

Response to Anonymous Referee #1:

10. Is the overall presentation well structured and clear? From line 22 Page 4091 to line 5 page 40929(13 lines), more models were introduced, in which there were six lines to introduce the ADDEM model, but it was not used in this work. In fact, model ISORROPIA II was used. It is better to give some words to describe why this model was chosen.

Response: Thanks for your comment. We have rephrased this paragraph. The introduction about the ADDEM model has been shortened. More sentences to describe the ISORROPIA II model have been added. The reason for choosing ISORROPIA II model in this work has been expounded in Section 3.3 in the text. These sentences have been revised as:

“Most models only consider how inorganic solutes influence the saturation vapour pressure as solute (Raoult effect). Topping et al. (2005a, 2005b) developed a model called ADDEM, which considers both the Raoult effect and the curvature effect of the organic/inorganic aerosol components. Chang et al. (2001) calculated the purely theoretical water content of ambient aerosols with the ISORROPIA model to adjust the discrepancy of PM₁₀ concentrations between the results measured by the β -gauge monitor and sampled by the hi-vol sampler. Hennigan et al. (2008) predicted the liquid water concentration with the ISORROPIA II thermodynamic equilibrium model, using mean sulfate, nitrate, and ammonium concentrations from the August 1999 Atlanta Supersite data. Though the model does not consider the effect of organics on water uptake, they thought that the high inorganic concentrations of PM_{2.5} suggest that the model results provide a reasonable estimate.”

12. Are mathematical formulae, symbols, abbreviations, and units correctly defined and used? There were too many abbreviations to be defined and used. Some abbreviations need not be defined, since they were not used frequently

Response: Thanks for the comment. The following rarely used abbreviations are removed from the text: HDMPS, DAASS, VGF, SMPS, PRD, AWS, CPCs.