

Interactive comment on “Separation of the optical and mass features of particle components in different aerosol mixtures by using POLIPHON retrievals in synergy with continuous polarized Micro-Pulse Lidar (P-MPL) measurements” by Carmen Córdoba-Jabonero et al.

Anonymous Referee #4

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Cordoba-Jabonero et al. P-MPL Aerosol Discrimination

This paper describes adaptation of the POLIPHON technique to polarized micro pulse lidar instruments with the goal of continuous 24/7 monitoring and discrimination of various aerosol types and their physical and optical properties based primarily on the depolarization ratio. There is obvious merit to this work. MPLs are the workhorse of the ground-based lidar community. Algorithms based on a technique like this could

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prove invaluable to long-term data records, both for climatological analysis and satellite verification. The paper is very well organized and the figures clear and legible. This is the first time this reviewer has seen this manuscript.

My summary recommendation is that this paper be accepted pending Minor Revisions. I have only a few scientific concerns. Technically, there are issues with the language. I've tried to help (see attachment). In particular, pay attention to the use of colons and semi-colons. Most of the usage is redundant and/or inappropriate. Also, be mindful of paragraph structure, as it is very important in ensuring a logical and consistent flow for your reader!

Scientifically...a few points:

- Are you bound by corresponding AERONET inversion retrievals, and thus a minimum AOD of ~ 0.40 in order to conduct your retrievals? If so, what is the impact of this?
- What are the prospects for adapting this technique operationally? This is never really discussed.
- To my belief, and in spite of some papers in the literature, your definition of volume depolarization is not correct in the classical sense. Follow Sassen (1991) for reasoning and historical evolution of the term. This doesn't matter, really, but you should be clear what it is that you've defined.

A very good paper and study. Congratulations.

Please also note the supplement to this comment:
<https://www.atmos-meas-tech-discuss.net/amt-2018-15/amt-2018-15-RC2-supplement.pdf>

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2018-15, 2018.

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