

Interactive comment on “Alignment of atmospheric mineral dust due to electric field” by Z. Ulanowski et al.

Anonymous Referee #3

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The authors put forward an interesting set of data and plausible explanation for same, and in general is a well reasoned paper deserving publication.

I have a hopefully minor problem with the jump from the observations to the claimed phenomena responsible for them, and perhaps a sentence or two could address this. Here is my problem. There are (at least) three places where the link between polarimetric data and dust alignment are mentioned:

From the abstract : "Optical polarimetry observations on La Palma, Canary Islands, during a Saharan dust episode show dichroic extinction { consistent } with the presence of vertically aligned particles in the atmosphere."

From the introduction: In this study, we report on high-sensitivity optical polarimetric

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observations which { indicate } the presence of vertically aligned particles in the atmosphere in the Canary Islands region, and show that the observations coincided with a Saharan dust episode.

From section 2.1: The excess polarization {can be interpreted } as being due to an interaction of the starlight with non-spherical particles having their long axes preferentially oriented in the vertical direction

To me, the use of the word { consistent } admits other causes for the polarimetry observations, while the use of the term { indicate } does not, and the { can be interpreted } phrase again permits alternative explanations .

Hence, the title seemingly assumes the truth of the hypothesis that the observed polarization is a result of aligned non-spherical mineral dust. Wouldn't a more neutral title be "Observed polarization of starlight and possible causes ? " (or something at least mentioning that the fundamental observations being reported are the solid circles and squares of figure 10? i.e. a polarization measurement)

I suggest a stronger claim to the cause of the observations me made than the following (" The angular aperture of the instrument was only 500, hence the measurement was that of extinction, and the error due to the inclusion of any scattering in the measured flux was likely to be negligible. The observations were screened for the presence of clouds. ")

Is scattering into the line of site the ONLY other possible cause of the results ? No systematic alignment of a dichroic mineral can produce the same result?

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 13203, 2007.

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