

## ***Interactive comment on “Comparison of AERONET and SKYRAD4.2 inversion products retrieved from a Cimel CE318 sunphotometer” by V. Estellés et al.***

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We thank the reviewer comments and typo corrections. All of them will be corrected or added in the final manuscript text. Below we answer to the comments specifically.

Comment: In section 3.1.1 (p6889, line-16), actually “the aerosol optical depth” is derived from eq.(1), but to be more specific, the aerosol optical depth is retrieved by subtracting the optical depth of Rayleigh scattering and gas (ozone) from the total optical depth that obtained from eq.(1).

Response: The suggested specification have been included in the final text.

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Comment: In section 3.2, the title of this section is “AERONET retrieval algorithm”, but it seems that the main topic of the section is the sensitivity of AERONET. This paper focuses on the comparison of the algorithm between AERONET and SKYRAD.pack version 4.2. I recommend this paper add brief description about the inversion algorithms, for instance the difference between AERONET (e.g. Dubovik and King, 2000) and SKYRAD (e.g. Nakajima et al, 1996).

Response: The AERONET algorithm formulation was not included in the paper because it is published elsewhere, and we intended to keep the article short. However, after the reviewer suggestion we have changed the structure of section 3 (methodology) to accommodate a brief description of Duvobik algorithm in relation to the Skyrad algorithm.

Comment: In section 4.2, “In any case, we must bear in mind that Che et al. (2008) study was performed in very turbid conditions, excluding all cases with an aerosol optical depth at 440 nm lower than 0.4.” The threshold of optical depth 0.4 at wavelength 440 nm is the threshold of AERONET level 2.0 for single scattering albedo and complex refractive index. Che et al., (2008) selected the SKYNET data to suit the data of AERONET level 2. Please check that.

Response: The sentence have been removed in the text.

Typo corrections: We thank the reviewer for all these corrections. These will be applied in the text. However, we believe that scenario is the correct word for the sentence at P6887, line 25 “Scenario” will be used (detailed comment 4).

For the detailed comment 8:  $i_1$  and  $i_2$  are the Mie intensity functions (Nakajima et al., 1996). This correction will be added in the text.

For the detailed comment 9:  $K_{sca}$  is the Mie kernel function for the scattering of an spherical particle. There was a mistake in P6891 line 13: “The  $\delta a_{sca}$  is obtained by an equivalent integral to Eq. (4), substituting the kernel function  $K_{ext}$  by  $K_{sca}$ , being

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Ksca the Mie kernel function for scattering of an spherical particle". This sentence will be corrected in the text.

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Interactive comment on Atmos. Meas. Tech. Discuss., 4, 6883, 2011.