**Atmospheric
Measurement
Techniques
Discussions**

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

Anonymous Referee #2

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Comment on the manuscript, amt-2011-150: "Comparison of AERONET and SKYRAD4.2 inversion products retrieved from a Cimel CE318 sunphotometer" by Estellés et al.

This paper is interesting and valuable to developing a retrieval technique and accuracy of aerosol properties. As referred to in the title, the paper compared the result of aerosol properties retrieved by different two inversion algorithms, AERONET and SKYRAD version 4.2. Previous studies, such as Che et al., (2008), compared aerosol properties retrieved from AERONET and SKYNET, which networks use their own in-

strument and inversion algorithm. The different and interest point of this study is using same observation dataset at one of AERONET observation site for two algorithms by formatting AERONET observation data to SKYRAD. In this way the error between different instruments can be neglected, and this study can compare the result about only the inversion algorithm under the condition that the AERONET algorithm is not publicly available. Hence, this study is useful for the development of the inversion technique and the accuracy of retrieval, and appropriate for AMT. However I recommend this paper clarify the following things:

(1) 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).

(2) 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).

(3) 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 2.0. Please check that.

Detailed comment: 1. P6887, line10: measure → measures 2. P6887, line16-17: I think you lost "is" at two point in following sentence? : "... sunphotometer currently operates ... its data routinely processed by ..." → "... sunphotometer is currently

operated . . . its data is routinely processed by . . ." 3. P6887, line 20-21: antyciclonic → anticyclonic 4. P6887, line 25: scenarios → escenarios 5. P6889, line 10: I think "the Beer's low" is better than "the Beer low". Please check that. 6. P6890, line 5: "afect" → "affect" 7. P6891, line 13: "Kext" → "Kext(x,m)" 8. P6891, eq.(7) : Please add a brief explanation of "i1" and "i2". 9. P6892, line 9: Please add a brief explanation of "Ksca" 10. P6892, line 15: In the sentence, "The so simulated R. . .", is "so" mistype? 11. P6893, line 18: "largers" → "larger" 12. P6893, line 25: "is intented to. . ." → "is intended to. . ." 13. P6898, line 19: Please check the following : "we must bore in mind . . ." → "we must bear in mind . . ." 14. P6903, line 26: "In the other hand, " → "On the other hand"