

Interactive comment on “Global distribution and radiative forcing of soil dust aerosols in the Last Glacial Maximum simulated by the aerosol climate model” by T. Takemura et al.

Anonymous Referee #1

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Comments on “Global distribution and radiative forcing of soil dust aerosols in the Last Glacial Maximum simulated by the aerosol climate model”; by T. Takemura et al.

General comments: This paper is interesting and well written. The aerosol transport model coupled with GCM, SPRINTARS is known to be one of good performance models for the evaluation of direct and indirect radiative forcing. Various factors such as vegetation, ice cover and ice nucleation are taken into account in the simulations of soil dust transport and radiative forcing, and the results are discussed carefully. This kind of study in the paleoclimatology is limited so that this paper is worthwhile publishing.

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One thing that I would like to comment is in the part of discussion of radiative forcing, i.e., Section 4. During LGM, the area covered by ice or snow is much larger than that in the present, and thus surface albedo is supposed to be larger than the present. The aerosol direct radiative forcing is discussed with underlying high surface albedo due to ice cover and underlying low clouds. However, the direct and indirect radiative forcings of aerosols should be compared with radiative forcing of surface albedo change; otherwise it is difficult to evaluate how much aerosol radiative forcing is important among radiative forcing agents in LGM.

Specific comments: Page 20464, line 20: It is assumed that; assumed; is appropriate? Page 20470, line 20-21: The meaning of this sentence is ;higher dust emission flux in the LGM than PRE;? What is the reference to be compared with the result of Werner (2002)? Page 20471, line 6-8: Does the precipitation change contribute to the increase in dust emission?

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 20463, 2008.

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