

## ***Interactive comment on “An improvement on the dust emission scheme in the global aerosol-climate model ECHAM5-HAM” by T. Cheng et al.***

### **Anonymous Referee #2**

Received and published: 12 November 2007

Title: An improvement on the dust emission scheme in the global aerosol-climate model ECHAM5-HAM Author(s): T. Cheng, Y. Peng, J. Feichter, and I. Tegen

This paper shows an impact of surface roughness length, soil moisture and East-Asian soil properties for the dust emission change within the ECHAM5-HAM global aerosol-climate model. They show the strong impact of dust emission by these changes from model sensitivity analysis. Their incremental information for the dust emission is important to improve the dust model even if their analysis is very basic and fundamental. This paper can be accepted in ACP after minor corrections.

Minor comments:

page 13960 line 19: Reference of IPCC 2001 must update by IPCC AR4 2007.

page 13961 line 1: What is first-order patters ?

page 13962 Equation (1) : Describe the definition of  $U_{t^*}(D_p)$

page 13965 second paragraph: The soil type of "Takliman" sounds strange. Is this a common classification of Chinese soil type?

page 13967 line 18: Why the result is "reasonable" ? I understood that the emission value of 1670 Tg/yr is within the variation range of AeroCom, however this is not a reason of reasonable.

page 13969 Section 3.2 Validation on East-Asian dust emission. Contents of this section are a little bit poor and qualitative. More detailed discussion of emission change in East Asia is important. Show the emission amount map (like Figure 5 for emission). The reader must have a strong interest where and how much dust emission changes due to the inclusion of new Chinese soil type information. The discussion of of Figure 6 and Table must base on RMS between observation and model.

Section 4 does not include conclusion. It only has discussion. I suggest splitting this section into 4. Discussion and 5. Concluding remarks, and then authors must describe their new findings in New section 5.

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Discussion Paper