

Interactive comment on “Aircraft vertical profiles during summertime regional and Saharan dust scenarios over the north-western Mediterranean Basin: aerosol optical and physical properties” by Jesús Yus-Díez et al.

Anonymous Referee #2

Received and published: 12 October 2020

Summary: The manuscript summarizes findings from an aircraft campaign over the western Mediterranean Basin in conjunction with in-situ aerosol measurements at two monitoring sites- MSY and MSA. The analysis explores two main episodes during the campaign, designated as (1) regional pollution episodes and (2) Saharan dust events. The paper synthesizes measured aerosol optical properties- including extensive and intensive properties- from the campaign and highlights the differences in meteorology and aerosol populations during the two types of episodes. While no new methods are presented, it is clear that care has been taken with the data and the analysis. The

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paper is very well written and the analysis is clear.

General Comments:

-Excellent background section!

-My main qualm with the paper is that Figure 7 and 8 are quite difficult to read. It is as if the ratio of the figures is off; they should be slightly wider. I realize the challenges associated with presenting this much information at once- and I see the logic behind how these figures are organized. If the individual plots can be widened slightly or maybe if the legends could be moved to inside the plots to allow them to get bigger, that might help the reader. But the paper could be published with the figures as is if necessary.

Technical Comments:

Line 46: Perhaps add a reference to the NOAA Federated Aerosol Network here as well?

Line 65: Suggest changing to ‘...one or two a day’ or ‘...once or twice a day’

Line 111-112 : Grammatically, ‘reach’ should be ‘reaches’ and ‘create’ should be ‘creates’

Line 175: Suggest changing ‘hysplit’ to ‘HYSPLIT’ since their website capitalizes it

Figure 2: It would be nice to add the units of measurement to the figure descriptions in the caption, as they are difficult to read on the plots

Line 216: Please specify if aethalometer data were further corrected or if the manufacturer 2-spot correction was the correction used

Line 216: Were any corrections applied to the MAAP data?

Line 265: Extra ‘)’ on this line can be deleted

Lines 307-309: It sounds like AAE was calculated using different wavelength pairs for

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different legs. What is the effect of this on your results? Why not use a wavelength pair available in all flight leg data records so you have consistency?

Line 323: Add a space after 'concentrations,' before 'PM1/10'

Line 324: Add a space after 'sigma[ap]'

Line 358: It seems like 'typically register' should be past tense 'typically registered'

Line 386: should say 'also took place'

Line 536: How was the PBL estimated?

Lines 559-560: 'associated to' should be 'associated with'

Line 595: remove 'was'

Line 601: 'wildfire-related' instead of 'wildfires related'

Line 603-605: This sentence is difficult to read; consider rewording.

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2020-837>, 2020.