

***Interactive comment on* “To what extents do urbanization and air pollution affect fog?” by Shuqi Yan et al.**

Anonymous Referee #3

Received and published: 27 January 2020

Review of “To what extents do urbanization and air pollution affect fog?” by Yan et al.

This paper investigates the effects of urbanization on the fog formation in eastern China. The Authors study the effects of two important factors on the fog formation, i.e., urbanization and aerosol particles. Using the WRF-Chem model, the contribution of the individual and the combination effects of these factors to the fog formation are estimated. The data and the model used in this study are reliable, and the analysis of the results is supported this study. Because the region of this study (eastern China) is under a rapid development stage, the causes on the environmental and ecosystem effects need to be carefully studied. The content of this study fits the scientific committee needs, and suitable for the publication in ACP. I have some comments for the paper, and the paper can be published after the Authors carefully address my follow-

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ing comments. (1) The focus of this study is on the radiative fog. However, there are different fog formation in atmosphere. For example, the advection fog formation is often occurred in the coast of eastern China. The Authors should highlight that under different fog conditions (i.e., radiative fog or advection fog, etc.) what is the effects of the urbanization and aerosol particles on the fog formation. (2) Is this study suitable for the most of large cities in eastern China? (3) Some important references are missing. For example, Tie et al (2017) studied the important feedback of atmospheric moisture on the aerosol pollution in eastern China, which should state in the instruction.

References

Tie, X., R.J. Huang, J.J. Cao, Q. Zhang, Y.F. Cheng, H. Su, D. Chang, U. Pöschl, T. Hoffmann, U. Dusek, G. H. Li, D. R. Worsnop, C. D. O'Dowd, Severe Pollution in China Amplified by Atmospheric Moisture, *Sci. Rep.* 7: 15760 | DOI:10.1038/s41598-017-15909-1, 2017. Tie, XX, X. Long, GH Li, SY Zhao, JJ Cao, JM Xu, Ozone enhancement due to photo-dissociation of nitrous acid in eastern China, *Atmos. Chem. Phys.*, 19, 11267–11278, 2019.

Interactive comment on *Atmos. Chem. Phys. Discuss.*, <https://doi.org/10.5194/acp-2019-1045>, 2020.

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