene were calculated from observations as explained in Section 2.4. In additions to trace gases, the loss rates of $RO_2$ with respect to their reaction with NO and radical recombination reactions are shown. OH measurements by LIF were scaled by a factor of 0.8 because the comparison between OH and DOAS hints to an calibration error of LIF measurements.

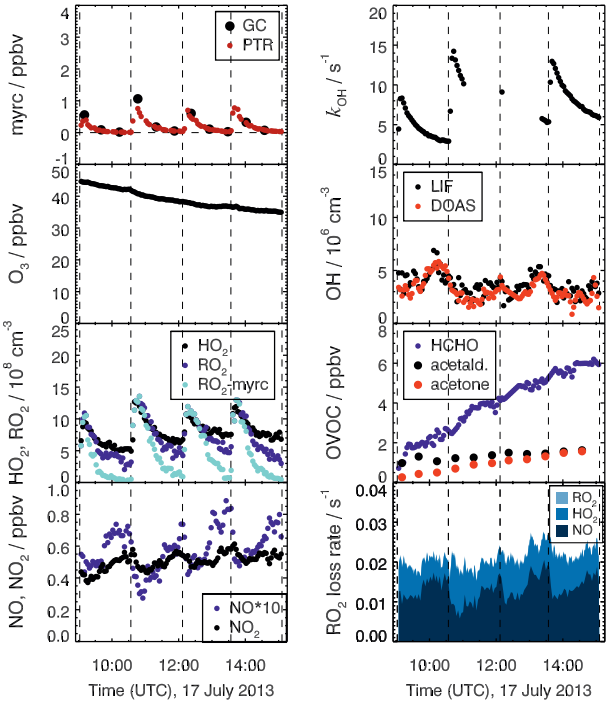


**Figure S2.** Same as Fig. S1, but for the experiment with myrcene at low NO conditions on 17 July 2013.

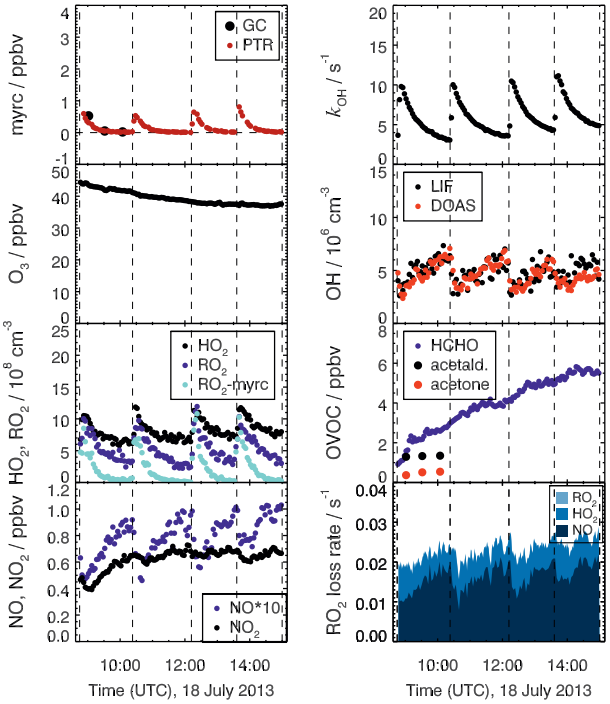


**Figure S3.** Same as Fig. S1, but for the experiment with myrcene at low NO conditions on 18 July 2013.

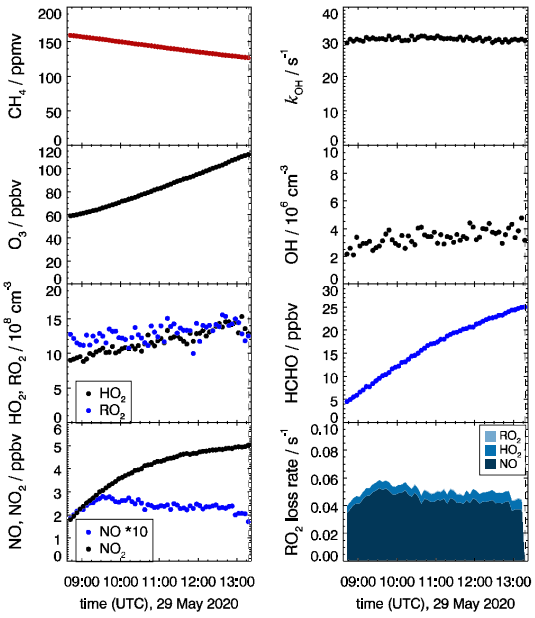


**Figure S4.** Same as Fig. S1, but for the experiment with methane on 29 May 2020.

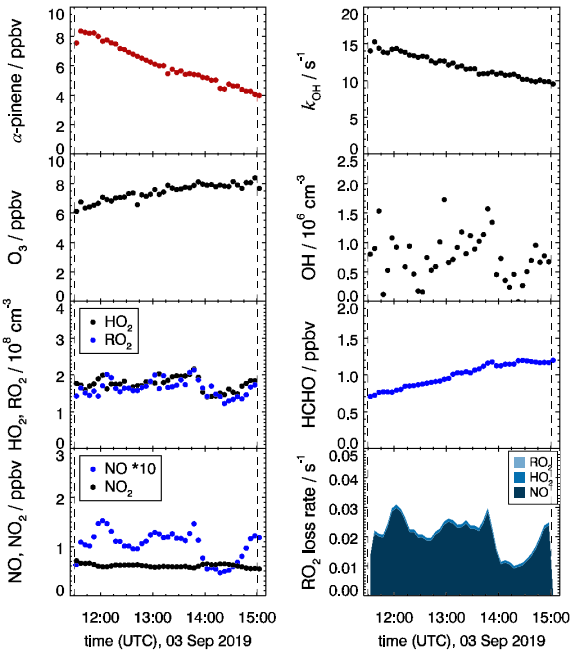


**Figure S5.** Same as Fig. S1, but for the experiment with $\alpha$-pinene on 03 September 2019.

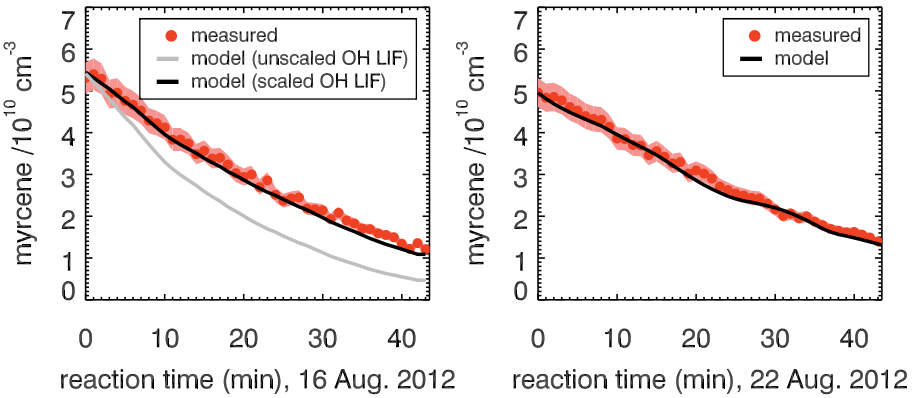


**Figure S6.** Comparison of the measured time series of myrcene concentrations with results from model calculations on 22 August 2012 (left panel) and 16 August 2012 (right panel). The model is constrained to measured temperature, pressure, ozone and OH concentrations and the rate constant of the reaction of myrcene with OH was optimized resulting in a value of $2.1 \times 10^{-10} molecules\,\mathrm{cm}^{-3}\mathrm{s}^{-1}$. OH was measured on 22 August by DOAS and LIF and only by LIF on 16 August. The comparison of OH and DOAS measurements on 22 August revealed that LIF measurements need to be scaled by a factor of 0.8, most likely due to a calibration error. Therefore, also measurements on 16 August are scaled by a factor of 0.8. Model results demonstrates that the scaling of the OH measurements is also required to describe the measured behaviour of myrcene in this experiment.

