

The manuscript appears to be very strong after the revision, and I recommend publication in ACP after a few technical revision.

Technical comments (there may be more, please proofread):

Line 31- “undefinition” to “undefined”

Line 199 - “thought” to “though”

Line 275 - “at there” to “there”

Line 325 - “almost” to “mostly”?

Line 325 - “region IV” was never introduced in the main text. If it is necessary to be named as region IV, the authors should define it. If not necessary, the authors can consider removing the naming of region IV and just mention that it is a region categorized as protein -like...

Line 345 - “indicating different chemical structures”. I understood that the authors performed water extraction first, then methanol extraction. I just wanted to suggest that this is a good location to briefly remind the readers about this by discussing that the water-soluble fraction is already extracted with the WSOC, and MSOC contains a distinct population of compounds.

Line 396-397 - “Combing these results with the WSOC mentioned above results and comparing the...” Awkward sentence; please restructure.

Line 408 - “easily ioninzed” to “readily ionizable”

Line 466 - “had a resemble VK diagram to that of...” to “had a VK diagram similar to that of..”

Line 498 - “new sight for” to “new insight into”?

Line 559 - “could be more detected in the atmosphere” - unclear phrase.

Line 627 - “Comparison with” to “Compared to”

Line 628 - “common in” should be “common to” here

Line 669 - “Next, we further discussed” - did the authors mean “In the next section, we will further discuss”?

Line 671 to 673. This sentence was very unclear