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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Modeling study on the transport of summer dust and anthropogenic aerosols over the Tibetan Plateau" *by* Y. Liu et al.

Anonymous Referee #1

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General comments: This study describes the transport processes of dust and anthropogenic aerosols over the Tibetan Plateau by the simulation using an aerosol transport model coupled with a non-hydrostatic regional model. It is worthwhile to clarify the transport processes because the aerosols over the Tibetan Plateau arrive at the high altitude and spread in the wide range. However, there are ambiguous descriptions in the paper. It is better to indicate the locations of the northern and southern slopes, and the east area of the Tibetan Plateau in the figures. I recommend publication after the revisions.

Specific comments: 1. 15013, L4-5: Two locations of Taklimakan desert are written, "Northeast of TP, Taklimakan desert" and "West of TP, the Taklimakan Desert".

2. 15015, L16: Where is the area of "the decreasing SSA and AE over the northern slope of the TP" in Figure 4? The solid box? The SSA decreases but the AE increase in the solid box. Furthermore, the AOD (Figure 3b) and the mass column loading of dust (Figure 9) are small in the solid box. What is the aerosol in the solid box?

3. 15015, L21-23: The SSA of the dust regions shown in Figures 3 and 9 is high in Figure 4a. The high SSA regions spreads eastward in Figure 4a.

4. Figure 5: The topography of the southern slope of the TP is very different between Figures 5a and b. Is this due to the model resolution?

5. 15017, L27-28: What is "whereas another current curves northeast"?

6. 15018, L15-16: Is the westerly wind correct? I cannot understand what you mean.

7. 15018, L18-15019,L21: The dust mass concentration is depicted in Figures 8 and 9. "aerosol mass concentration" should be changed to "dust mass concentration".

8. 15018, L27: Is "9 km" correct? The dust cannot be observed at 9km in Figures 8a2 and b2.

9. 15018, L28: Where is the outbreak location in Figure 8a2.

10. 15018, L28: Where is the dust transported eastward from 70 to 80E in Figure 8a2?

11. 15019, L4: The large updraft near the southern slope of TP is not observed in Figures 8b.

12. 15019, L10: "the east area of the TP"

13. 15019, L16: Where do the aerosols begin to extend southeastward? The northern or southern slopes?

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 15005, 2015.