**Atmospheric
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Comment

Interactive comment on "Mass yields of secondary organic aerosols from the oxidation of $\vec{\alpha}$-pinene and real plant emissions" *by* L. Q. Hao et al.

Anonymous Referee #1

Received and published: 11 January 2011

General comments

This manuscript reports the results of a study of the SOA yields from the oxidation of biogenic VOCS. This study presents smog chamber laboratory work, focussing on SOA formation via oxidation of the emissions of two dominant tree species from boreal forest area, Scots pine and Norway spruce by OH and O3. Similar experiments were conducted with ïĄą-pinene as a reference system.

The data are of very good quality and the presentation is clear and well written. An appropriate discussion of the atmospheric significance of the results is provided. The subject matter will be of interest to readers of ACPD.

I recommend publication after the authors have considered the following comments:

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Specific comments

P. 28789 - Line 12: "The SOA yields from oxidation the real plant emissions vary from 1.9% at an aerosol loading of 0.69 μg m-3 to 13.6% at 32.8 μg m-3". In table 2, the SOA yields vary from 1.9 % to 17.7%... this SOA yield of 17.7 % should be mentioned by the authors. Same remark P28799 - line 10. Same remark P28804 - line 21.

P. 28794 - Line 2: "It is assumed that the wall loss rate is first order and the loss rate constant is independent of size particle". Have the authors verified that the wall losses are independent of the size particle? What is the experimental procedure used to determine the SOA wall losses?

P. 28794 - Line 11: "The parameter k varied from 0.0026 to 0.0086 min-1". How do the authors explain such variability?

P. 28795 - Line 7: the dilution factor F should be expressed in the same unit as the SOA wall losses (in min-1 and h-1; see P. 28794).

Have the authors performed "blank" experiments with the same procedure (addition of O3, TME or 2-butanol) but without plant or ïĄ-pinene inside the chamber? If yes, what are the values of the SOA mass concentrations obtained?

P. 28816 - Fig. 2: The authors should add "Exp. R1024" in the title of Fig. 2.

P. 28820 - Fig. 6: why the authors do not represent the aerosol volume concentration corrected for SOA wall losses (dashed black curve).

Technical corrections

P. 28795 - equations (5) and (6): the way to describe the different terms of the equation should be homogeneous (see the subscripts).

P. 28798 - Line 3: "p" is missing: "presented" and not "resented".

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 28787, 2010.

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