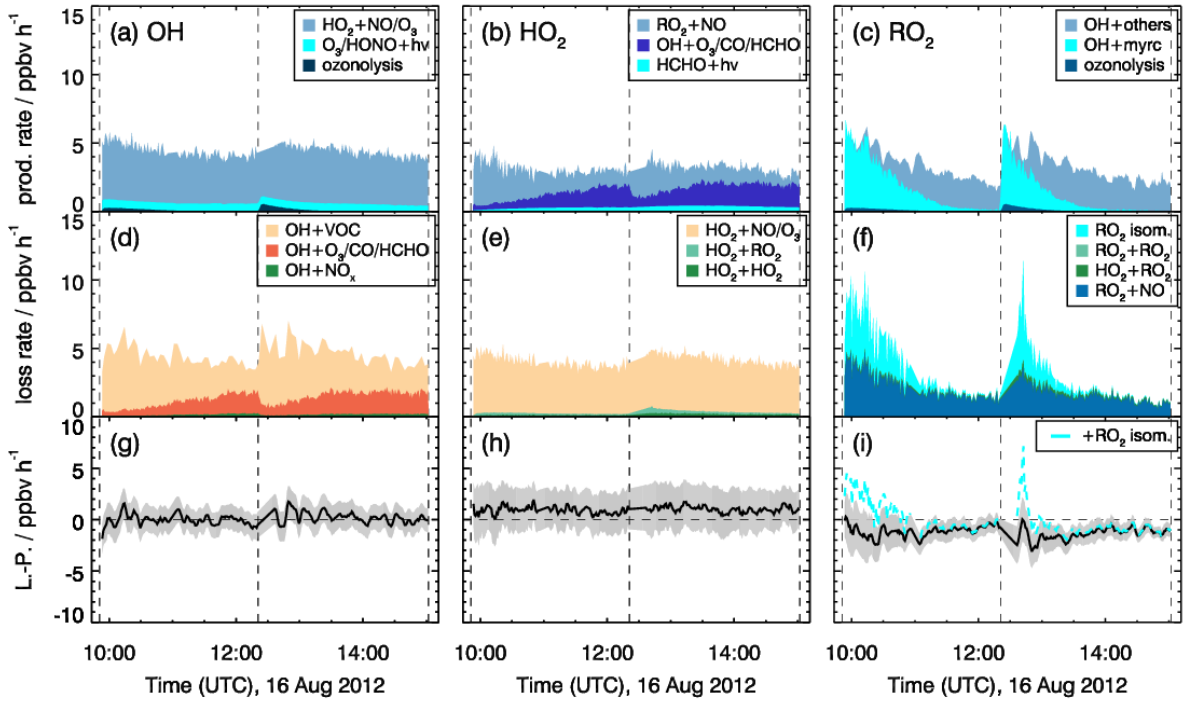


**Figure S7.** Rates of radical conversion reactions and imbalances between production and destruction rates ($L - P$) for the experiment with medium NO mixing ratios on 16 August 2012. Grey areas in the lower panels give the uncertainty of $L - P$. In the lowest right panel, the black and cyan lines denote $RO_2$ budget without and with considering $MyO_2$ isomerization reaction at a rate of $0.014\,s^{-1}$.

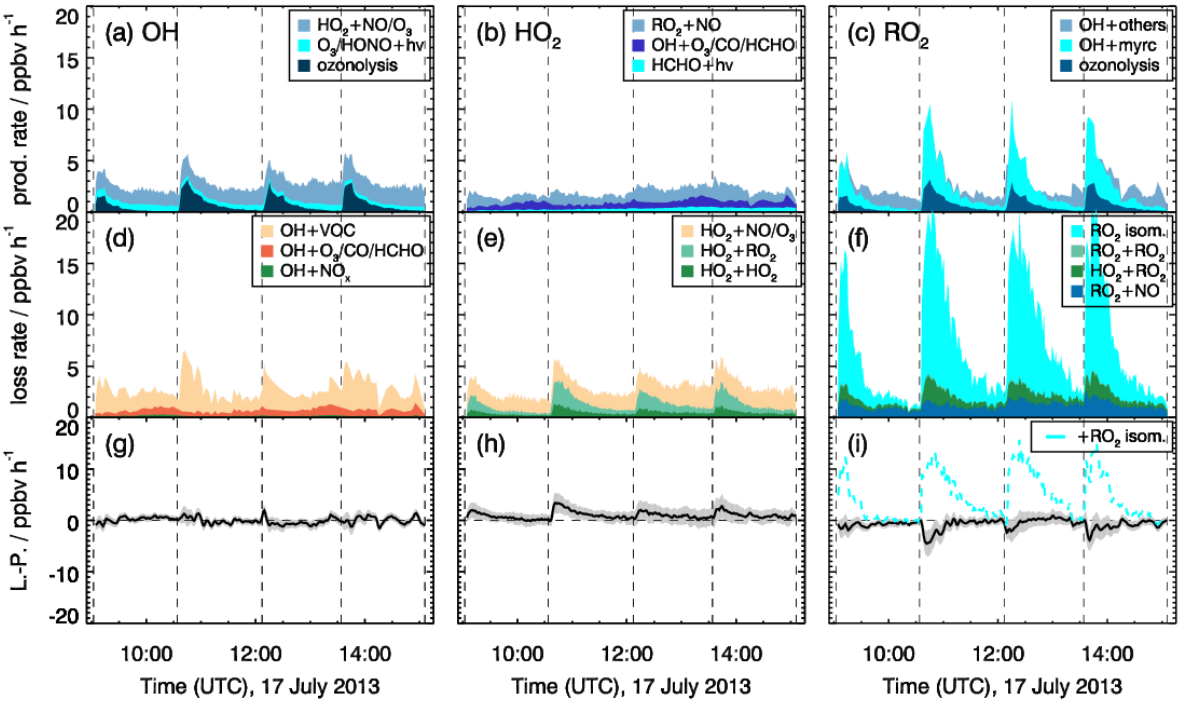


**Figure S8.** Same as Fig. S7, but for the experiment with myrcene at low NO conditions on 17 July 2013.