**Climate
of the Past
Discussions**

Interactive comment on "Modeling dust emission response to MIS 3 millennial climate variations from the perspective of East European loess deposits" *by* A. Sima et al.

Anonymous Referee #2

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The manuscript by Sima et al. uses a dust emission model coupled to an atmospheric general circulation model and a vegetation model to simulate dust emission fluxes at the climate equilibrium for three reference scenarios representing stadial/interstadial changes in glacial climate conditions in Eastern Europe, with the aim to help interpretations of loess records. The study is a follow-up of a previous work focused on Western Europe (Sima et al., 2009, Quat. Sci. Rev.).

The motivation for the study is relevant for the interpretation of loess records and for an improved representation of the dust cycle in climate models. The model setup used for the study is indeed characterized by important limitations in the representation of

the dust cycle (just emissions, not transport and deposition) and its dependence on climate. Still, the model and limitations of the approach are accurately described in the manuscript, and some interesting insight can be gained from the results of this study. Also the stage of development of this modeling project and its foreseen implementations are clearly stated.

The text and figures are clear and appropriate to describe the methods and results of this study. In my opinion the manuscript is worth publishing, almost in its present form.

I just have a couple of minor comments:

Page 147, lines 10-13. I would encourage a more detailed description of the identified dust sources. In addition, those areas are also indicated as deposition areas – is there any relevant information that could be provided in the respect e.g. grain size?

Page 151, line 15. The clay fraction is often referred to based on a different size boundary. Please explain this.

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