Atmos. Chem. Phys. Discuss., 7, S6704–S6705, 2007
www.atmos-chem-phys-discuss.net/7/S6704/2007/

Atmospheric Chemistry and Physics Discussions

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

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Received and published: 9 November 2007

The paper "Alignment of atmospheric mineral dust due to electric field" by Z. Ulanowski, J. Bailey, P. W. Lucas, J. H. Hough, and E. Hirst presents a new and interesting study that is especially important for current/future polarimetric remote sensing applications. The authors showed one compelling case of optical polarimetry observation during a Saharan dust episode. Clearly more cases are needed to make this study more representative, and to quantify radiative effects of potential vertical dust alignment. The influence of mineral dust particle size distribution, shape, and refractive index on the polarization patterns is still not clearly understood, and, in some cases, might exceed the influence that dust alignment might have on remote sensing retrievals.

General comments:

1. Presented modeling results show that "Venetian blind effect" may have decreased optical thickness in the vertical direction by as much as 10% at wavelength 780um. It will be interesting to see this effect at 550um for several satellite viewing geometries. The green band at 550um is normally used to report satellite-retrieved optical properties.

2. Could sub-visible cirrus clouds enhance/obscure the detected polarization effect?

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

ACPD

7, S6704–S6705, 2007

Interactive Comment