

Interactive comment on “Observations of oxidation products above a forest imply biogenic emissions of very reactive compounds” by R. Holzinger et al.

Anonymous Referee #1

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From the presented data and arguments it still appears that the vertical gradients could just as well be explained by direct emissions from plants (maybe the fragments detected by the PTRMS instrument correspond to several sesquiterpene fragments). In order to claim that these compounds are actual oxidation products more evidence needs to be presented (e.g. carefully conducted branch enclosure experiments showing that these fragments are not directly detected from plants); if the authors' conclusions are valid the PTRMS instrument should at least be able to detect significant amounts of primary terpene (e.g. sesquiterpene) emissions from plant enclosure measurements. If the OX_x compounds are directly released from the local vegetation the total unaccounted terpene flux will be smaller than the 6 -30 fold underestimation claimed in the abstract. I agree with reviewer 2. In the manuscript's present form the authors

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try to make a quantitative argument about unaccounted terpene fluxes without any further evidence/measurements on the direct emissions. The conclusions are therefore more or less based on circumstantial evidence. It should be fairly easy to test their hypothesis by comparing canopy scale and branch level scale measurements using the PTRMS instrument and show that these results are consistent. Compared to the present speculative arguments this could provide a strong proof for their conclusions. The authors elusively refer to a manuscript under review (Goldstein et al., GRL) using GC-MS analysis by Rasmussen. It appears that an intercomparison between the GCMS and the PTRMS measurements could provide another important test for the conclusions drawn in this manuscript.

Interactive comment on Atmos. Chem. Phys. Discuss., 4, 5345, 2004.

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