

## ***Interactive comment on “Regional severe particle pollution and its association with synoptic weather patterns in the Yangtze River Delta region, China” by Lei Shu et al.***

**Lei Shu et al.**

minxie@nju.edu.cn

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Particle pollution has been raised wide attention in the world, and is quite prominent in China. Synoptic system is identified as one of the significant causes. This paper studied the relationship between particle pollution and weather pattern in the Yangtze River Delta region of China. The work is meaningful. The manuscript is well organized. [We appreciate the referee for the valuable and constructive reviews of our manuscript. We carefully revise the manuscript based on the following comments.](#)

I suggest to publish the manuscript after addressing the comments and sugges-

C1

tions as below:

1) In Figure 2 and 3, it is better to mark the city name near each point.

[Response: Thanks for the constructive comment. The city names have been added in Figs. 2-3 in the new revised manuscript.](#)

2) The study is discussed the regional air pollution, but the used pollution data are mainly based on the surface monitoring records in 16 cities. 16 points cannot well reveal the spatial characteristics of air pollution. So, it is better to use the MODIS/AOD data and add some more discussion based on them. The satellite information can help to show the regional condition.

[Response: Thanks for the constructive comment. In the new revised manuscript, the aerosol optical depth data from satellite observation \(MODIS/AOD\) are used to reveal the regional characteristics of aerosol pollution. The introduction of MODIS/AOD data has been added in Section 2.1. More discussion based on the AOD data has been added in Section 3.1.1, 3.1.2 and 3.3.1. These added data and discussion words can help us to understand the spatial distribution of aerosol in this region.](#)

3) The analysis of transport processes of particle pollution is limited to the geopotential height fields and wind fields at 850 hPa. It is better to give a more comprehensive comparison between different layers, for example, at surface layer, 850 hPa layer, and 500 hPa layer, etc.

[Response: Thanks for the constructive comment.](#)

[We have added the comparison of geopotential height fields and wind fields between different layers \(500, 850 and 1000 hpa\) in Section 3.3.2 of the new revised manuscript.](#)

[Meanwhile, in the new revised manuscript, we also removed Figs. 6-10 of the original manuscript, and replaced them with Figs. 7-11, which present the averaged](#)

C2

condition of all days for each weather pattern.

4) There are many grammar errors in this manuscript, including Lines 99-100, “a great deal of” are not a good choice of words. May be replaced by “a lot of researches”? Line 110, “focuses the pollution” should be replaced by “focuses on the pollution”. Line 271, “the most importance source” should be replaced by “the most important source”. Line 383, “occur for 14.3 percent of the days” may be revised as “occur in 14.3 percent of the days”. Line 389, “are less frequently” should be replaced by “are less frequent”. Lines 398-399, “Fig. 6 to 10” should be replaced by “Figs. 6 to 10”. Many other errors are not pointed out here. Please improve the English of the manuscript with the aid of native speaker.

Response: Sorry for these grammatical errors in the original manuscript. The errors listed above are corrected as follows.

The words “a great deal of” on line 99-100 of the original manuscript are revised as “a lot of”.

The words “focuses the pollution” on line 110 of the original manuscript are revised as “focuses on the pollution”.

The words “the most importance source” on line 271 of the original manuscript are revised to “the most important source”.

The words “occur for 14.3 percent of the days” on line 383 of the original manuscript are revised to “occur in 14.3 percent of the days”.

The words “are less frequently” on line 389 of the original manuscript are revised to “are less frequent”.

C3

The words “Fig. 6 to 10” on line 398-399 of the original manuscript are revised to “Figs. 6 to 10”.

Additionally, a professional language correcting company has helped to modify and improve the English in the new manuscript carefully.

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C4