

***Interactive comment on “Dust events in Beijing, China (2004–2006): comparison of ground-based measurements with columnar integrated observations” by Z. J. Wu et al.***

**Anonymous Referee #2**

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This paper generally well describes the physical and optical characteristics of dust events observed at Beijing, China during the springtime of 2004–2006. Both ground-based measurements of particle size distribution and column-integrated aerosol optical properties (including Angstrom exponent, AOD, refractive index, etc.) retrieved from AERONET were analyzed. Some meteorological data (including sounding) and TOMS AI with aerosol mass concentration data also used.

Following comments need to be more clearly addressed :

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Synoptic scale view of dust events needs to be considered in the dust event categorization and characterization of optical properties. In this paper authors are mainly concentrated on the measurement data at Beijing, except for TOMS AI and back trajectories. Spatial and temporal evolution of each dust events from source regions to Beijing would be also important to understand aerosol optical properties of two dust types categorized in this study. More quantified evidence to support authors' categorization and findings would be required.

(in section 3.4.2) Authors mentioned the extinction contribution by urban aerosols between type 1 and 2. But it is possible if authors carry out optical closure study (i.e., physic-chemical apportionment study of aerosol light extinction with size and components) for fine and coarse mode aerosols.

In the retrieval of the aerosol volume size distribution, the cause of discrepancy between AERONET and TDMPS measurements needs to be discussed with more detailed explanation.

More new and unique findings from the study needs to be provided.

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Interactive comment on Atmos. Chem. Phys. Discuss., 9, 11843, 2009.

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