

Editor report on the revised version of acp-2021-136 “Measurement report: Vertical distribution of biogenic and anthropogenic secondary organic aerosols in the urban boundary layer over Beijing during late summer”

Line numbers refer to the annotated ‘track-change’ manuscript.

p. 1, l. 31: replace ‘undertaking’ by ‘undertaken’

p. 2, l. 2: replace ‘radiation force’ by ‘radiative forcing’

p. 2, l. 10ff: These references seem somewhat outdated and should be amended by more recent ones. Please take a look at more recent ones and select those that are relevant to your discussion and should be included, e.g. – but not limited to - (Hodzic et al., 2016, 2020; Huang et al., 2020; Liu et al., 2021; Pai et al., 2020)

p. 2, l. 32: ‘heterogeneous chemical and gas-to-particle reactions’ should be replaced by ‘heterogeneous chemical reactions and gas-to-particle conversion’

p. 3, l. 17: Add ‘good’ or ‘improved’ before ‘air quality’

p. 5, l. 11: ‘...are about half to several hundred meters away from the sampling site.’ – It is not clear what ‘half’ relates to in this context.

p. 5, l. 27: 51.1%% - redundant ‘%’ sign

p. 6, l. 5: Define DHOPA

p. 6, l. 7: ‘3-acetuldipic acid’ – please clarify this species name. It does not show up in Tables S1 or S2 and does not seem to be a common name. I assume you might mean acetyl adipic acid? (If so, please also correct Figure 4k)

p. 8, l. 15-22: I am not sure that I understand this new text, in particular the last sentence. If conclusions based on the 2-MT/triol ratio as derived from lab measurements are rather ambiguous, why do the large differences in observed ratios here lead to the conclusion that more vertical SOA measurements are needed? Obviously the 2-MT/triol ratio is not useful in concluding on SOA formation and modification processes.

p. 9, l. 15: ‘formation of E2’ should be ‘air masses during E2’ (or similar)

p. 10, l. 2: Please add a reference to the statement “ASOA is a larger contributor to the loading of SOA and the formation of air pollution in urban areas.”

p. 10, l. 14: Do you mean ‘biogenic aerosols’ by ‘natural aerosols’?

p. 10, l. 14-17: It is not clear how this text relates to your findings. Did you also observe higher BSOA formation when anthropogenic factors were enhanced? Are you referring to effects such as enhanced BSOA yields at high NO_x levels or similar? Make the connection of the literature studies to your findings here clearer.

p. 11, l. 21: 'We found that the fractions of ASOC decreased and Iso_SOC increased for the emission controls' – This sentence is not clear. Should it read '...as a response to the emission controls'? Please clarify.

Data availability: Please note our guidelines for Measurement Reports that state that 'The data presented in measurement reports must be openly accessible in accordance with the EGU data policy.'
https://www.atmospheric-chemistry-and-physics.net/about/manuscript_types.html

Please make the data available in a public data repository
https://www.atmospheric-chemistry-and-physics.net/policies/data_policy.html