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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Impacts of atmospheric circulations on aerosol distributions in autumn over eastern China: observational evidences" *by* X.-Y. Zheng et al.

Anonymous Referee #1

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China is facing the big air pollution challenge due to rapid economic development and urbanization. The MS presented the AOD distribution using 10 years observation data and discussed how the synoptic patterns influence the AOD distribution. It is a very useful tool to support air quality forecast and provides a potential direction of pollution apportionment. However the MS should do more analysis before accepted.

1. Fig. 1b presents the SD of AOD, does it the SD mean Shandong province? It is confused. 2. Annual variations of AOD were shown in Fig.2. More explanations should be given to discuss the reasons. 3. Fig. 4 and Fig. 5 discussed the two types of air pollution. More discussions should be give how the surface, 850 hPa and

500 hPa circulation match each other to induce the worst air quality or lead to clean air. Temperature contours were also shown, how the temperature influence the AOD distribution? 4. It is better to add the emission inventory in the MS in order to show the relationship between AOD and emission distribution. 5. Six atmospheric patterns were summarized for polluted episodes. The MS only simply described the phenomena according to the figures. More quantified index should be used to indicate the difference among the six types. 6. Vertical structure should be shown to explain the influence of circulation.

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 3285, 2015.