

Interactive comment on “Surface features on Sahara soil dust particles made visible by atomic force microscope (AFM) phase images” by G. Helas and M. O. Andreae

Anonymous Referee #1

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The paper demonstrates the use of the Atomic Force Microscope AFM phase image method to investigate the surface structure of mineral dust particles. Although this paper is not the first that uses the AFM method to investigate aerosols, it is the first to discuss the surface structure in such detail.

The high resolution method reveals the microstructure of the surface, including the presence of material that covers parts of the aerosol particle. The fact that such materials are found in crevasses and on other imperfections on the surface, is a very valuable information that could shed light on the potential uptake of water vapor by mineral dust particles and on their role in cloud processes.

Mineral dust particles have been shown in the past to be very efficient ice nuclei. As is indicated in the paper, there have been a number of reports suggesting that dust particles coated with soluble material such as sulfate and sea salt could also serve as giant cloud condensation nuclei. The present paper may open the door for more quantitative estimation of the amount of soluble material on the particles and on their effects on droplet nucleation.

Of course, as the authors admit, at this stage, the study is somewhat limited because it cannot identify the chemical composition of the foreign compounds in the crevasses of the dust particles. Further study in this field may yield promising results.

Minor point: Is it possible that the soluble material was formed during storage? Please explain.

Interactive comment on Atmos. Meas. Tech. Discuss., 1, 1, 2008.

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Interactive Discussion

Discussion Paper

