

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

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Received and published: 12 June 2009

I followed the discussion by the referees and the colleagues that introduced comment SC C1712 on the pertinence of comparing EQSAM3 to thermodynamic models. I certainly support the key recommendation to check the thermodynamic basis of EQSAM3.

The evaluation of model results may be particularly relevant in that situation. While I will not make myself statements on the extent and suitability of the comparison presented (noting that Reviewer #1 expressed the need for comparison with high accuracy benchmark models), I would like to comment on specific issues :

- something is likely wrong in figure 5, panel (h). First, this panel should logically refer to EQSOLV II, not to EQSAM3 as stated on the vertical axis. Second, as I would expect

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observations to be the same as in panel (f), it seems that each of the dots should have the same abscissa in both scatterplots. Why do observation values actually shown in panels (h) and (f) appear to differ ? This may have consequences on the evaluation and comparison between the models.

- figure 6 shows large discrepancies between EQSAM and observations. As written in section 4, "EQSAM3 predicts a scattered departure from the observations at both high and low concentrations". Isn't it too optimistic to report in the conclusion about this that "both EQSAM3 and EQUISOLV II overpredicts particulate nitrate at lower temperatures" ? The results reported on figure 8 also seem to suggest that the average error is much larger in EQSAM3.

[Interactive comment on Atmos. Chem. Phys. Discuss., 9, 9551, 2009.](#)

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