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Atmospheric Chemistry and Physics Discussions

Interactive comment on "The effect of temperature and water on secondary organic aerosol formation from ozonolysis of limonene, Δ^3-carene and α-pinene" *by* Å. M. Jonsson et al.

Å. M. Jonsson et al.

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We appreciate the comments and suggestions from the referees where they acknowledged our findings as important and useful within the field of biogenic SOA formation. However, there are some concerns about clarity and some specific comments. Consequently, we will adapt and re-formulate our paper before consideration to ACP. Below are our detailed comments on the issues raised by the referees.

Referee 1

As advised the "results and discussion" and the abstract will be modified with aim of

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getting our messages and findings more clear to the reader.

The specific addressed issues:

Page 9326, top: This is to give a general background to temperature studies of SOA for the non-experts.

Page 9326, bottom: It is clear and we will reformulate this. (However, in most cases the Odum model has been used as a two-product fitting procedure)

Page 9327, bottom: This will be clarified with some examples

Page 9328, line 19: The agreement of the terpene concentrations can be seen in Table 1.

Page 9329, top: Since limonene contains two double bonds it could be oxidised further. However, the general rate of reaction for ozonolysis of these double bonds strongly suggests that only the endocyclic bond will be oxidised during the applied reaction time.

Page 9329, line 13: Transported/carried or sent through.

Page 9329: This is described in the experimental section Page 9328, line 5.

Page 9332, line 18-20: It will give the authors a feeling about how these OH-yields vary between different studies and the OH-yield range for the different terpenes.

Referee 2

Specific comments:

1, 2, we agree and will change the text accordingly.

3 There is limited overlap since our EST paper only consider the scavenger effect at room temperature, while in the present paper data are presented where the scavenger

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effect is evident also at low temp. This is clearly an important finding and evidence for OH chemistry affecting SOA at low temperatures and we will emphasise this even further in the ACP manuscript. (The EST paper is now accepted and publically available)

4, we agree and will change the text accordingly.

5, we agree that chemical analysis would further aid in interpretation. However, the aerosol formation itself and its variability with RH, Scavenger and Temperature gives information on changes in chemical/physical processes. Hopefully, we can in future studies include also chemical composition measurements.

6 The concentrations were chosen to be in the lower end of typical SOA experiments and giving SOA mass of similar magnitude as found in the atmosphere. However, most important is that for all conditions the same amount was reacted, (with the exception for without OH scavenger where the produced OH will consume some additional terpenes)

7 The time effect will be discussed in the anticipated ACP manuscript

Technical corrections: Thanks! These will be incorporated in the ACP manuscript

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Interactive comment on Atmos. Chem. Phys. Discuss., 8, 9323, 2008.