

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

**Z. Ulanowski et al.**

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We thank Olga Kalashnikova for perceptive comments.

1. Concerning the modelling of the "Venetian blind effect" at 550  $\mu\text{m}$  for several satellite viewing geometries, we agree that examining the effects of dust alignment on satellite retrievals should be assessed. This will be one clear priority for future modelling work. However, in view of the variety of observing geometries, techniques and wavelengths it should be the subject of a future, more extensive study, and we decided to include in the present article only one illustrative example of the impact on optical thickness. Also, we feel that the modelling should ideally follow further observations of alignment, ideally accompanied by in situ measurements of electric properties, so that parameters describing the alignment are properly constrained.

2. On the question whether "*sub-visible cirrus clouds enhance/obscure the detected polarization effect*", vertical alignment of ice crystals outside storm clouds has never been observed, in contrast to horizontal alignment due to hydrodynamic forces. Therefore cirrus, if present, can be expected to weaken the observed polarization. During the 3-7 May period there was no evidence of cirrus from MODIS or visual observations, so any cirrus, if present, would have been thin. As such it would have been unlikely to interfere with our measurements on those dates. However, future measurements of polarized extinction could be used to monitor the extent of crystal alignment in cirrus clouds and we estimate that this should be possible for optical thickness at least an order of magnitude lower than for the La Palma case, i.e. down to about 0.03 (the threshold for subvisual cirrus). We include a note on this in the final version.

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