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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Undisturbed and disturbed above canopy ponderosa pine emissions: PTR-TOF-MS measurements and MEGAN 2.1 model results" *by* L. Kaser et al.

Anonymous Referee #2

Received and published: 1 August 2013

Kaser et al present first eddy covariance flux measurements above a ponderosa pine forest using recently developed equipment, the PTR-TOF-MS. The manuscript compares the data in "normal" and "disturbed" conditions to the commonly used model MEGAN 2.1. The unique data set, including several storm events and subsequent periods, is used to point out a significant underestimation of measured monoterpene fluxes by the model. The manuscript incorporates new methods with accomplished modeling, and hence represents a substantial contribution to ACP.

The presented results are based on high quality measurements using state-of-the-art equipment. The analysis methods as presented are sufficient and based on standard

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procedures. The presentation in text and figures of these results is clear, as well as the following discussion and conclusions.

The manuscript should be published after addressing the following minor comments and questions:

Why is ponderosa pine forest important? Could you add to the introduction a motivation why the understanding of this explicit ecosystem is important? E.g. is ponderosa pine representative for other pine forests? How much area is covered by this in comparison to other forest types? Are the findings and conclusions of the presented study important for global or regional atmospheric chemistry?

The catalytic converter was used to generate background measurements every 7 hours. Is this interval sufficient to capture diel variations of the background? Did you observe fluctuations between the different background measurements?

In Section 3.2 you describe the criteria for quality control. These criteria are listed for explanation of the analysis. However, in order to understand the reason for the thresholds and different conditions more explanation would be necessary. Could you please give references or reasons? For example, criteria (1), (2) and (6) are described as necessary to eliminate contamination from a highway, or vegetation change, or a reference is given. Could you please provide similar descriptions for the other criteria?

P.15344, l. 14: The text refers to (black) and (grey). Where can the reader find this?

Please, double-check Table 1 and what was written in Section 3.3. There seem to be inconsistencies of how many compounds were grade A and B.

Table 5: “B” probably means “beta”.

Table 7: Was the monoterpene speciation characterized by gas chromatographic methods?

In many figures bigger labels are needed to improve the readability in the print-out,

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such as in Fig 3, 4, 7, 8, 9, 10, 11.

In Figure 4 an additional line at y=0 could show the difference between negative and positive fluxes.

In Figure 8, the y-axis label should probably be something else than “time (DOY)”.

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 15333, 2013.