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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Secondary organic aerosol formation in cloud droplets and aqueous particles (aqSOA): a review of laboratory, field and model studies" *by* B. Ervens et al.

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We thank the reviewer for his/her careful comments on our manuscript that will help to clarify several sections. We address the comments in detail below. In addition, we have modified text at a few places in order to improve readability and added some references that came to our attention after submission of the first version of the manuscript in order to give a more complete review of the most recent literature related aqSOA formation.

General reviewer comment: Review of "Secondary organic aerosol formation in cloud droplets and aqueous particles(aqSOA): A review of laboratory, field and model studies" by Ervens et al. This manuscript provides a review of the current knowledge of

aqueous phase organic reactions and discusses the importance of these processes in influencing atmospheric aerosol particles. The topic should be of great interest to this journal's readers and will serve as a useful reference in future studies examining aqueous processes involving organics. The paper gives proper credit to a wide body of past work and it is written clearly. The Figures and Tables strengthen the manuscript. I recommend publication of this manuscript after minor changes are addressed below.

Specific comments:

1) Pg 22306, Line 19: "OH concentrations" Done.

2) Pg 22310, Line 9-11: This sentence does not read well. I recommend re-wording it. We reworded this sentence: The ozonolysis of limonene results in gasSOA formation. Products comprise water-soluble oligomers that can be dissolved in the aerosol aqueous phase where they are further oxidized (Bateman et al., 2011).

3) Pg 22310, Line 18: "benzene, toluene, and xylene react" Done.

4) Section 5.4: It would be worth mentioning hydroxymethanesulfonate as a tracer species. Dixon, R. W. and H. Aasen (1999). "Measurement of hydroxylmethanesulfonate in atmospheric aerosols." Atmospheric Environment 33(13): 2023-2029. We added this reference and reworded the sentence accordingly Organosulfur compounds (e.g., organosulfates, hydroxymethanesulfonate) that can only be ascribed to aqSOA processes have been identified in ambient samples.

5) Figure 1: The image quality should be improved. Indeed the figure appeared somewhat blurry in the published manuscript. In the revised manuscript its quality will be improved.

6) Figure 3 Caption: In the third line place a comma before "etc" and place a period at the end of the first sentence. Fix punctuations and spacing in sentence beginning with "(a)". Done.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 22301, 2011.