

Interactive comment on “Measurements on pointing error and field of view of Cimel-318 Sun photometers in the scope of AERONET-Europe” by B. Torres et al.

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Received and published: 6 May 2013

General comments:

The paper is well structured, its assumptions and methods used are clearly presented.

The paper is focused on a specific instrument and covers a large amount of technical details that are not necessarily of interest to a broader audience. It has the aspect of a technical report addressing the AERONET community.

To become more interesting for the readership of AMT, the paper should include a discussion of the scientific relevance of a more accurate knowledge of the Cimel pointing

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error. The demonstrated pointing error of less than 0.01 degree seems a large improvement over the potential azimuth offset of 0.5 degrees that Dubovik et al. assumed in their publication on the accuracy assessment of aerosol optical properties provided by AERONET.

From the conclusions it remains unclear what impact the inclusion of the CROSS scenario will have on AERONET protocols: will the list of instrument check flags be extended; or will also the accuracy of AERONET data products be further improved?

Albeit not a native English speaker myself, I would recommend that the paper be carefully edited for English usage.

*Detailed comments:

P3017 to 3019 I might miss an essential point made here, but the relation of (8) to (2) seems a trivial one, please advise.

P3020, L 5 - 12 the style of this section explaining relations between next subsections is hard to read and understand. Consider reformulating the single phrase consisting of a sequence of dependent clause to a clearer structure of statements.

P3020, L21 2.2 Field of View In this chapter, the terms field of view (degrees) and solid angle (sterad) are used indiscriminately, please reformulate

P3022, L9 'New scenarios' The term 'scenario' is well known in the AERONET community, but would need more explanation for the general reader. 'Procedure' might be a better term

P3023, L8 it remains unclear why the tolerance for the GOSUN scenario is as low as 0.03°. Given a field of view of 1.2° and a solar (angular) diameter of 0.5°, I would estimate a tolerance of $\pm 0.35^\circ$. The demonstrated pointing accuracy of 0.01° would then be excellent indeed, but just marginally OK if the tolerance is just 0.03°.

P3027, L27 How can the new scenario perform scans with 0.01° resolution (sect. 3.1.1)

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when the basic step size of the Cimel robot is 0.05° ?

P3024 section 3.1.2 Solar movement during the matrix scan were to be anticipated and could be explained analytically: the solar hour angle changes at a fixed rate $15''/\text{sec}$ in equatorial coordinates, thus the transformation to the horizontal system is just a trigonometric one, taking the annual changes of solar declination into account. The manuscript could become more readable by shortening this section and eliminating parts or all of Figures 3 to 6.

P3030 no explanation is provided why results for visible and infrared (1640nm?) channels are given as separate columns in Table 5. If the intention is to demonstrate the parallelism of collimators for Sun- and Sky measurements, please state explicitly in the caption and text.

P3032 on the Laser measurements Expanded laser beams have a Gaussian intensity distribution for the TEM-00 mode, and may show inhomogeneous beam profiles for higher order modes. Did your setup include a spatial mode filter, and what fraction of the beam diameter was scanned during the matrix measurements?

*Technical corrections:

P3017, L5 'dr = 0' seems out of context P3020, L1 the phrase seems out of its context P3023, L2 'slack' instead of 'game'

Tables 2 to 7 although obvious, the unit 'degree' should be given in the caption Table 5 first column lacks header 'Photo' and # indication for serial number

Interactive comment on Atmos. Meas. Tech. Discuss., 6, 3013, 2013.

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