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Atmospheric Chemistry and Physics Discussions

Interactive comment on "The potential influence of Asian and African mineral dust on ice, mixed-phase and liquid water clouds" *by* A. Wiacek et al.

Anonymous Referee #2

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This paper describes a trajectory analysis that investigates the availability of mineral dust particles as ice nuclei. It is an interesting and important study with an original approach. The results presented in the paper provide new insights and information about the potential role of dust particles from different source areas as ice nuclei in cirrus and mixed phase clouds. The paper is concise and well written. I recommend accepting it for publication in ACP after just few minor (mostly technical) modifications.

1. The description of the different trajectory cloud types (e.g., MPC, CIRRUS, WARM_HET..., etc) is essential for understanding the paper. While the types are shown schematically in Figure 4 and described in the main text, it would be helpful to

have an additional table with the description of the different types for reference. This could be either an additional table, or table 2 could be expanded to include a short description of the different types.

2. Page 4029/4030: Replace 'lab' with 'laboratory'

3. Page 4031: As shown e.g. by Schepanski et al., 2007 (GRL) the West African desert is not necessary a major source region for dust emissions, but since high optical thickness values are found in this region it may still be a good starting point for trajectory studies.

4. Page 4032: What is 'low altitude' and 'high altitude'?

5. Page 4033: Please explain what is meant by the influence of the 'extreme topography' of the Tarim basin.

6. Page 4050: The Bodele is most active in winter, spring and fall, not just spring and fall.

7. Figure 1: The circle symbols are hard to see on the maps, they should maybe be larger.

8. Figure 8: The symbols should be larger.

9. Figure 13: The axis labeling is too small.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 4027, 2010.