

Interactive comment on “Concentrations and solubility of trace elements in fine particles at a mountain site, southern China: regional sources and cloud processing” by T. Li et al.

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Solubility refers to the extent to which a substance dissolves in a particular solvent. According to IUPAC definition, solubility is the analytical composition of a saturated solution, expressed in terms of the proportion of a designated solute in a designated solvent (<http://goldbook.iupac.org/S05740.html>). The solubility of a substance fundamentally depends on the physical and chemical properties of the solute and solvent as well as on temperature, pressure and the pH of the solution (<http://en.wikipedia.org/wiki/Solubility>).

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In this paper, Li et al. (2015) defines element solubility as the percentage of water-soluble concentrations of an element divided by its total concentration (Page 13018, Line 3-4). This definition has a conflict with the traditional concept of solubility in chemistry. The word “solubility” is used in the title of the paper, and appears frequently in the Abstract and the Introduction, but its own definition is not available until Sect. 3.4.

The authors also use the phrase “total fraction” to describe the total concentration of trace elements in fine particles. In addition to ionic compounds (water-soluble fraction) and elementary substances of trace elements, are there any other forms of elements existing in the total fraction which were experimentally analyzed in this study? Again, “element solubility” in this study appears to have nothing to do either with the solubility of ionic compounds or the solubility of elementary substances.

Reference

Li, T., Wang, Y., Li, W. J., Chen, J. M., Wang, T., and Wang, W. X.: Concentrations and solubility of trace elements in fine particles at a mountain site, southern China: regional sources and cloud processing, Atmos. Chem. Phys. Discuss., 15, 13001–13042, 10.5194/acpd-15-13001-2015, 2015.

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