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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Assessing the ammonium nitrate formation regime in the Paris megacity and its representation in the CHIMERE model" *by* H. Petetin et al.

Anonymous Referee #1

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The authors have presented an extensive gas and particle chemical composition measurement data along with 3-D chemical transport modeling results. The measurement protocols are quite good and the QA/QC procedures look fine. They used the CHIMERE regional model which is also quite well documented. Their findings are also quite interesting ones, showning limitations of the model itself and input data (emission data) with interesting discussion. Thus, I recommend the manuscript be accepted for publication in the Journal with some minor revisions and discussion on these points: 1. It would be better if the module(s) on deposition processes be explained in more detail since the authors claimed deposition might be one of the important error sources for

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ammonia. 2. The authors claimed that crustal species were minor and I agree with the authors on it. Another point that should be checked for the validity of the gas/particle equilibrium model is the effects of organic acids. Since some organic compounds (gas phase) were measured, a discussion on the effects of oreganic acids would be possible (though qualitative or semi-qualitative) 3. It would be nice to discuss on the sensitivity of ISORROPIA to the RH near to the deliquescence point of ammonium nitrate.

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 23731, 2015.

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