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Comment on acp-2022-597

Mingjin Tang (Referee)

Referee comment on "Measurement report: Abundance and fractional solubilities of aerosol metals in urban Hong Kong – insights into factors that control aerosol metal dissolution in an urban site in South China" by Junwei Yang et al., Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2022-597-RC1, 2022

Yang et al. collected size-segregated aerosol particles at an urban site in Hong Kong (China) at four different seasons, measured abundance and solubility of 10 metals, and investigated factors which modulated metal solubility. They found that for a given metal, in general solubility was higher in fine particles than coarse particles. In addition, they concluded that sulfate played a key role in modulating metal solubility in fine particles. Overall, the date presented in this manuscript is very valuable, and the findings are also interesting. I would recommend it for final publication after the following comments are addressed.

Major comments:

Line 174-178: After sonication, how were insoluble materials separated from the aqueous extracts? Was it achieved by high speed vortexing? Filtration is usually used by many studies, with filter pore-size clearly stated. More information should be provided here.

Line 250-259: Can the authors show and discuss correlations between Al and other metals? This may give further insights (in addition to size distribution) to their sources.

Line 352-353: Several previous studies, including our work (Zhang et al., 2022) and references therein, also found that Fe solubility (as also other metals) was higher in fine particles than coarse particles. The authors may consider discussing these studies.

Line 392-405: As this work did not manage to detect oxalate in aerosol particles, I feel this paragraph is tedious and not very relevant. The authors may consider making it more concise.

Minor comments:

Line 67-69: The first sentence only mentioned “many atmospheric processes”, but the second and third sentences mainly discussed ocean biogeochemistry. The authors may need to modify the first sentence to make it more appropriate.

Line 203-204: would it be enough to use only one unit (ng/L) here?

Line 239: It may be better to use particle diameter for x-axis in Figure 1.