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Atmospheric Chemistry and Physics Discussions

Interactive comment on "What controls the recent changes in African mineral dust aerosol across the Atlantic?" *by* D. A. Ridley et al.

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Three comments:

1. The downward AOT trend discussed in this manuscript was first identified using AVHRR retrievals in the paper Mishchenko, M. I., and I. V. Geogdzhayev, 2007: Satellite remote sensing reveals regional tropospheric aerosol trends, Opt. Express 15, 7423-7438.

2. In that OE paper, we also noticed a significant decrease of the regional Angstrom exponent, meaning that the dust particles became larger. Although the Angstrom exponent trend is less reliable given the poor quality of the AVHRR data, it would be interesting to discuss it in the context of other findings in this manuscript.

3. AOT retrievals for dust aerosols are affected strongly by dust-particle nonsphericity: Mishchenko, M. I., I. V. Geogdzhayev, L. Liu, J. A. Ogren, A. A. Lacis, W. B. Rossow, J. W. Hovenier, H. Volten, and O. Munoz, 2003: Aerosol retrievals from AVHRR radiances: effects of particle nonsphericity and absorption and an updated long-term global climatology of aerosol properties, J. Quant. Spectrosc. Radiat. Transfer 79/80, 953-972. AOT errors can exceed a factor of 3 if nonsphericity if not accounted for. However, the AOT trend can still be rather accurate if the observation geometries remain stable on average over the period of observations. The authors should discuss this important issue.

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 3583, 2014.