

We thank the editor and the reviewers for their helpful comments. We have addressed all the remaining comments, which further improved our manuscript. Below is our point-by-point response with details of the changes made.

Editorial comments:

- a) Regarding figure 1: please ensure that the colour schemes used in your maps and charts allow readers with colour vision deficiencies to correctly interpret your findings. Please check your figures using the Coblis – Color Blindness Simulator (<https://www.color-blindness.com/coblis-color-blindness-simulator/>) and revise the colour schemes accordingly with the next file upload request.

We have now changed the middle and bottom panels to make them readable to colourblind readers.

- b) Tables 3 and 4 contain coloured cells or/and coloured values. Please note that this will not be possible in the final revised version of the paper due to HTML conversion of the paper. When revising the final version, you can use footnotes or italic/bold font.

We have now removed the colour shading and used bold characters for highlighting instead in both tables.

Reviewer 2 Akinori Ito

General comments

When you use the word of solubility or dissolved fraction, the reader assumes that you measured total dissolvable and water-soluble or dissolved concentrations and then calculated the fractional solubility or dissolved fraction, as you mentioned previous studies such as on l.62 and l.399. However, you measured only the dissolved concentrations in the fog samples. Then you used dissolved fraction for the ratio of the dissolved concentration in fog to TSP. Please do not use the same word with different meanings.

We have now replaced “dissolved fraction” with either “dissolved metals” or “concentration of dissolved metals” throughout the manuscript.

Specific comments

l.65: How did you consider photo-reduction processes of marine biogenic emissions, photo-reductive dissolution of ferrihydrite by methanesulphinic acid, Fe(III)-carboxylate complexes in this paper, as a complement to those findings? Please discuss this on l.410 and consider rephrasing this.

We have realised that our phrasing could be misleading. We haven't specifically looked into photo-reduction processes, so we have now removed: "as a complement to those findings" and instead the sentence starts with "In this paper, we present a comparison...".

l.150: Please rephrase fraction by metal, or explain the fraction to what.

We have now changed the sentence as follows "dissolved metals are defined operationally as passing through a 0.2 μm filter which may include nano-sized particles as reported in previous studies (Giorio et al., 2025; Shi et al., 2009). One difference between the concentration of dissolved metals in fog ...".

l.360: This may be one of the reasons of enhanced dissolved Fe concentrations in fog samples compared to the TSP samples. Please discuss hydroxide in the TSP samples on section 4.5.

We thank the reviewer for this suggestion. We have now modified the sentence accordingly at now line 366: "the real speciation picture may be shifted in favour of a larger proportion of hydroxide formation for some metal ions, which could limit their ability to dissolve in water." We have also added a comment to section 4.5, at line 398: "In the case of TSP, iron oxides/hydroxides contribute 39-52% and iron clays contribute 38-52% (Table 4), making the majority of Fe insoluble. In fog samples, the contribution of these two classes of minerals is more variable, with iron oxides/hydroxides contributing 27-56% and iron clays contributing 32-64% (Table 4).".

l.409: The reference does not show more contribution of smaller particles with a higher soluble iron content to fog droplets compared to larger particles with a lower soluble iron content. Please check and correct this.

We have now rephrased the sentence as follows: "Additionally, Marcotte et al., (2020) showed that iron oxide solubility in mineral dust decreases with increasing particle size. Therefore, as activation to droplet is a size-dependent process, there may be a fractionation of soluble iron whereby, for example, smaller particles with a higher soluble iron content may contribute more to fog droplets compared to larger particles with a lower soluble iron content."