

General.

We would like to appreciate the editor for providing the valuable comments to improve the manuscript. We have revised our manuscript by fully taking the editor's comments into account. Responses to specific comments are described below. All the changes made and appeared in the revised text are shown in red. All detailed answers to comments are displayed in blue.

Comments of editor and our responses to them

The authors have addressed the reviewers' questions and concerns comprehensively. However, the abstract and concluding sections are missing some elements required by the journal. I ask authors to revise those sections according to the ACP Guidelines for the title, abstract, and concluding section:

https://www.atmospheric-chemistry-and-physics.net/policies/guidelines_for_authors.html.

Response: We sincerely appreciate your careful review of the manuscript. We have updated the relevant content.

Lines 24–26: ...Marine atmospheric organic aerosols play a pivotal role in regulating global climate dynamics and influencing marine biogeochemical cycles. Compared to the extensive research on marine isoprene-derived secondary organic aerosols (SOA), the origins of marine aromatic and aliphatic organic aerosols remain elusive...

Lines 521–543: Based on our current understanding, this study represents the inaugural instance of simultaneous comprehensive characterization of OSs and NOCs (in both ESI+ and ESI– modes) in PM_{2.5} in tropical marine areas, particularly in the Sansha area with minimal anthropogenic pollution. The significant correlation ($r = 0.61–0.71$, $P < 0.01$)

between estimated surface seawater isoprene and OS_i and OS_m indicated the important role of marine biological emissions in the formation of marine aerosol BSOA. Integrated analysis of air mass backward trajectories, Mantel tests, PCA, and specific molecular tracers (e.g., C₆H₅O₄S⁻ and C₇H₇O₄S⁻) revealed that precursors originating from the marine environment may substantially contribute to the formation of aliphatic and aromatic OSs and NOCs in the Sansha area. We concluded that the emissions of marine organisms can contribute to the formation of both typical BSOA (i.e., isoprene and monoterpenes-derived species) and aliphatic- and aromatic-derived SOA in this sea area. A recent study in the Yellow Sea of China has reported that marine phytoplankton or microorganisms can contribute to the formation of marine aerosol OS_i and OS_m (Wang et al., 2023). However, the available information regarding the origins of aliphatic and aromatic OSs and NOCs in marine aerosols was previously inadequate. It has often been assumed that aliphatic and aromatic pollutants in marine aerosols are predominantly derived from long-range atmospheric transport from land, with less consideration given to local marine-derived sources or secondary formation (Zhou et al., 2023; Sun et al., 2023; Hansen et al., 2014). Thus, this is the first field observation case to demonstrate that marine organisms may also provide important aliphatic or aromatic precursors for the formation of aliphatic and aromatic OSs and NOCs.

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