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The revised manuscript entitled “**Comparison of key absorption and optical properties between pure and transported anthropogenic dust over East and Central Asia.**” by Jianrong Bi, et al.

Response to Reviewer#2:

We are grateful to the Editor and the anonymous Reviewer for their constructive and insightful comments. The comments of the Reviewers are helpful and valuable for greatly improving the manuscript. Please find a point-by-point reply to the issues as follows (highlighted in blue color font). And we have also uploaded the file of “Response to-Reviewer#2(acp-2016-764)-supplement.pdf”.

Specific comments:

(1) Page 16, lines 471-473: “The main input parameters of spectral AOD, surface albedo, WVC, and columnar ozone amount are prescribed to same values (e.g., ...)”

⇒Please give the prescribed values of spectral AOD, surface albedo, WVC, and columnar ozone amount in the manuscript, which would be convenient for audience.

Response: Thank you very much for Reviewer’s insightful comments. We have presented the prescribed values of spectral AOD, surface albedo, WVC, and columnar ozone amount in Lines 471-473, “(e.g., 0.72, 0.30, 1.0 cm, and 300 DU for input AOD₄₄₀, surface albedo, WVC, and ozone amount)”.

(2) Page 33, Figure 5(b): For Minqin and Dunhuang sites, the AOD₄₄₀ and r_{coarse} are shown for “-”, the authors may want to indicate the missing data. Please give the explanation in the context.

Response: Thank you very much for Reviewer’s good comments. We have added “Note that the “-” in Figure 5(b) represents that missing data for AOD₄₄₀ and r_{coarse} ”

at Dunhuang and Minqin sites.” in Page 34, Lines 912-913.

Minor comments:

(1) 1. Introduction, Page 5, line 142: Please add “There have been several world-famous aerosol long-term monitoring networks over Asian region for examining aerosol features and its radiative effects, for instance, AERONET—AErosol RObotic NETwork (Holben et al., 1998), SKYNET—aerosol-cloud-radiation interaction ground-based observation network (Nakajima et al., 1996; Takamura et al., 2004; Che et al., 2008), and CARSNET—China Aerosol Remote Sensing Network (Che et al., 2009, 2014, 2015).” at the beginning of this section and add corresponding cited literature in References.

Response: We have added “There have been several world-famous aerosol long-term monitoring networks over Asian region for examining aerosol features and its radiative effects, for instance, AERONET—AErosol RObotic NETwork (Holben et al., 1998), SKYNET—aerosol-cloud-radiation interaction ground-based observation network (Nakajima et al., 1996; Takamura et al., 2004; Che et al., 2008), and CARSNET—China Aerosol Remote Sensing Network (Che et al., 2009a, 2014, 2015).” at the beginning of this section and add corresponding cited literature in References.

(2) Page 7, line 200: “**3. Asian Dust Optical properties**”

⇒ Change to “**3. Asian Dust Optical Properties**”

Response: We have changed to “**3. Asian Dust Optical Properties**” in Page 7, Line 200.

(3) Page 7, lines 201-205: Change to “A great amount of publications have verified that mineral dust aerosols are commonly predominant by large particles with coarse mode (radii>0.6 μm), which are the essential feature differentiating the dust from fine-mode dominated biomass burning and urban-industrial aerosols (Dubovik et al.,

2002b; Eck et al., 2005; Bi et al., 2011, 2014; Kim et al., 2011; Che et al., 2013).”

Response: We have changed in Page 7, Lines 201-205.

(4) Page 8, line 209: “compared to”

⇒ Change to “compared with”

Response: We have changed “compared to” to “compared with” in Line 209.

(5) Page 8, line 219: change “literatures” to “literature” and modify the other places in the whole manuscript.

Response: We have changed “literatures” to “literature” in Line 219 and modify the other places in the whole manuscript.

(6) Page 9, lines 259-260: “Note that the occurred months of PDU days are nearly different from TDU days at Dalanzadgad,”

⇒ Change to “Note that the occurred months of PDU cases are nearly different from TDU cases at Dalanzadgad,”

Response: We have changed to “Note that the occurred months of PDU cases are nearly different from TDU cases at Dalanzadgad,” in Page 9, Lines 259-260.

(7) Page 10, line 294: “and estimated SSA at 325 nm (~0.80) is much lower than at 660 nm (~0.95).”

⇒ Change to “and estimated SSA at 325 nm (~0.80) is much lower than that at 660 nm (~0.95).”

Response: We have changed “and estimated SSA at 325 nm (~0.80) is much lower than that at 660 nm (~0.95).” in Page 10, Line 294.

(8) 5. Summary, Page 17, line 494: change “PUD” to “PDU” and modify the other places in the whole manuscript.

Response: We have changed “PUD” to “PDU” in Page 17, Line 494 and modify the other places in the whole manuscript.