

From Ref#1

Comments 1: In the Abstract (lines 37-38) SO_4^{2-} (sulphate), CH_3SO_3^- (methane sulphonate) and NO_3^- (nitrate) are denoted by "acidic" species. From a chemical point of view this is definitely wrong: actually, the corresponding acids are H_2SO_4 (and HSO_4^-), $\text{CH}_3\text{SO}_3\text{H}$, and HNO_3 !

Reply: The terms of SO_4^{2-} , CH_3SO_3^- , and NO_3^- were changed to H_2SO_4 , $\text{CH}_3\text{SO}_3\text{H}$, and HNO_3 in the text of abstract.

Comments 2: Page 10, line 172, typo: aerosol (not "aerool").

Reply: The typo was corrected to "aerosol".

Comments 3: Page 20, line 364, typo: several micrograms per cubic meter (not "milligrams").

Reply: The typo was corrected to "micrograms".

Comments 4: Page 35, line 668: Laskin et al., 2012 is absent in the reference list.

Reply: Reference of Laskin et al., 2012 was added into "References".

Comments 5: Page 45, line 872: supercooled or subcooled (not "super-cold").

Reply: "Supercooled" was used in the text.

From Ref#2

Comments 1: lines 183-184: what is meant by "...constituents can be localized in each aerosol particle.."? Please reword.

Reply: As typo was found, the typo was corrected. Then we reworded this sentence as follows.

Therefore, aerosol modification and fractionation might be negligible, although aerosol constituents can be solidified separately in each aerosol particle because of efflorescence of deliquescent aerosol particles under dry conditions.

Comments 2: lines 266-267 and 272-274: “respectively” has not been used in a correct way.

Reply: “Respectively” was removed in the sentences.

Comments 3: line 301: maybe should be expressed “1-2 orders of magnitude”

Reply: In the sentence, statement was changed to “1-2 orders of magnitude”.

Comments 3: lines 468-470: articles missing

Reply: Detection limit of relative abundance depends on analyzed particles in this study, articles were not required in this sentence. The sentence was reworded to

Considering the mean analyzed particles in each sample in this study, the detection limit of relative abundance was ca. 0.1% in fine mode and 1-2% in coarse mode except for samples with lower aerosol density on the substrate in coarse mode.

Comments 4: line 534: something wrong in this sentence

Reply: Typo was found and corrected as follows.

Because horizontal distributions of the modified sea-salt particles and mineral particles internally mixed with sulfates were described, respectively, in sections 3-5-1 and 3-5-3, their description is excluded from this section.

Comments 5: lines 572-573, 599-600, 614-615 and 626-628: The way of expressing the ranges is confusing. I would recommend using either the format “..was in the range n.d – N %” or format “..ranged from n.d. to N%”

Reply: These sentences were reworded to format of “..ranged from n.d.