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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Emissions of isoprenoids and oxygenated biogenic volatile organic compounds from a New England mixed forest" *by* K. A. McKinney et al.

Anonymous Referee #1

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The paper investigates BVOC emissions based on ecosystem scale flux measurements at a mixed forest in New England. Ecosystem scale VOC flux data are still scarce, but important to quantify the actual net exchange of VOC on scales that are important for large scale emission and chemistry models. The present manuscript reports new eddy covariance VOC flux measurements obtained above a deciduous ecosystem in the Northeastern US. The manuscript is well structured and presents important new information on the exchange of VOCs. It should be published after addressing comments outlined below:

Throughout the manuscript data are compared to different VOC flux datasets in the

literature. It is important to note that when comparing Harvard forest with coniferous ecosystems one would certainly expect distinct differences in the exchange of VOC emissions (e.g. methanol and acetone). The composition of terpene fluxes can also vary considerably between different ecoregions.

When interpreting OVOC fluxes it is important to point out that ecosystem scale flux measurements infer a net flux; many OVOC could exhibit a compensation point and a flux dependence on ambient concentrations.

m/z 153: another candidate for m/z 152 is methylsalicylate. Many oxygenated terpenes (e.g. camphor) are typically associated with coniferous species. Since MeSA is a plant hormone signaling stress it would be an interesting to identify the species using GC-MS or PTR-TOF-MS.

P 28584, line 20 ff: The HLC's of compounds addressed here (e.g. ketones) are quite small, such that solubility can not explain their uptake. The bidirectional change of these compounds therefore has to be governed by chemistry (e.g. enzymatic and non-enzymatic reactions in the mesophyll).

P 28587, line 10 ff: if no considerable flux of MVK+MAC has been observed the flux detection limit of the current setup is probably too high to detect deposition fluxes. The flux detection limit should be calculated (e.g. according to Lenschowand Kristensen, 1985) and compared to the typical magnitude of expected for deposition fluxes.

P 28589: It is not clear whether the effect of past temperature history has been considered when modeling isoprene emissions using MEGAN.

Technical corrections: Reformat references given in the Introduction (e.g. p 28567, line 21) P 28591, l11: change to Müller

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Interactive comment on Atmos. Chem. Phys. Discuss., 10, 28565, 2010.