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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Characterization of polar organosulfates in secondary organic aerosol from the unsaturated aldehydes 2-E-pentenal, 2-E-hexenal, and 3-Z-hexenal" *by* M. S. Shalamzari et al.

Anonymous Referee #1

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This paper describes the mass spectrometric characterization of a series of organosulfates from green leaf volatile precursors in simulation chamber experiments and then in ambient aerosol at a forested site in Hungary. This is an interesting paper and contains a very thorough interpretation of the mass spectra obtained, including multiple steps of tandem MS. The identification in ambient samples of these tracers of GLV chemistry is novel and adds to the finding of the paper. My main criticism of the paper is that it is difficult to really understand the impact of this chemistry on a wider scale. The paper is very technical and describes the analysis well. But at the end I'm left wonder-

ing whether these are actually important or if they are just well suited to the analysis method. Do the authors think this is a large source of SOA? Is it a global source, regional or local? There is no mention of the potential for anthropogenic emissions of GLV from grass cutting in domestic and within cities (i.e. could they be more important than isoprene OS in these environments?). Do the authors think these species are likely to be found in cities where biogenic and anthropogenic emissions mix. What are the potential impacts of this source? If the authors could address some of these questions I would be happy to accept this paper.

Mostly the paper is well written but it gets a little confusing at some parts. I have put specific comments below.

Abstract: This needs some text on the relevance of the findings. (see comments above).

Page 29559, line 27: Change to "reaction of sulphuric acid with epoxide containing"

Page 29560, line 17: Here and throughout there are a lot of sentence that start with "AS to". This makes the sentences rather long and hard to follow. Often the sentence just needs to be reversed to be clearer i.e. "It was shown that. . .. .bulk sulphur mass at K-puszta in Hungary"

Page 29560, line 27: What do mean by "magnitude"? Is this ion abundance?

Page 29561, line 11: I think it needs to be clearer here that you are actually characterizing OS from e-pentenal in particular and that the other VOC precursors fall apart to give E-pentenal. I was confused reading this why you were only talking about one set of OS but 3 precursosr. Line 18: Change "resorting" to "using".

Page 29562, line8, sentence doesn't make sense – preparing used twice. Line 15: Im not sure you need to explain which VOCs you are using again. Take out "selected". Page 29563, line 24: Change to "some adaptations".

Page 29564, line4: Change to "and the 2-E-pentenoic acid reaction products were

sampled after 5 min."

Page 29565, line 25: I think it needs ti be clearer what you mean by "substantial relative abundance" Do you mean peak area, ion intensity?

Page 29567, line 28: watch tense, only 1 reaction 1.

Page 29568, line 3 plus figure: This reaction scheme seems unlikely. Surely the second attack of this molecule will take place at the double bond? Do the authors have an explanation of the reaction adjacent to the unsaturated bond.

Page 29569, line 10: I am not entirely convinced by this explanation. Why is this seen for this peak only? The retention time is not much different but the shape is much worse. Line 17: give retention time for second isomer. Line 23-27: I don't think this section is explained particularly well. And the reasoning is hard to follow. Needs more.

Page 29571, line 12: Don't think you need to explain the structure of methacrolein

Page 29581, table 2: The top section is confusing, making you think it is somehow related to the rest of the table. I would remove this. I don't think you need to give the structures of the precursors. I would like to see Rt in this table.

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 29555, 2015.