

Interactive comment on “Different strategies to retrieve aerosol properties at night-time with GRASP algorithm” by Jose Antonio Benavent-Oltra et al.

Anonymous Referee #2 Received and published: 10 October 2019

The paper “Different strategies to retrieve aerosol properties at night-time with GRASP algorithm” shows novel strategies for the retrieval of vertically-resolved aerosol properties at night-time using GRASP algorithm. To this goal, the authors proposed three different schemes combining the measurements of different remote sensing instruments. To quantify the accuracy of the retrieved night-time aerosol properties obtained by these strategies, the authors used independent aerosol measurements and products as the reference. The title of manuscript clearly reflects the contents of the paper. The paper is well-structured and clearly written. The number and quality of the references are appropriate.

We would like to thank the referee #2 for his/her useful comments and suggestions. Responses to the comments are provided next:

Major comments:

The conclusions in this article are based on experimental data acquired during a Saharan dust event that took place during SLOPE I campaign at Granada (Spain) from 18th to 21st July 2016. Whether they will be valid for another set of experimental data?

In this work we present three different schemes combining the measurements of different remote sensing instruments such as elastic lidar, sun/sky/lunar photometer and/or sky camera to retrieve vertical profiles and column-integrated optical and microphysical aerosol properties at night-time. These schemes are successfully applied to a Saharan dust event, in principle, the results obtained do not indicate that these schemes could not be used for another set of experimental data. However, as stated in the paper, additional studies would be need to investigate the accuracy and uncertainty of the retrieved GRASP products obtained with the proposed schemes, in this sense, sensitivity tests using synthetic data as reference could be done.

Minor comments:

The text of the article contains minor misprints. Namely:

- the punctuation in the first affiliation is not keep: [Corrected](#).
- the punctuation is not keep in references to the relevant literature, there are no dots or semicolons (for example, P. 2 line 18, P. 6 line 13, P. 4 line 10, P. 15 line 8): [Corrected](#).
- the numbering is broken for tables 2-3 (P. 31-32): [The page 31 and 32 gave the impression that there were two tables in each one, but the Table 2 contains the size distribution parameters both P1 and P2 periods and Table 3 contains the RRI and IRI. The periods have been joined more in Table 2, and the same for RRI and IRI in Table 3.](#)
- figure 10 and its mention are missing from the text (P. 20): [Removed "\[Insert Figure 10 here\]" because this figure not exist.](#)

References:

- missing dots at the end of the references (P. 24 line 49, P. 25 line 27, P. 27 line 21, P.28 lines 20, 22, 24): [Corrected](#).
- the font size reduced (P. 24 lines 3-8): [Corrected](#).
- there is no uniform style in writing doi for references: [Corrected](#).