

Interactive comment on “Combined effects of surface conditions, boundary layer dynamics and chemistry on diurnal SOA-evolution” by R. H. H. Janssen et al.

Anonymous Referee #1

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The manuscript ‘combined effects of surface conditions, boundary layer dynamics and chemistry on diurnal SOA-evolution’ by Janssen and co-workers presents an interesting study on the impact of entrainment, surface conditions and chemistry on the secondary organic aerosol fraction inside the boundary layer. The manuscript is written in a very clear way and clearly points out the need for more detailed research on the impact of entrainment when studying the evolution of SOA inside the BL. I would recommend publishing this manuscript in the Journal of Atmospheric Chemistry and Physics.

The weak point of this manuscript, as already mentioned by the first referee is the

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missing comparison with measured data. Measurements of vertical profiles in and above the BL are available from many campaigns and would make the conclusions of the paper much stronger. The authors mentioned the Humpaa-Copec campaign and this data for example would have been a very suitable data-set (including airplane in-situ measurements) especially seeing that one of the co-authors would be able to access all the data.

The second weakness of the manuscript is the (necessary?) simplifications for some parameters like for example the assumption of constant concentration profiles of reactive species in the FT.

Overall I can congratulate the authors to a very good manuscript and after taking the advices of the first referee into account the paper presents very interesting information for the community especially the sensitivity studies for certain selected parameters.

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 9331, 2012.

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