

Interactive comment on “Nocturnal aerosol optical depth measurements with modified skyradiometer POM-02 using the moon as a light source” by Akihiro Uchiyama et al.

Anonymous Referee #1

Received and published: 11 July 2019

The work presented in this paper is valuable as it indicates that the lunar photometry technique is gaining space in the scientific community and arising interest from the companies producing the needed equipment.

General comments:

I have doubts on using AOD obtained from LIDAR as the truth. Usually it is the opposite, you use AOD from photometer to constrain the LIDAR results. This is also in some way recognized by you at L474-477.

I suggest to read and eventually cite also the last paper from Barreto et al. 2019 about intercomparison between CIMEL and PFR lunar versions.

C1

<https://doi.org/10.1016/j.atmosenv.2019.01.006>

I think sections 2.2 and 2.3 could be merged. There are repetitions between them. I don't understand the last part of the last sentence of section 2.2: "depending on the aerosol optical depth...".

Did you write an implementation of the ROLO equation? Did you use filter functions of just central wavelengths?

Eq4 In my opinion it is not necessary to define C1 and C2, it's confusing to me.

Eq7 Same as for Eq4. By the way, you are using the same symbols C1 and C2

Finally, I suggest to ask a mother-tongue people to check the manuscript.

Specific comments:

L34 I suggest "reflectance estimated by the Robotic..." L34 Maybe a reference to the ROLO paper is required here L38 "visible and near-infrared" L38 "This indicates..." or "could indicate" L65 AERONET L131 Remove "Prede Co Ltd., Japan". Is a repetition L157 Could you please explain this sentence? Where you get 2×10^{-5} ? L177 "Therefore, it is difficult..." L220 The equation is reported without any introduction words. L305-308 Repetition. Please remove L373-374 Even if the meaning is clear to me, I suggest to rephrase the sentence in a clearer way. L394-395 Remove the repetition of "the detector output" -> "and hence may be..." L406-409 Please rephrase the sentence in a clearer way. L413 The sentence about the calibration factors at 940 nm is not clear to me. L418 Please check the "C(=" L448-451 This sentence is a repetition. L491 UTC, not UCT L494-496 You repeated many times in the text this explanation about the statistics shown in the tables. I think one time is enough. L602-603 The sentence about the ROLO model is not clear to me. Please rephrase

Table1 Which are the units? Amperes?

Fig2, Fig3 Maybe you could improve/simplify the labels of the y axes

C2

