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Comment

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

Anonymous Referee #2

Received and published: 6 March 2007

The paper by Rinne et al. describes hydrocarbon fluxes above a Scots pine forest canopy. It presents novel results using eddy covariance measurements of VOCs at the SMEAR II station and, based on a stochastic Lagrangian transport model, discusses the implication of measuring canopy scale fluxes of short lived VOCs. As such the manuscript merits publication in ACP after addressing the following comments:

Page 2358, line 25: add reference: Kesselmeier et al., GBC, 2002.

Page 2365, line 5 cc: A constant OH profile throughout the canopy seems to be very simplified. For example Stroud et al. (Role of Canopy-Scale Photochemistry in Modifying Biogenic-Atmosphere Exchange of Reactive Terpene Species: Results from the CELTIC Field Study., JGR, 2005) found that OH within the forest canopy varies signifi-

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cantly according to the extinction of photolysis rates.

Page 2365, line 19: It appears that Boy et al., (2005) treated the canopy as a 'big leaf' without subdividing it into several layers each exhibiting different oxidant levels (e.g. low OH and high NO₃ in lower canopy). How will different profiles of OH and NO₃ in the canopy effect the presented analysis?

Page 2366, line 12cc.: It is not clear what source distribution within the canopy was used to investigate the effect of chemistry on fluxes?

Minor Comments:

Page 2360, line 1: change hydrocarbon to VOC

Page 2361, line 4 cc: revise sentence: ... but does not lead to systematic errors as long as the averaging period is much longer....

Page 2367, line 25. Revise to ...of the measured total VOC emissions on a mass basis...

Page 2368, line 20: Revise to ...emissions from the forest floor...

Page 2369, line 6: Revise to ...Fluxes of all four compounds...

Page 2371, line 12: Revise to ...the chemical degradation has the largest effect ...

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

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