

Interactive comment on “Aerosol Single Scattering Albedo retrieved from ground-based measurements in the UV-visible” by V. Buchard et al.

Anonymous Referee #3

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ATMOS MEAS TECH DISCUSS, 3 3179-3198, 2010-09-14 Authors: V. Buchard, C. Brogniez, F. Auriol and B. Bonnel Title: Aerosol Single Scattering Albedo retrieved from ground-based measurements in the UV-visible

The paper describes a method and results of single scattering albedo (SSA) retrieved from ground-based measurements of spectral and diffuse solar irradiance in the ultraviolet and visible region. Knowledge on the SSA, which is an important parameter describing the optical characteristics of atmospheric aerosols also in the UV region, will help to better quantify and understand the role of atmospheric aerosols for climate.

C1609

The subject is within the scope of the Journal. The paper is well written, but needs a few additions, as described below.

Title: It is not clear what ‘UV-visible’ means (from ... to?). I recommend replacing it by ‘UV and visible region’

Introduction: It should be mentioned in the beginning, how single scattering albedo, as it is referred to in the paper, is defined (e.g. dimensionless quantity defined as the ratio between aerosol absorption and extinction optical depth at a selected wavelength).

Section 2.1, page 3182: During the alternate measurements of global and diffuse spectral irradiance, which takes about 6 minutes each with your instrument, solar zenith angle (SZA) changes, considerably at higher SZA. Have you applied a correction to take account of its effect for the direct/diffuse ratios, or is the SSA retrieval method limited to a certain range of smaller SZA, where the change is negligible?

Page 3184, line 21: ‘latter’

Page 3184, line 25: Which of the extraterrestrial spectra that are offered by the SHI-Crivm algorithm published by Slaper et al. (1995) have you selected? Please, cite the author(s).

Section 3, page 3186: The overall number of cases of 109 + 51 for 3 years is not large, because you have restricted the analysis to clear sky cases. For sites with even lesser clear sky conditions, the number of results for SSA would still be smaller and probably not suffice to derive an SSA ‘climatology’. Have you analyzed data with the sun not occluded, but with few scattered clouds in the sky, as to what extent the measurements could be used for retrieval of the SSA and with which uncertainty?

Page 3186, line 25: better ‘... of the SSA retrieved from the spectroradiometer ...’

Page 3198, Fig. 7: AERONET data designated as circles look like squares