

Interactive comment on “Saharan dust events at the Jungfrauoch: detection by wavelength dependence of the single scattering albedo and analysis of the events during the years 2001 and 2002” by M. Collaud Coen et al.

Anonymous Referee #3

Received and published: 8 December 2003

1. The title should be shorter.
2. Angstrom exponent is not always defined as -1 times the slope of the extinction coefficient. It would be better to discuss in the abstract before definition the wavelength dependence itself. E.g. replace the sentence.

"While the exponent of the single scattering albedo is usually positive, it becomes negative during Saharan dust events due to.." with "While the single scattering albedo usually increases with the wavelength, it decreases with wavelength during Saharan dust events due to.."

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3. First parag. in the introduction please give references to the dust forcing (Tegen et al. 1996 found it to be neutral over the ocean) and the effect on snow and rain (may be Rosenfeld in PNAS?).

4. Page 4 - the parameter $C=2.15$ I am sure is not known to the third digit. In fact it varies with the density of the absorber on the filter (if remember correctly between 1.5 and 8 - Horvath et al) therefore it will be also wavelength dependent. I do not think it is a problem in the present technique but can be more thoroughly evaluated. Later on it is compared to PCASP of Reid et al., which is very important. The authors may mention the range of values of aerosol absorption on the filter and its relation to possible variation in "C".

5. Page 10: There is no Holben et al. 2003 in the reference and I am not familiar with such paper. Correct spectral properteis of dust were reported by

- Kaufman, Y. J., et al.: Absorption of sunlight by dust as inferred from satelite and ground-based remote sensing, Geophys. Res. Lett., 28 , 1479-1483, 2001.

- Dubovik, O., et al.: Climatology of aerosol absorption and optical properties in key worldwide locations, J. Atmos. Sci, 59, 590-608, 2002.

6. Chemical analysis: It will be important to mention what fraction of the cases identified as dust by the chemical analysis where found as dust by the analysis of the Angstrom exponent of the single scattering albedo.

Interactive comment on Atmos. Chem. Phys. Discuss., 3, 5547, 2003.

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