Atmos. Chem. Phys. Discuss.,
https://doi.org/10.5194/acp-2019-878-RC1, 2020

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Molecular and spatial distributions of dicarboxylic acids, oxocarboxylic acids and α-dicarbonyls in marine aerosols over the South China Sea to East Indian Ocean" *by* Jing Yang et al.

Anonymous Referee #1

Received and published: 12 January 2020

This observation-base study presents the data of organic aerosol species from a cruise campaign from the South China Sea to the eastern Indian Ocean. It shows the spatial variations of dicarboxylic acids, oxocarboxylic acids and α-dicarbonyls in the marine aerosols in the investigated oceanic areas. It also discussed their sources and major influence by the oceanic emissions and long-range transport. It could be accepted for publication in ACP after revision.

1. I would suggest the authors to re-organize the manuscript in order the present their findings in a clearer way. In the current version, it was not easy for me to follow and

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Discussion paper

to understand the major findings. Some part(s), e.g. their fraction in water-soluble organic carbon, can be moved above to a part maybe mainly describing the overview of data. If possible, the data of ions as well as organic carbon, elemental carbon may be shown there to let the readers quickly get an overview of the data. The authors should also re-organize the discussions for a better presentation of their results and conclusions. For example, the ratios of C3/C4 dicarboxylic acids and their correlations are separated into two different parts, which should be merged. These discussions are highly related.

2. I would suggest the authors to polish their findings. What are the major findings in this observation? What information would they like to bring to the readers?

3. Be very careful to deal with the correlations and ratios, I found they may suggest different/contradictory conclusions in the discussion.

3. The authors should pay attention to their citations. In these oceanic areas, there are some other observations on organic aerosols which should be inspirational for the authors when undergoing their discussions.

4. Some figures can be moved to the supporting information. For example, Figure 2 only shows the chemical structures of the diacids. It is hard to get information from Figure 9 efficiently. Figure 8 could also be moved to the SI.

5. L301-305: I do not understand why? From the ratios, we could say these aerosol particles are aged but it is hard to know if they are influenced by marine biota or continental anthropogenic emissions.

6. L361-365: The sentence is too long and hard to be followed. Please rephrase it.

7. Line 394-396: I do not see the high Chlorophyall-a concentrations in the SCS in the satellite image (Figure 1a). A close look at a special case of some samples (e.g. 55-60) would be necessary.

8. Minor errors: L210: it should be “lower than” L298-299: should the sentence be

“the more the aerosol particles are aged, the higher the ratios are”? L311: “attribute for”should be “attribute to”

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