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Interactive comment on “A combined observational and modeling approach to study modern dust transport from the Patagonia desert to East Antarctica” by S. Gassó et al.

Anonymous Referee #2

Received and published: 24 August 2010

This is a generally well done report using an integrated approach to evaluate dust transport from Argentina to Antarctica. The scientific significance is excellent and the scientific approach and methods are generally good. It is a great case study of dust transport in an under-studied region of Earth that has climatic implications.

The abstract, as well as the text itself (especially sections 3.4, 4.1, 4.4, and 5.0), is not very concise and would benefit from eliminating extraneous information not specifically relevant to the goal of the paper; the manuscript as a whole would be much more powerful if it were condensed and shortened.

Please consider the following items. Note that the codes reported on lines 243-244 are

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standard World Meteorological Organization codes with very specific meaning. "Dust Storm" requires visibility less than 0.5 km, I believe (also see line 372).

Paragraph beginning on line 338: Remote sensing and observational studies contradict the likelihood that the entire lake was emitting dust, or even a large part of it: most dust events are apparently from spatially isolated plumes, even on dry lakes. These plumes move and shift about and thus may move away from weather recording stations and thus the "apparent extent" of the event may be misstated. Threshold wind speed, as well as wind speed, also will change as an event progresses. All that said, that does not materially obviate the conclusions of the paper.

Section 3.4: first two paragraphs: that is an extremely long time for dust to be expected to remain in the atmosphere.

Lines 454- 472: The area of emission is not necessarily proportional to intensity/amount of emission. One intense one-square-kilometer source can emit more dust than a less intense hundred-square-km source. Also, note that there can be variations in sources with different emissivities during an individual event.

Please ensure that the references are in proper order, and all citations are in the same style.

Interactive comment on *Atmos. Chem. Phys. Discuss.*, 10, 13287, 2010.

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