

Referee 3:

L. 12: I suggest to include here which oxidants were used to generate the SOA.

This information is given in the main text and the authors aim to keep the abstract short and concise.

L20: It is not clear what you mean by “illustrate”. Please use a more scientific description. Please add information about the temperatures.

“illustrate” has been changes to “show”. The temperatures are listed in L16-17.

L21: I suggest to add more information about your results here to describe what you mean by “significant”.

Details about the significant changes in the samples composition are given in the main text and we like to keep the abstract short and concise.

L53-61: This section contains speculations and broad criticism of previous studies. I suggest to change the wording to avoid these broad accusations of unspecified previous studies.

The authors think this comment is not a “broad accusation” but it is rather highlighting the fact that detailed information about sample storage conditions is often missing in previous studies.

L70: Please state purities if known.

The purities were added (L70-71).

Section 2.2: The conditions for laboratory generation of SOA samples should be described in much more detail including the OCU in the main manuscript. How much ageing does this compare to (oxidant concentrations, days)?

In L79 we refer to our previous publication where the OCU is described in much detail. Unfortunately, aging times or OH concentrations were not characterized in this study.

Furthermore the dates of ambient sampling should be listed, as well as supporting measurements such as PM levels.

The dates are listed in Table S2. No additional information was collected.

L90: Please provide this information, maybe in the SI.

L90 refers to Table S2 in the SI providing this information.

L101-102: What was the precision of these volumes? Please give the appropriate number of digits.

The type of Pipettes used and the extra digits were added to the text.

L113-115: These lines need revision regarding: liquid chromatographic measurements, split sampler, for separations. Please rewrite to clarify and improve the (scientific) language.

L115-116 was rewritten. "Split sampler" is the name given by the manufacturer.

Section 3.3. It is important to consider the influence of the time of year on the results.

All samples are collected in the same month (May 2022) as given in Table S2.

It is very interesting that the conclusion in section 3.3 is that ambient samples are less affected by the storage conditions. Could this difference be due to a high content of freshly formed reactive species (HOMs, peroxides etc.) in the laboratory-generated SOA?

Yes, this could be a reason.

Conclusion L359: This sentence seems quite speculative.

Our data shows that individual organic particle components change over time when kept at room temperature for ambient samples collected with a high-volume air sampler as discussed in section 3.3. Concluding that this needs to be considered for samples which are kept inside of an automated sampler at room temperature or above does not seem speculative.

Fig S4: Which type of SOA is shown?

This information was added to the caption (now Fig. S5).

Fig. S2 and S5: Numbers in dark blue markers are not visible.

The color of the labels was adjusted.

Line 10 artefactual – please check that this is a correct word

According to Collins dictionary it is.

L18: Seems that a word is missing after chromatography – with? coupled to?

No word is missing, this abbreviation is widely used in other studies and by the manufacturer.

L50: exhibit -> show?

Exhibit was changed to show.

L62: define – I assume you mean “identify” or “characterize”.

Define was changed to identify.

L127: AGC target of 3E6 – please clarify

Automated Gain Control (AGC) was added to L129.

L164: I suggest to mention the oxidants again.

This information is given in the method section.

L297: generates -> generated

Generates was changed to generated.