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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Measurement of scattering and absorption properties of dust aerosol in a Gobi farmland region of northwest China – a potential anthropogenic influence" *by* Jianrong Bi et al.

Jianrong Bi et al.

bijr@lzu.edu.cn

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Response to Referee1:

We are grateful to the Editor's and Referee1's insightful and constructive comments for this manuscript! We have carefully checked and revised the whole manuscript according to Referee1's comments, which are helpful and valuable for greatly improving our manuscript. Please find a point-by-point reply to the issues as follows (highlighted in the blue font). And we have also uploaded the file of "Response to-Referee1(acp-2017-165).pdf".

General comments:

Dust aerosol in remote Taklimakan Desert and Gobi deserts of northwest China is thought to be hardly affected by human activities, due to sparse population. The authors conducted a comprehensive field measurement in a Gobi farmland region of northwest China, and demonstrated a potential anthropogenic influence on dust physicochemical properties using multiple ground-based active and passive sensors. The agricultural operations and biomass burning from crop residue prior to growing season were well documented to produce significant impacts on elevated dust loadings and absorption characteristics in Dunhuang farmland during spring of 2012. The findings of this study are very interesting and would help to improve our understanding of the interaction among dust aerosol, atmospheric chemistry, and climate change in desert source region. And I suggest that the authors should carry out long-term and continuous measurements of mineral dust at remote Gobi deserts in northwest China, to quantify the potential anthropogenic contributions on regional climatic and environmental changes. I think the English wring is fine, and I recommend this manuscript is appropriate for publishing after minor revision.

Response: Thank you very much for the Referee's good suggestions and the acceptance of this work. Indeed, this study only covers several months in spring during intensive period and it is indispensable to acquire long-term measurements of mineral dust for fully understanding the potential anthropogenic contributions on regional environmental and climatic changes. Hence, we have set up two permanent field observatories (SACOL and Dunhuang) in northwest China to continuously measure mineral dust since 2013, and will obtain more valuable findings, which will help quantify the anthropogenic contributions of dust aerosol in remote desert source region.

Minor comments:

1. Abstract, Page 1, line 27: "In the afternoon (13:00–18:00 LT)"

âĞŠ Change to "In the afternoon (13:00–18:00 LT, local time)". When an abbreviation

firstly appears in the manuscript, please give the full name.

Response: We have changed “In the afternoon (13:00–18:00 LT)” to “In the afternoon (13:00–18:00 LT, local time)” in Line 27 and modified the corresponding places in the entire context.

2. Page 3, line 78: “(i.e., hematite and goethite)”

âĞŠ Change to “(i.e. hematite and goethite)”

Response: We have changed to “(i.e. hematite and goethite)” in Line 78.

3. Page 4, line 90: “(i.e., Mongolia Gobi desert)”

âĞŠ Change to “(i.e. Inner Mongolian Gobi desert)”

Response: We have changed to “(i.e. Inner Mongolian Gobi desert)” in Line 90.

4. Page 4, line 111: “close to the east edge of Kumtag Desert”

âĞŠ Change to “close to the eastern edge of Kumtag Desert”

Response: We have changed to “close to the eastern edge of Kumtag Desert” in Line 111.

5. Page 5, line 130: “to the southeast”

âĞŠ Change to “to the southwest”

Response: We have changed to “to the southwest” in Line 130.

6. Page 6, line 154: “High AI values (>0.7) distributions”

âĞŠ Change to “The distributions of high AI values (>0.7)”

Response: We have changed “High AI values (>0.7) distributions” to “The distributions of high AI values (>0.7)” in Line 154.

7. Page 9, line 265: “(i.e., Mongolia cyclones)”

âĞŠ Change to “(i.e. Mongolian cyclone)”

Response: We have changed “(i.e., Mongolia cyclones)” to “(i.e. Mongolian cyclone)” in Line 265.

8. Page 12, line 331: “2 to 4 km”

âĞŠ Change to “4 km”

Response: We have changed “2 to 4 km” to “4 km” in Line 331.

9. Page 12, line 332: “which was within the planetary boundary layer (PBL)”

âĞŠ Change to “which was above the planetary boundary layer (PBL)”

Response: We have changed to “which was above the planetary boundary layer (PBL)” in Line 332.

10. Page 14, line 402: “Likewise”

âĞŠ Change to “Similarly”

Response: We have changed “Likewise” to “Similarly” in Line 402.

11. Page 19, line 563: “atmospheric boundary layer structure”

âĞŠ Change to “the structure of atmospheric boundary layer”

Response: We have changed “atmospheric boundary layer structure” to “the structure of atmospheric boundary layer” in Line 563.

12. Page 20, line 575: “lager”

âĞŠ Change to “larger”

Response: We have changed “lager” to “larger” in Line 575.

13. Page 21, line 614: “The findings of this study directly demonstrated mineral dust”

âĞŠ Change to “The findings of this study directly demonstrated that mineral dust”

Response: We have changed to “The findings of this study directly demonstrated that mineral dust” in Line 614

Please also note the supplement to this comment:
http://www.atmos-chem-phys-discuss.net/acp-2017-165/acp-2017-165-AC1-supplement.pdf

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