

Re-review of Luo et al. submission:

The authors have addressed a substantial amount of both reviewers concerns. However, there are a few points that I think are critical that have not been adequately addressed. I still think it is very misleading to call any of these background aerosols. The authors are using this as a designation for aerosols that are not influenced by sea fog or dust, but there is a history in the literature of what a background aerosol is, and this is not an appropriate usage, even with a definition in the manuscript.

It appears based on the authors reply that there are no true experimental blanks. They measured the values on the filters alone, i.e., a filter blank, but they never deployed those filters into their setup on the cruise to determine a methodological blank. This is a serious problem as these types of collections on ship can quite easily have handling blanks due to ship exhaust and not being in a clean laboratory.

The average concentration for the aerosols is not useful given the incredibly wide range in aerosol concentrations reported. In addition, the filter blank value should be used to correct the reported values.

Ammonium is normally fine mode aerosol, except in coastal areas with mixed pollution and marine aerosols, where it frequently is present in the coarse mode (e.g., Yeatman, S.G., Spokes, L.J., Dennis, P.F. & Jickells, T.D. 2001. Comparisons of aerosol nitrogen isotopic composition at two polluted coastal sites.). I do not think it is appropriate to use deposition velocities for TSP samples given the potential for fine mode ammonium nitrate due to high concentrations pollutants (i.e., nitrate in the fine mode), and coarse mode ammonium. Everything related to the dry deposition N fluxes should be removed. Knowing the actual size of each aerosol type in a complex highly polluted yet marine area is critical, it is not okay to just use the typical assumptions. All of section 3.3 should be removed as well as Figure 8.

The propagated errors for WSON concentrations are huge – this needs to be visible in all figures and its impact on interpretation should be accounted for.