

## ***Interactive comment on “Cloud screening and quality control algorithm for star photometer data: assessment with lidar measurements and with all-sky-images” by D. Pérez-Ramírez et al.***

**Anonymous Referee #1**

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The manuscript presents the cloud screening algorithm for the star photometer based on analyzing the differences between the consecutive measurements. The clouds affected data revealed by the algorithm correlate well with the lidar measurements and with all-sky-images. The authors analyze significant amount of the measurements with different types of aerosol to prove applicability of the algorithm. The paper is well written and can be recommended for publication after some revisions.

General comments

In this paper I miss an accurate mathematical description of averaging procedure and filtering. Sometimes it is confusing. For example, in fig.1 the authors write “Moving av-

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erage procedure =all night”. I personally have difficulties to understand what it means. All points are averaged? Then why it is moving average?

The number of references is 56, which is probably too much. I think that this number can be decreased.

Technical comments

Abstract, 1 ln. Should be “paper presents”

p.1658, ln17-20. “The fourth Intergovernmental Panel on Climate Change notes the importance of studying the atmospheric aerosol radiative effects to fully understand its role on climate change (Forster et al., 2007). The atmospheric aerosol can scatter and absorb light and thus modifies Earth-Atmosphere radiative balance. Furthermore, atmospheric aerosol particles can act as cloud condensation nuclei and thus they can modify cloud droplet size and cloud albedo”.

This was repeated so many times that probably can be skipped.

p.1659. ln.9 “. . .which include the development of appropriate instrumentation to fill the nighttime gaps in large temporal observations that rely on the sun”.

should be “includes”

Sun photometry retrieves the particle microphysical parameters. Has star photometry potential to do it?

p.1660, ln2. “. . .which consists of assuming that. . .” why not to say just “assumes. . .”

p.1661 ln.17 “The Full Width at Half Maximum (FWHM). . .”

It is commonly used abbreviation, no reason to expand.

p.1662 ln24 “The Raman lidar system model LR321D400 (Raymetrics s.a., Greece) is used to derive backscattered and extinction aerosol profiles. This system emits laser beam at 355, 532 and 1064 nm and collects the backscattered signal in four elas-

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tic channels at 1064, 532(parallel and perpendicular) and 355 nm, and three Raman channels at 387, 408 and 607 nm. . .” In this work only one signal at 532 nm is used, and no extinction or backscattering profiles were derived. So, no reason to give the detailed description of the lidar.

p.1663 ln.8 “ $m_r$  is the relative optical air mass” It would be good to add a phrase explaining what is relative optical air mass.

p.1663 ln 18 “. . .ozone and nitrogen optical depths to  $\delta_{atm}(\lambda)$ .” Probably should be NO<sub>2</sub>?

p.1664 ln4. Å(Ångström, 1929)

Is this reference really necessary?

p.1665 ln20 “. . .From Figure 2a can be observed that more than 95% of  $\delta A_e(\lambda)$  at 380, 436, 500, 670, 880 and 1020 are below than 0.015, 0.012, 0.012, 0.010

I can't get these numbers from this figure. This histogram needs explanation.

p.1666 ln8 “. . .the procedure developed consists basically of calculating the moving average for every data point  $\delta A_e i(\lambda)$ , taking into account that the point  $\delta A_e i(\lambda)$  is not included in the computation of its corresponding moving average”

As I already mentioned, it would be good to give exact mathematical expressions.

p.1667. Is figure 4 necessary? The authors use it to prove that no dust intrusion occurs during period of the measurements. May be just a comment in the text is sufficient.

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Interactive comment on Atmos. Meas. Tech. Discuss., 5, 1657, 2012.