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Interactive comment on “Regional characteristics of spring Asian dust and its impact on aerosol chemistry over northern China” by Y. L. Sun et al.

Anonymous Referee #2

Received and published: 25 December 2006

Authors Response: The analysis of aerosol components including elements and ions confirmed further the regional characteristics of spring aerosol over northern China. Our results could be important to study the mixing of pollution aerosol and mineral aerosol during the transport at different regions. In addition, our field data could be used to verify the results of model simulations.

New Comments: In the paper from the same group named “Composition and mixing of individual particles in dust and nondust conditions of north China, spring 2002” published in JGR have given the light sight about the mixing of pollution aerosol and mineral aerosol during the transport at different regions. Although, it was the data collected in 2002, the result of this idea has been set.

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Authors Response: As we have six sampling sites at different regions over northern China, we can easily see how the Asian dust impact atmospheric environment in the cities over northern China during its transport and how the dust storm affect different components in the aerosols. It's very important to study the transformation mechanism of dust storm during the long-range transport.

New Comments: This work (with only one year's field observation) could not reveal the transformation mechanism of dust storm during the long-range transport without the necessary lab and modeling work.

Authors Response: We found that spring dust could lead to the pH in the aerosols over northern China increase ~ 1 in spring. As we all know that dust has a buffering effect on the acidity of atmosphere over northern China, but here we used the field aerosol data to prove further this neutralization effect.

New Comments: The similar results about buffering effect from dust have been published such as: * Nishikawa, Masataka; Kanamori, Satoru; Kanamori, Nobuko; Mizoguchi, Tsuguo, Science of the Total Environment, 1991, 107,13-27 * Wang, Z.F., Akimoto H., Uno, I., 2002. Neutralization of soil aerosol and its impact on the distribution of acid rain over East Asia: Observations and model results. Journal of Geophysical Research. 107, D19: ACH 6-1-6-12. * Zhang, Y., Carmichael, G.R., 1999. The role of mineral aerosol in tropospheric chemistry in East Asia - a model study. Journal of Applied Meteorology 38, 353-366. * Byung-Gon Kim, Soon-Ung Park, Transport and evolution of a winter-time Yellow sand observed in Korea; Atmospheric Environment 2001, 35, 3191-3201 etc.

Authors Response: we also collected the aerosols in 2006 at five sampling sites as mentioned in the paper. The analyzing and data processing is on-going. The results will be prepared in another paper.

New Comments: Then I'd like to suggest that the author combine the 2004 and 2006 data to make a new better manuscript, which would be better choice.

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Interactive comment on Atmos. Chem. Phys. Discuss., 6, 12825, 2006.

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6, S5712–S5714, 2006

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