Atmos. Chem. Phys. Discuss.,
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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Aerosol optical characteristics and their vertical distributions under enhanced haze pollution events: effect of the regional transport of different aerosol types over eastern China" *by* Tianze Sun et al.

Tianze Sun et al.

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Dear referee #2,

Thanks for your thoughtful comments and suggestion. We have taken account of the reviewer's suggestions and revised the manuscript carefully to meet all the reviewers' requirements. All the changes have been highlighted in the revised manuscript. My detailed responses, including a point-by-point response to the review's comments, are as follows:

General comments:

"The authors present a notable effort in investigating aerosol optical properties associated with typical haze events in the Yangtze River Delta, with distinct atmospheric environment from northern China garnered lots of attention. Compared with the few previous studies, this work gives a comprehensive insight in this wet and rainy region, and revealed the special role of regional transport, which can be an important reference to the community. Besides, some minor revisions are needed before publication."

Response: We appreciate the referee for the valuable and constructive reviews of our manuscript.

Specific comments:

1. "The specific scope of the Yangtze River Delta in Figure 1 left needs to be confirmed, and better give region of the Yangtze River Delta in the right." Response: Figure 1 has been modified in the manuscript (L724, P28) and uploaded.

2. "For the daily MODIS aerosol data, the Level 2 MODIS AOD at 10 km resolution can better show potential sources around the YRD." Response: Thanks for the valuable comment. We have altered the archive data of the Level 3 MODIS AOD to the Level 2 to better illustrate the AOD distribution over YRD region. And the Figure S2 in the supplement has also been modified and uploaded.

3. "It's difficult to quantify aerosol-PBL interactions directly from observations. To be rigorous, exact descriptions are suggested based on the current results and corresponding references such as: Tang et al., Mixing layer height and its implications for air pollution over Beijing, China, Atmos. Chem. Phys., 16, 2459-2475, doi:10.5194/acp-16-2459-2016, 2016." Response: Thanks for your thoughtful suggestion. We have carefully referred the corresponding references and cited them in the revised manuscript at Line43-45, P2 as "Based on Tang et al. (2016)'s research, the atmospheric mixing layer provide useful empirical information for improving

meteorological and atmospheric chemistry models and the forecasting and warning of air pollution."

Please also note the supplement to this comment:
https://www.atmos-chem-phys-discuss.net/acp-2017-805/acp-2017-805-AC2-supplement.pdf

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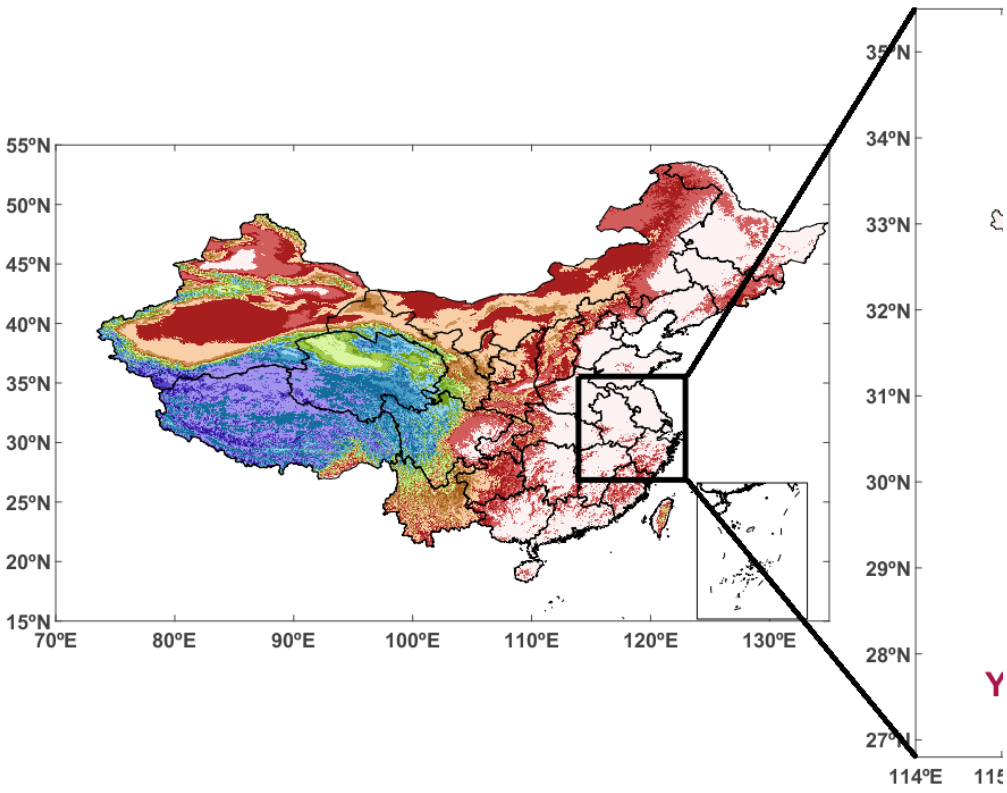
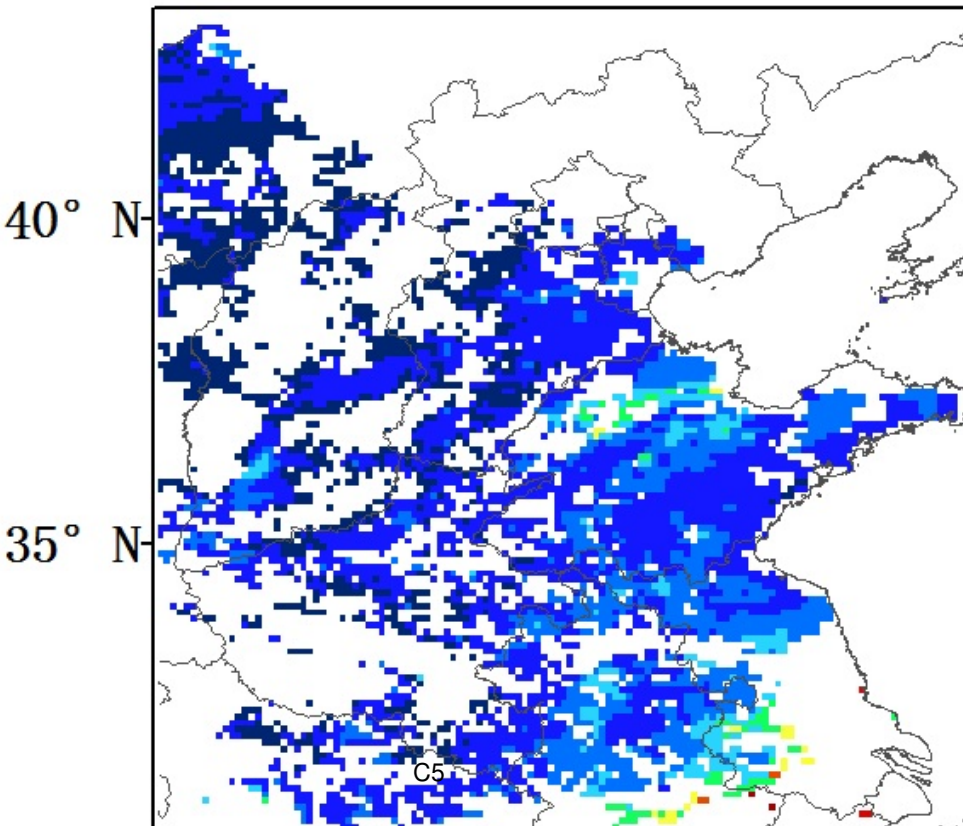


Fig. 1.

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