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Atmospheric Measurement Techniques Discussions

Interactive comment on "Quantitative and enantioselective analysis of monoterpenes from plant chambers and in ambient air using SPME" *by* N. Yassaa et al.

Anonymous Referee #2

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General comments

This study demonstrates a method to extract, identify and quantify enantiomeric and non-enantiomeric monoterpenes from plant chamber and ambient air using SPME and GC-MS. Multiple SPME fibre coatings are tested and results are compared to two other established techniques for optimisation of the system and validation of the method. Synthetic, biogenic and ambient emissions of monoterpenes are all used.

In general this is a well written, well structured manuscript with a high degree of relevance to realistic emissions of monoterpenes. The experimental setup, methods and

optimisation procedures are all clearly described. The authors present a convincing argument for the use of SPME to quantify monoterpene emissions, although the method is perhaps limited in terms of the maximum volume mixing ratio that can be quantified. However, it appears to be a valuable technique, which allows a full investigation the ability of terpenoids to form secondary organic aerosol. The conclusions are clearly drawn and well supported by the results.

Overall this is a very good quality manuscript and I would recommend publication with a few minor amendments and corrections outlined below.

Specific comments

1. Section 2.2.1 Description of cuvette chamber. The air scrubbing system that is described seems very thorough and of high quality. However; I have one concern regarding the re-humidification of the air. The authors state that "the air was bubbled through a vessel filled with tap water" (line 14). Given that this is placed after the scrubbing system, please state what material the vessel is constructed from to make it clear this will not contaminate the airflow. Please also comment on the use of tap water rather than distilled water, as the use of purified water would have minimised any contaminants added to the air stream after the scrubbing system.

2. Please add more description of the blank chamber measurements or background subtraction of blanks from samples. If this has been done in an earlier study, please reference the relevant paper.

3. Figure 3. The bars shown in this figure should be averages of a number of extractions or measurements for each terpenoid to ensure accuracy. Please add the number of repetitions to the figure legend and add error bars to the figure. If they are not replicated please state this and explain why.

4. Please could the authors comment on whether they have tried quantifying other terpenoids (e.g. sesquiterpenes) using the technique they describe. Could they include

a comment in the discussion section on the applicability of SPME and GC-MS to other terpenoids?

Technical corrections

1. Section 4, Conclusions, line 10. Missing word in sentence “This easily automated method when combined. . .” should be “This is an easily automated method. . .”

2. Text in all figures needs to be larger and clearer in general (the exception to this is figure 8 which is fine).

3. Figure 6 caption. Typo “efficiens” should be “efficiencies”

4. Figure 7. There is no explanation of which colour is which terpenoid. Please add.

5. Figure 9. Resolution appears to be particularly poor – please improve for clarity.

Interactive comment on Atmos. Meas. Tech. Discuss., 3, 3345, 2010.