

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 #3

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The work is of great scientific significance applicable across many fields (e.g. air chemistry, radiative transfer, health & human impact), and research method is sound. However, technical & grammatical errors were wide spread making the manuscript, at times, difficult to read. If not for these I would suggest minor revisions, but spelling, verb-tense, and phrasing errors are abound warranting major revisions. -Further justification needs to be made for some parts. Why are the given times for the examples profiles chosen? The maximum and minimum AOD for each case along with their respective times is dis-

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cussed at length, but these aren't necessarily the times in the profiles shown in figures 4, 6, and 8. - Referring to diurnal variations as "First" and "second" part of the day is poor wording, and is relative. During discussion of figures 3, 5, and 7 stated times are sometimes unclear if you mean local time or UTC with wording such as "noon," which is a relative term to local time. It is also difficult to see the black AOD and Lidar Ratio symbols on the dark blue color bar in these figures. Figures 3a and 3b don't have matching x-axes. -Why was the smoke case broken up into smoke and non-smoke, and the pollen case broken up into pollen and background aerosol? The non-smoke aerosol is said to be of arctic origin, but there is no mention of potential local background aerosol in the retrieval, isn't this a possibility? Vice versa for the pollen case, why is there no HYSPLIT analysis for the pollen case? Is it assumed on this day the background aerosol didn't have an origin outside BCN? All this needs justification.

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