

Interactive comment on “East Asian dust storm in May 2017: observations, modelling and its influence on Asia-Pacific region” by Xiao-Xiao Zhang et al.

Anonymous Referee #1

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Mineral dust is an important source of atmospheric aerosols, loess and sediments of seafloor. It is also a biogeochemical link among land, atmosphere and ocean. Unusual dust events, such as strong dust storm, are main contributor of mineral dust to the oceans, and they can influence on environment, climate, marine primary production, and atmospheric CO₂ at a large continental scale. Strong dust storm event that occurred in East Asia on May 2017 was a typical case to show the influence and transport of Asia dust. The authors integrated data of surface observation, remote sensing and mode simulation and analyzed quantitatively dust transport process and its influence on continental China, and northern Pacific region. The result will be very helpful to understand global dust cycle. I suggest, before it is accepted, some places should be

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revised as below.

General comments: 1. In the introduction, the scientific problems and significance should be more come to the point. 2. Why data at heights of 2000-3000 m were used to analyzed the trajectories of dust transport? 3. How to exclude airborne dust in the US from its local source? 4. The transport process, such as migrating speed, impact and span on air quality at different localities, should be explained in more detail. 5. Please revise the method section to make it more concise.

Specific comments: 1. Pg 1, line 21: It's meaningless to write the number of cities directly. 2. Pg 5, line 23-24: What are those scheme used for? 3. Pg 5, line 24-28: What is the real accuracy of the simulation? 4. Pg 6, line 20-30: What indicator was used to determine the arrival of dust event in a place? 5. Pg 9, line 9-10: Some references are cited here. Is this result calculated by the authors or quoted by others? 6. Pg 9, line 1-8: I advice the authors to discuss the contribution of this event to annual dustfall in different cities of China. 7. Pg 9, line 1-8: I advice the authors to compare the magnitude of dust deposition with other dust events. 8. Fig.1: I suggest the authors explain more in detail about the dust cloud migration from MODIS image. 9. Fig.6: Please explain the maximum wind speed exactly, is it the daily maximum wind speed during the dust storm event? 10. Fig.7: Could the authors add dust vertical distribution in the source regions? 11. Fig.8: The exact meaning of loading and deposition needs to make clear.

Please also note the supplement to this comment:

<https://www.atmos-chem-phys-discuss.net/acp-2018-205/acp-2018-205-RC1-supplement.pdf>

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2018-205>, 2018.

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