Atmospheric Chemistry and Physics Discussions

Atmos. Chem. Phys. Discuss., referee comment RC2
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Comment on acp-2021-258

Anonymous Referee #2

Referee comment on "Mapping gaseous dimethylamine, trimethylamine, ammonia, and their particulate counterparts in marine atmospheres of China's marginal seas – Part 1: Differentiating marine emission from continental transport" by Dihui Chen et al., Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2021-258-RC2, 2021

This manuscript presents cruise measurements of gaseous and particulate amines along with ammonia over Yellow sea and Bohai sea during wintertime. Measurements of basic gases and particulate composition are sparse over oceans. Thus, this study presents important progress on our understanding of sources of ammonia and amines, and their roles in particle formation over oceans. The paper can be publishable if the following issues and concerns are fully resolved.

- Between lines 140-145, the comparison was made between two different time periods and this might be meaningless unless the authors can provide strong rationale to do so. Also, conclusions made on the origin of the particulate TMAH+ between lines 177-178 were based on similar comparison. Can the authors be sure that the TMAH+ concentration was highest in summer than in any other seasons?
- What are the backgrounds or interferences for both NH3 and NH4+, the gaseous amines, aminum from the URG and potentially affect the measurement results?
- The authors claim that the TMA and TMAH+ are mainly from sea spray aerosols and hence they can be used as tracers for other basic compounds. Do the authors have any evidences between concentrations of the above two species and concentrations of sea spray aerosols or their makers? In addition, how confidence is for the measurements of the above two species?
- Rather minor: there are no section numbers for introduction and the second section.