

Responses to the editor:

We thank the editor for the careful review of our manuscript. The comments and suggestions are greatly appreciated and have helped to further improve the manuscript. As shown below, all the comments have been addressed. In the following, please find our responses to the comments and the corresponding revisions made to the manuscript. The point-by-point comments are addressed in the following text. The original comments are shown in italics and responses are in normal font. The revised parts of the manuscript are in blue. The line numbers here refer to the clean version.

Comments:

1. *Line 321 still uses the word "tracer", as objected to by Referee #1. ... "We identified aqSOA tracers in cloud droplets ..." Please modify this sentence as you have done elsewhere in the paper.*

Response: Accepted. We apologize for the omission. This has been modified in line 284-285 as follows:

“We identified **enriched OA compounds in cloud droplet residuals** by comparing the intensity fractions of all compounds between **CDR** and CF using a t-test at a significant level of 0.05.”

2. *The word "adjacent" is still used on Line 360 of the revised manuscript (excerpt below), which is even more confusing as written than the line objected to by Referee #2 where the word "adjacent" was removed. "OA in cloud droplets contained higher numbers of C, O, and N atoms, exhibited a CH₂-based homologous series, and showed an enrichment of higher-molecular-weight compounds compared with adjacent cloud-free aerosol particles". As written here, a reader might conclude the authors are referring to interstitial aerosol particles.*

Response: Thanks for pointing this out. We have revised line 357-361 in the manuscript as follows:

“OA in cloud droplets contained higher numbers of C, O, and N atoms, exhibited a CH₂-based homologous series, and showed an enrichment of higher-molecular-weight compounds compared with **aerosol particles sampled under the temporally closest cloud-free conditions**, collectively highlighting the importance of accretion reactions in cloud processing of OA at the molecular level.”

In addition, we also revised the sentence containing “adjacent” in line 152-154 of the Methods section:

“Of the 16 recorded cloud episodes, **we selected those without precipitation to avoid the influence of wet deposition and with a cloud-free period within <2 h from the cloud episode, and for which CDR, INT, and CF samples were all available.**”

3. *The editor also requests that the authors modify the term "Cloud Droplet (CD)" to "Cloud Droplet Residual (CDR)", since soluble organic gases may be lost during the evaporation process in the GCVI, which makes CD and CDR*

distinct.

Response: Thanks for the suggestions. We agree with the editor's concern. In the original manuscript, we used the term "Cloud droplets (CD)" to emphasize the sample type measured and provided a note in the Method section; however, this may have caused ambiguity and potential misunderstanding. The term "Cloud droplet residuals (CDR)" is more appropriate for clearly
35 addressing the scientific questions. Accordingly, all references to "Cloud droplet residuals (CDR)" have been revised throughout the text, figures, and tables in both the main manuscript and the Supplementary Information, as documented in the revised files.