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Atmospheric Measurement Techniques Discussions

Interactive comment on "Volatilizable biogenic organic compounds (VBOCs) with two dimensional gas chromatography-time of flight mass spectrometry (GC $\vec{\times}$ GC-TOFMS): sampling methods, VBOC complexity, and chromatographic retention data" *by* J. F. Pankow et al.

Anonymous Referee #2

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This paper describes using GC x GC-TOFMS to analyze air samples of volatilizable biogenic organic compounds. This instrument allows the authors to detect a huge diversity of compounds that may be important in aerosol formation and growth.

Minor Comments:

Introduction

Pg 3651, lines 9-12: Haven't some of these compounds been shown to be emitted under stress-free conditions?

Pg 3651, lines 15-19 & 21-24: Clearly distinguish the compounds that are oxidation products vs. those that have functional groups due to the synthetic pathways within the plant (emitted with functional group already). For example, in the standard mixture used here, camphor and linalool are emitted as oxygenated monoterpenes, whereas nopinone is an oxidation product of b-pinene. The lack of distinction may cause confusion with readers who are not familiar with these compounds.

When discussing the different analytical methods in section 2, there is no mention of solvent extraction methods, like that in Oremeno et al. 2010 (ES&T) used with branch enclosure measurements. I think this Super Q and or Hayesep Q adsorbent cartridge method should be included in this extensive review of quantitative sample methods, or justify why it was excluded from the list.

Pg 3655, line 7: "With the latter"... what was the former?

When discussing the methods in Section 3, the authors should mention the type of column used, etc. At least reference the table with this information in this section of text.

What was the ozone level in the clean air vs. "lab air"? Could this affect the differing results?

Section 4

The first paragraph discusses MDL values, but does not specify which sampling method was used to acquire those values.

In each new section, please redefine acronyms, like ATD.

When discussing the chromatograms in section 4.2, emphasize which plant sample and/or standard mixture was used to generate each figure. The information is there;

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it's just buried with in the text and the differences between each sample are not immediately clear.

Where the plants potted or cut? Was the aim of this study to simulate the potential emissions by inducing them or to simulate real emissions that would be measured in the field? Comment on how your results would differ, depending on each type of sample.

Pg 3663, line 18: "presumed higher level of biological activity" When were the samples taken; how long were they stored? Is the biological activity still relevant?

Conclusion

Please redefine OPM here. The only other definition was way back in the introduction.

Pg 3666, lines 10-11: the repetition of "quantitative" makes this sentence confusing.

Overall, I am unclear from this conclusion what the "take home" message is. Much of this paper was a review of analytical methods.

Table 4: the MDL should have units of ng m-3 (the negative sign is missing)

Interactive comment on Atmos. Meas. Tech. Discuss., 4, 3647, 2011.