

Interactive comment on “Hemispheric transport and influence of meteorology on global aerosol climatology” by T. L. Zhao et al.

Anonymous Referee #2

Received and published: 14 June 2012

This work analyzes aerosol transports simulated with the global air quality modeling system GEM-AQ/EC, with emphasis on four regions in NH. The paper contains useful and interesting results. I recommend its publication, with minor revisions.

1. Although source-receptor (S-R) relationships have been mentioned numerous times, including in the abstract, I cannot see clearly this point. To me, the paper is about aerosol transport as indicated by the title. Please clarify or revise the context. For example, Fig 1 only shows aerosol transports from the four boundaries of the identified regions, what about local sources (emission) and sinks (e.g., deposition).

2. The results seem to indicate that aerosol particles behave almost like “passive” tracers of large scale circulation. In this regard, partitioning between mean and eddy transports would make more sense. For example, eddy transports likely have a lot to

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do with the higher meridional variability.

3. The authors mention that the model include aerosol-cloud interactions; but it is not clear whether the relationship to precipitation is due to wet deposition only or also include effects of aerosols on precipitation. This needs to be clarified.

4. Both standard deviation and coefficient of variation are used to represent variability. I do not understand why sometimes one not the other is used? Please explain. I also do not see the need of the acronym LTR.

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 10181, 2012.