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Atmospheric Measurement Techniques Discussions

Interactive comment on "A dynamic plant chamber system with downstream reaction chamber to study the effects of pollution on biogenic emissions" *by* J. Timkovsky et al.

Anonymous Referee #2

Received and published: 12 December 2013

General Comments:

This manuscripts reports research on biogenic volatile organic compound emissions from vegetation and their atmospheric behavior, using a newly designed dynamic plant chamber system with a downstream reaction vessel. By using the rather novel detection method of proton-transfer-reaction time-of-flight mass spectrometer these authors demonstrate measurements of emissions, reaction products, kinetical behavior, and product studies.

This summary illustrates that this work covers a variety of different topics. Each of

these are given somewhat equal weight in the manuscript, so it is not 100% clear what the primary focus of this work is. Being a submission to AMTD, I would have expected a primarily technical paper. The experimental and measurement approaches that are presented in this paper are reasonably well established, therefore in my opinion this work falls short in presenting innovative and novel analytical methodology beyond what has been published previously. Consequently, I do not think that this manuscript warrants publication based on the analytical developments that are being presented.

Similarly, results and discussions that are presented on the measurement applications do not go beyond previous research. It his highly questionable that seedlings that are 'collected' from a natural growing environment and brought into a laboratory will demonstrate natural emission behavior soon after. Consequently, emissions data are likely not representative and comparable with other studies. Findings and discussions on the BVOC emission behavior do not add any new knowledge to what has been known for some 20 years. Kinetics experiments were conducted without an OH scavenger, consequently these experiments are below current standards for conducting such studies and any data from these experiments are questionable.

In summary, I think the paper is too thin on either aspect of the covered topics to warrant publication, and in my opinion AMT would be a wrong place for a manuscript with such a relatively minor emphasis on analytical and experimental development work.

Specific Comments:

9009/18: I am not aware of a TEI Model 49 W003 analyzer? 9010/10: Which ion would be detected at m/z 21.023? 9010/25: Source or preparation method of standards, preparation date, and their certification should be provided. 9011/4: This sentence is not clear to me. 9011/28: 2 min would be a very slow rate for heating a focusing trap. Or is this the time that the trap was kept at 100oC after rapidly heating it to that temperature? 9012/12: 38 ml min-1 ? 9015/10: The resulting ozone concentration should be provided. 9015/12: Shouldn't the yield be calculated as:

yield = ([product]after – [product]o)/[monoterpenes]o

9016/5-17: It is disappointing that despite GC separation and PTR-TOF-MS detection no definite identification of monoterpene compounds could be achieved.

9029/Table 1: I don't see show m/z emission rates can be of value, unless the parent compound identifications are provided as well.

Interactive comment on Atmos. Meas. Tech. Discuss., 6, 9005, 2013.