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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Modelling of gaseous dimethylamine in the global atmosphere: impacts of oxidation and aerosol uptake" *by* F. Yu and G. Luo

Anonymous Referee #2

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This manuscript for the first simuates the global distribution of DMA/methylamines concentrations, and discusses its impact on new particle formation. The work is novel and can be published in ACP, while i have a few major comments for the authors to consider, as appended below:

1) It is not clear to me, that why DMA is selected as the model amine. is it because there is relatively enough info available in the literature for DMA than other amines? 2) The discussion based on the simulated results is somehow weak at its present form, can be expanded accordingly. 3) The simulation uses the spatial distribution and seasonabl variations of ammonia for the DMA, due to the lack of info. for amines. This is reason-

able, as the emission sources of amines are indeed similar to ammonia, although with different emission fluxes. However,Is there any way to evaluate this assumption, for example, by some sensitivity tests upon changing the spatial and seasonal variations in the model simulations?

Also, as the distributions of ammonia can also be used for other methylamines (MMA or TMA), and the estimated fluxes, uptake coefficients, etc., are also available for MMA and TMA, this simulation can be conducted on them too. In this regard, i believe FIgure 5 can be modified. I suggest the authors to do so, the modeling results with more methylamines should make the paper more scientifically sound and valuable for other future studies.

Other specific comments: 1) Both in the abstract and methods, the authors talked about "amines", while the results are actually only for DMA. Some clarifications are necessary. Just one example, in P17732-line 20, the reaction coefficient 6.54*10-11 is for DMA or for what amines? 2) P17729-line 21: "several others" to "several other studies" 3) tile of section 2.1, can be changed to "Sources and fluxes" as you also mentioned the emission fluxes.

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 17727, 2014.