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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Mineral dust variability in central West Antarctica associated with ozone depletion" *by* M. Cataldo et al.

Anonymous Referee #2

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Recommendation: this paper should not be published in ACP.

First, the presentation of the material is **very poor**. Just to give an example: the entire introduction consists of **a single paragraph over two pages long!** Even an undergraduate knows text needs to be broken down in paragraphs. Here's another example: after discussing Fig 1, presumably the key result of the paper (in Section 3), the authors launch into a two-page long, rambling fusillade of review material about the AAO and many other things, citing a million papers, again without a single paragraph break, and with little coherent train of thought I could detect in the entire discussion. Why is an avalanche of review material placed in the results section? I could cite other examples, but I think this should suffice. This kind of writing should not appear in a scientific journal with even the smallest pretense of self-respect.

Second: and most importantly. I believe much of the science in this paper is plainly and simply wrong. The main "alleged" finding of this manuscript, from what I could gather, is that ozone depletion has caused mineral dust transport into Antarctica to decline in recent decades. The evidence, apparently, comes from comparing Figure 1a (dust) and Figure 1b (ozone). I am sorry for being really thick, but what I see there is ozone going down from 1960 to 2000, while dust goes up and down without any discernible trend: so were is the connection?!? The authors don't even attempt to compute a basic correlation between the two time series... Yet they construct "dendrograms" with "single linkage as the amalgamation algorithm": I have no idea what in the world that means! In any case, most of the methods in this paper are complicated beyond necessity and, in the end, obscure the simple fact that the ozone and dust time series have little to do with each other.

Finally (and perhaps most disturbingly) this paper contradicts previous studies, surely a red flag that something is fishy. As an explanation for the discrepancy, we are offered some really farcical speculations such as the

> hypothesis in which the polar vortex may act like an "atmospheric barrier", preventing warmer, coastal air from moving in to the continent's interior

How can a polar vortex **in the stratosphere** be a barrier to anything **near the surface**? There is no polar vortex in the troposphere, so this explanation is total nonsense. This betrays profound misunderstand of the most elementary atmospheric science.

I rest my case.

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 12685, 2012.