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Interactive comment on “Extreme Saharan dust event over the southern Iberian Peninsula in september 2007: active and passive remote sensing from surface and satellite” by J. L. Guerrero-Rascado et al.

Anonymous Referee #1

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The authors describe in detail a major Saharan dust transport event that occurred over the Iberian Peninsula. On the basis of a synthesis of active and passive remote sensing instruments the authors show optical, geometrical and microphysical feature. This paper on the synthesis of data from various observational platforms is a good example showing the effort one has to undertake in order to obtain a detailed look at the complexity of aerosol transport processes.

The paper is well written and organized, but it is much too long. I count 30 pages. There are too many sections, there are too many pictures. Given the number of sections and

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picture, and also topics covered in the paper one could easily make two papers of it, but with different focus: part one could present the experimental evidence (lidar, sunphotometer, satellite data) and one could also compare the data from the various platforms. Part two should focus on the transport and the heating rates. In that respect the authors could also present some more pages with a more detailed description of the radiative impact studies. To my taste that part is a bit too short in this paper. But extending this heating rate part in the present paper would increase its size even more.

If the authors wish to stay with one paper (and not making two parts from it) the manuscript needs to be shortened considerably and streamlined. I give some examples: The introduction can be shortened. It is too long and discusses too many details. The description of EXCALIBUR (line 20 – 26) on page 15678 can be deleted. The description of the Saharan dust event (section 3) is lengthy and unnecessary. The text on page 15683 (lines 12 – 29) can be either shortened or deleted at all. Section 5: drop it. No need to show a few results of other sunphotometer sites. If you drop section 5 (which bears little information content) you get your paper short enough to keep it in one part. Section 8: drop it. This section does not really add a lot new information in the context of this paper. Particularly you do not really need to make it an extra section (put it into the heating rate part, shorten the text, and rename that section). The summary contains too many details. Shorten it (page 15969, after line 20, and page 15970, after line 20).

Figure 1: improve the scaling. We do not need to see those parts of the map where no trajectories are. Think about deleting Figure 2, Figure 4 is not needed. I find Figure 7 unnecessary, given the overall length of the paper. Drop Figure 8. Figure 11: I have serious doubts about the trustworthiness of the systematic drop with height of the beta-related Angstrom exponents. This needs to be checked otherwise the paper is not acceptable. I see this drop in nearly each of the 5 examples, and the drop is particularly visible in row 2 (from top), row 4 and 5 (from top). Figure 14 can be put into a table.

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