

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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Received and published: 9 January 2018

Dear referee #1,

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:

C1

General comments:

“This manuscript provides a precise and a valuable summary of the monthly aerosol optical properties and their vertical distributions in the Yangtze River Delta (YRD) region, and well analyzes the characteristics and meteorological conditions during the major transport periods in strengthening air pollution in YRD region. It is scientifically written, sound, original and well-structured. I recommend to accept it after minor revision as indicated below:”

Response: Thank you for the positive comments on our manuscript.

Specific comments:

1. “Line 96, ‘these’ can be deleted.” Response: It has been changed in the manuscript at Line100, P4 as “in conjunction with direct sun AOD data collected at same wavelengths”.
2. “Line 113, please pay attention to the usage of the preposition.” Response: The preposition has been changed at Line117, P5 as “The products of CALIPSO were used for this study, and these are available at the NASA Langley Research Center (<https://www-calipso.larc.nasa.gov/>).”
3. “Line 128, Please check the English grammar.” Response: It has been checked at Line132, P6 as “The software TrajStat (<http://www.meteothinker.com/products/trajstat.html>) (Ngan et al., 2015) was used.”
4. “Line 255, Please check the English grammar.” Response: It has been checked at Line258-260, P12 as “Cluster-2 travels on the lowest and fastest stemming from north of Anhui province, accounts for 30.95%, and correlates with the PM2.5 concentration of $74.45 \pm 30.17 \mu\text{g}/\text{m}^3$.”
5. “Line 291, “and” can be deleted” Response: It has been deleted in the manuscript at Line295, P13 “They are transported over long distances and their influence can be identified on regional even global scales.”

C2

6. "Line 408, Please check the English grammar." Response: It has been checked at Line413, P18" While aerosols transported from the northern, southern or desert areas contribute much to the ambient atmospheric pollution in the YRD region, a high concentration of aerosols with diverse properties are also emitted locally."

7. "Line 426, Please modify 'the heights of 3 and 5 km'". Response: It has been modified at Line431, P19 as "Furthermore, another layer identified as "dust" exists between the heights of 3-5 km".

Please also note the supplement to this comment:

<https://www.atmos-chem-phys-discuss.net/acp-2017-805/acp-2017-805-AC1-supplement.pdf>

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2017-805>, 2017.