

## ***Interactive comment on “Surface observation of sand and dust storm in East Asia and its application in CUACE/Dust” by Y. Q. Wang et al.***

### **Anonymous Referee #2**

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The paper represents an important diagnostic study based on real-time surface dust measurements providing better understanding of the atmospheric dust process and its sources. The described observational system according to my knowledge is the largest regional network engaged/specialized to monitor surface dust. It therefore offers an exceptional opportunity to further improve evaluation of dust models and to perform data assimilation. Based on surface observations, the authors characterize the dust storm spatial and temporal distribution in China and evaluate empirical relationships between dust concentration and visibility.

I can recommend the paper for publication in ACP, but after taking into account the following comments/suggestions:

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Pg. 9118, lines 5, 10: Are the four SDS categories arbitrarily defined by authors or they are based on some existing categorization (SYNOP reports)? What data from weather stations is used: current/past weather, visibility? Please clarify.

Pg. 9119, line 15: Referencing on the Indian and Afghan SDS should be removed from the considerations in the paper text and from figures. These regions are not the subject of the study.

Pg. 9119, line 18: Is Fig 3 made using both PM and visibility measurements?

Pg. 9121, line 6: As indicated before the PM network was established 2003. Why the authors analyze only the 2004-2006 period?

Pg. 9121, line 21: “Due to the high frequency of SDS events, very low visibility was observed in Tazhong station with a mean value of 10 395 m.” Error in units? The effect of non-dust aerosol: this is enough to mention its impact on visibility as done in the text, and to retain in Fig 4 only Vis\_SDS and PM10\_SDS information. This will make the figure more ‘readable’

General: improvement of the language is recommended

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Interactive comment on Atmos. Chem. Phys. Discuss., 7, 9115, 2007.

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