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Interactive comment on “Estimation of mineral dust longwave radiative forcing: sensitivity study to particle properties and application to real cases over Barcelona” by M. Sicard et al.

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Received and published: 4 June 2014

Here you will find some elements of response to the last comments of S. Otto (Referee #1).

RESPONSE: I meant that it might be relative what the words "small" or "large" or "very" could mean without to clarify them in more detail, e.g., by numbers. Moreover, I am aware that Barcelona is located far away from the source. I only would like to stress the importance of the coarse mode particles. I am not a field scientist but know how difficult measurements of coarse particles might be, performed close to the source or

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far away from it. For this reason it would actually be of importance to measure dust particles directly rather than to trust on retrievals only. This is, of course, not your turn. But on the other hand I could ask you about the literature about in-situ dust particle measurements over the Barcelona site which really covered the coarse mode, against the background of the measurement problems. So, can you exactly state what particle sizes were really present? ... Of course, I also believe that far away the "largest" particles are removed from the dust layer. But only more or less direct measurements can illuminate questions like this. ... OK

»»»» Sorry to put the numbers in the revised manuscript and not state them clearly in my first answers. We define very large particles as particles with a diameter larger than 10 microns and base our discussion about the deposition of very large particles on the results from Maring et al., 2003; Ryder et al., 2013a; Osada et al., 2014.

RESPONSE: You should not remove the citation because it is part of the literature. Yang et al. used, e.g., different size distributions. I am sure that their results are correct within the scope of their basic assumptions. You could state that the contribution of the particle shape may have different effects depending on the particle properties assumed.

»»»» Yang et al. has been put back in the references in the revised manuscript.

RESPONSE: I understand that. It would be nice if you could encourage the interested reader in the main text whether it is possible to get in contact with the authors with respect to the k-distribution data.

»»»» We have added the following sentence in the revised manuscript: "The k-distribution coefficients are available upon request to the authors."

21) Wouldn't it be possible to move the supplemental figure and table to the main paper?

»»»» The supplementary material has been included in the main paper.

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Best regards and thanks a lot!

Michael Sicard

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 8533, 2014.

ACPD

14, C3214–C3216, 2014

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