

Interactive comment on “Hydrocarbon fluxes above a Scots pine forest canopy: Measurements and modeling” by J. Rinne et al.

J. Rinne et al.

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Thank you for your comments. It is true that there is data only from a few days in this manuscript. As the analysis of the data from longer period will take still some time we wanted to present at least the first results to the community now, together with the modeling tool for data interpretation. We have tried to expand the description of the parts pointed out by you.

Detailed responses to the comments raised by the reviewer 1: (page and line numbers refer to those in the original manuscript).

1. Page 2361, lines 20-27. The paragraph was referring to the intercomparison experiments conducted between disjunct eddy covariance and conventional eddy covariance techniques. Thus, we referenced first the papers describing these intercomparisons

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(Ammann et al., 2006; Rinne et al., 2007). Also references to the applications of these methods are given. We have tried to modify this paragraph to make in less confusing.

2. Page 2362, lines 18-21. The factor 1.96 comes from basic statistics. If data is normally distributed 95 % of the data lies within $\bar{x} \pm 1.96 \sigma$, where \bar{x} denotes average and σ standard deviation.

3. Page 2362, Eq. (2). This discrepancy was caused by wrong equation. In the case of the DEC measurements M37 was indeed measured directly. The correct equation will be presented in the revised manuscript.

4. Page 2365, line 19. The model is described in the paper by Boy et al. It is a simple box model with pseudo stationary state OH. Thus this model only describes above canopy OH levels. We have, however, conducted additional model runs by the stochastic Lagrangian transport model with chemistry using non-constant oxidant profiles. The results will be shown in the revised manuscript.

5. Page 2366, line 27. The model we are using integrates into unity due to assumptions of stationarity and horizontal homogeneity. This can be seen in Figures 3 and 5. We will however modify this sentence to be more general in the way requested.

6. Page 2367, line 12. We will mention the difficulties in sampling the very reactive and sticky compounds into the ptr-ms.

7. Page 2367, line 18. We will give the numbers in the revised manuscript. The errors related to the reported fluxes are however hard to assess, especially for those not reported by our research group.

8. Page 2368, lines 12-18. We will add the table.

9. Page 2369, line 27. We calibrated the ptr-ms using alpha-pinene, which is the most abundant monoterpene at the site, so we believe the fragmentation pattern should be similar for calibration and measurement. There is a possibility that the different time of the year have played the role in the differences in measured fluxes. We will discuss

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the discrepancies between different measurements in more detail in the Discussion chapter of the revised manuscript and also show the fluxes derived using M81.

Technical comments We will take into account the technical comments given by the reviewer. Especially we have changed the text referring to the Figure 4.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 2357, 2007.

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