Atmospheric Chemistry and Physics Discussions

Atmos. Chem. Phys. Discuss., referee comment RC2
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Comment on acp-2021-460

Anonymous Referee #2

Referee comment on "Contribution of combustion Fe in marine aerosols over the northwestern Pacific estimated by Fe stable isotope ratios" by Minako Kurisu et al., Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2021-460-RC2, 2021

This work is a well written manuscript describing size-fracionated aerosol data collected on two cruises in the Pacific Ocean. The authors report total and ultrapure water soluble iron concentrations, calculate fractional solubility, and δ56Fe isotopic values . The study focuses on determining the relative contribution of combustion Fe and the impact on the observed fractional solubility. The results are also compared with outpus from the IMPACT model.

I only have minor comments and have determined the manuscript to be nearly ready for final publication. This is a timely contribution to the literature as stable isotope studies are still rare in the marine aerosol community.

Minor Comments:

Line 91: In reference to Myriokefalitakis et al (2018), the authors state, "such as the relative fraction of combustion and dust Fe to the soluble Fe that is present over oceanic regions...". I believe this intends to refer to the relative contribution of combustion and dust Fe to the soluble Fe. The term fraction was a bit confusing in this context.

Line 104-105: It is not clear what is meant by "which is not directly associated with the observed T-Fe and S-Fe concentrations". I belive the authors mean that we are unable to determine the relative contributions of combustion Fe and natural Fe (assumed to mean mineral dust). Suggest rewording to "which is not possible from the observed T-Fe and S-Fe concentrations".

Line 142: Were certified reference materials digested and analyzed to assess the efficacy

of the digests? This data should be included if available.

Line 150: >18.2 MΩ·cm

Line 156: What Fe isotope was measured by the quadrupole ICPMS? Were any measures taken to remove polyatomic interferences?

Line 274: What were the sources of the large errors?

Line 279: How were the EF values tested to determine if there statistical differences across the groups?

Line 299 Fig3 caption: Delete "was not enough"

Line 380: change "sorely" to "solely"

Line 398-399: The final sentence does not fit here. The same statement follows at Line 421 after it has been more fully justified. Suggest delete the first use where the claim appear overly confident.

Line 459: Parantheses around acidic are not necessary

Line 560: Perhaps remind the reader what Comp 3 refers to.

Line 581-582: Change both uses of "is" to "are" for correct subject/verb agreement.