

## ***Interactive comment on “Observation of atmospheric aerosols at Mt. Hua and Mt. Tai in Central and East China during spring 2009 – Part 2: Impact of dust storm on organic aerosol composition and size distribution” by G. H. Wang et al.***

### **Anonymous Referee #1**

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General comments: Dust storm from Asia has been given much attention with most focusing on inorganic components such as sulfate, nitrate and elements. However, impact of dust storm on the downwind organic aerosols has not been considered. This paper addressed the influence of dust storm on organic aerosols in the downstream atmospheres including molecular composition and size distribution, which is very important for readers to improve their understanding on the characteristics of Asian dust storm and its impact on the downwind aerosol chemistry. The observation results in

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this paper from the Mt. Hua and Mt. Tai are very interesting and unique. The paper is organized well, tables and figures are clearly presented and related discussions are adequate and reasonable. Thus, I recommend an acceptance of this paper for publication in the journal after a minor revision. Detailed comments are given below.

Detailed comments: 1) Page 33545, line 8-9, the abstract section, based on the results and related discussions presented in this paper, here I think plants in the Gobi sandy desert are the source of the high level of organic aerosols found in the mountain samples during the dust storm event. Biogenic sources not only include plants but also mean other biota sources in soil such as invertebrates, bacteria and fungi. Molecular compositions of compounds (i.e., HMW n-alkanes, and fatty acids and alcohols) in the samples clearly indicate that organic matter in the dust samples were largely derived from the Gobi desert plants. Therefore, I think the related statement should be revised. 2) Page 33545, lines 14-17. These findings are very interesting. In the past decades scientists have used Ca/Ca<sup>2+</sup> as a tracer for investigation of dust storm, but it is hard to distinguish the local soil derived particles from the dust. Trehalose, as recommended by the authors, is probably a new tracer for dust plumes originating from the dry Gobi region. In addition, the conclusion about PAH sources is also very interesting, because the current work demonstrates that pollution from coal burning in China is still the major problem resulting in the poor air quality, although vehicle emissions in China has sharply increased. 3) Page 33549, line 25, using “were” not “are”. 4) Page 33553, line 15, “from” not “form”; 5) Page 33554, lines 18-22, what kind of formation pathways? Is it an in-cloud formation and/or aqueous-phase oxidation? Could the authors give more explanation? 6) Page 33557, line 3, “grow” not “grows”; line 14, “naphthalene” not “naphthalen” 7) Page 33558, line 27, here should be aerosols not aerosol. 8) Page 33560, lines 3-16, I think these statements would be more accurate if using past tense.

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