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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Impact of a new emission inventory on CAM5 simulations of aerosols and aerosol radiative effects in eastern China" *by* Tianyi Fan et al.

Anonymous Referee #2

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"Impact of a new emission inventory on CAM5 simulations of aerosols and aerosol radiative effects in eastern China" by Fan et al., compared the CAM5 model outputs with satellite and ground aerosol observations. The model outputs based on a new technology-based emission inventory MEIC are compared with those using IPCC AR5 emission inventory. The paper is well organized and the explanation of the experiments are clear. It is always good to have new data tested and explored to show their benefits. To be able to use new data to solve a science question is even better. This paper approves that using newly developed emission inventory, the annual mean AOD provided by CAM5 model is closer to satellite observation when compared with using old emission inventory. However, there are still scientific questions to be answered that

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could make this paper more meaningful to the community.

For example, Wang et al., (2016) described a mechanism of severe haze formation in two megacities in China, which may explain part of the large differences between the CAM5 model and ground observations over Beijing and Xianghe. Also, the large differences between two inventories are within cities. The significant of this new inventory, instead of improving the annual mean AOD or altering the aerosol forcing, could be improving the regional air quality forecast.

Overall, I agree with Referee #1 that this paper needs more analyses to better understanding the model results.

References:

Wang, G., Zhang, R., Gomez, M.E., Yang, L., Zamora, M.L., Hu, M., Lin, Y., Peng, J., Guo, S., Meng, J. and Li, J., 2016. Persistent sulfate formation from London Fog to Chinese haze.ÂăProceedings of the National Academy of Sciences,Âă113(48), pp.13630-13635.

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