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Interactive comment on “A review of Secondary Organic Aerosol (SOA) formation from isoprene” by A. G. Carlton et al.

Anonymous Referee #3

Received and published: 25 May 2009

This manuscript will be of use by the scientific community since it reviews actual knowledge on isoprene involvement on secondary organic aerosol formation. Therefore it deserves publication in ACP after the following changes that, to my opinion, will increase its readability and its impact.

I would like to see more synthesis tables in the revised version. For instance, one on field observations of isoprene oxidation products indentified on particles would nicely complement the discussion in section 2.1.

Discussion in section 2.2: How far the fast improvement of the analytical techniques the past 2 decades, contributed to the detection of SOA formation from isoprene oxidation? This deserves a comment.

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section 2.2. p. 8267, last paragraph – p. 8268, line 10: This could be part of section 3 on the mechanism.

P8273, line 15: provide chemical structure or name for C₃H₄O₂

p.8275, line 14: The paper by Presto et al (2005) presents a nice analysis of the NO_x dependence of SOA yield similar to that of O₃ formation.

Presto, A. A.; Huff Hartz, K. E.; Donahue, N.M. Secondary organic aerosol production from terpene ozonolysis. 2. Effect of NO_x concentration. Environ. Sci. Technol. 2005, 39, 7046-7054.

Section 5: There are two recent works discussing the marine isoprene involvement in SOA over the oceans. This aspect of isoprene is worth to be mentioned in the present review paper:

Arnold, S. R., Spracklen, D. V., Williams, J., Yassaa, N., Sciare, J., Bonsang, B., Gros, V., Peeken, I., Lewis, A. C., Alvain, S., and Moulin, C.: Evaluation of the global oceanic isoprene source and its impacts on marine organic carbon aerosol, Atmos. Chem. Phys., 9, 1253-1262, 2009.

B. Gantt, N. Meskhidze, and D. Kamykowski, A new physically-based quantification of isoprene and primary organic aerosol emissions from the world's oceans, Atmos. Chem. Phys. Discuss., 9, 2933-2965, 2009.

Table 2 also misses the recent global modeling study by Henze et al ACP 2008 that provides estimates for SOA from isoprene. Reference to this work is made elsewhere in the manuscript.

I would also add a comparative table with global isoprene and SOA budget estimates.

Table 3: Complete Table 3 with the adopted molecular weights and enthalpy of vaporization to provide an overall picture of the aerosol formation parameters. The reference should be 2006 and not 2008.

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P8283, line 9: burden should be in Tg and not in Tg yr-1 that is a flux.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 8261, 2009.

ACPD

9, C1163–C1165, 2009

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