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Atmospheric Chemistry and Physics Discussions

Interactive comment on "A comparison of water uptake by aerosols using two thermodynamic models" *by* L. Xu et al.

Anonymous Referee #2

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The extensive comparison of two thermodynamic models: EQSAM3 and EQUISOLV2 shown in the present manuscript is very useful for both climate and air quality modelling communities.

However, I still recommend to the authors the addition of one more test such as a modification of bi-salts treatment in EQSAM3, in order to show the reduction of the discrepancies between the results of the two models.

I also suggest the addition of a more extensive discussion on the use of these equilibrium models in non-equilibrium conditions at the end of Section 5 since, at present, both climate and air quality models tend to run at high spatial resolution with time steps of order of minutes.

I also suggest to the authors to change the title in something like in “A comparison of two inorganic thermodynamic models: EQSAM3 and EQUISOLV II” in order to reflect the content of the manuscript. The manuscript does not address only the water content predictions.

Minor comments:

-in the first part of the manuscript, dedicated to model to model comparison, please change the word “overestimate” with something like “higher values”. The term “overestimate” is more appropriate for the comparison of model results with observations.

-please make the graphs visible also on the paper. In the present form, the results can be seen only making 400% zoom on screen.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 9551, 2009.