

Interactive comment on “Vertical profiles of aerosol mass concentrations observed during dust events by unmanned airborne in-situ and remote sensing instruments” by Dimitra Mamali et al.

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We thank the reviewer for his time and effort. His/her comments have been very valuable for improving the quality of our manuscript. Below are our responses to all the points raised.

Point 1: Which is the time resolution and air flow used for the AE51?

The time resolution is 1 second and the air flow is 0.2 liters per minute. This information has now been added in the manuscript.

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Point 2: The sun photometer inversion is valid for AOD equal to 0.1?

According to bibliography (Dubovik et al. 2000, Dubovik et al. 2001) retrieval of the particle volume size distribution was demonstrated to be adequate in practically all situations with AOT > 0.05. For low aerosol loading significant errors are induced in the retrieval of the single scattering albedo, the real and imaginary part of the refractive index. This information has been added in Section 2.6 of the manuscript.

Point 3: S1 Which is the original time resolution of the OPC data?

The time resolution of the OPC data is 1 second. This information has been added in Section 2.4 of the updated version of the manuscript.

Point 4: p 2 | 3: instrumental -> fundamental

The change has been applied.

Point 5: p 8 | 7: define PBL here

PBL is now defined in the manuscript.

Point 6: Figure S1 why so different panels graphic?

We understand the point of the reviewer here. As a response we have improved Figure S1 in the updated version.

References

1. Dubovik, O., et al. "Accuracy assessments of aerosol optical properties retrieved from Aerosol Robotic Network (AERONET) Sun and sky radiance measurements." *Journal of Geophysical Research: Atmospheres* 105.D8 (2000): 9791-9806.
2. Dubovik, O., B. Holben, T.F. Eck, A. Smirnov, Y.J. Kaufman, M.D. King, D. Tanré, and I. Slutsker, 2002: Variability of Absorption and Optical Properties of Key Aerosol Types Observed in Worldwide Locations. *J. Atmos. Sci.*, 59, 590–608, [https://doi.org/10.1175/1520-0469\(2002\)059<0590:VOAOP>2.0.CO;2](https://doi.org/10.1175/1520-0469(2002)059<0590:VOAOP>2.0.CO;2)

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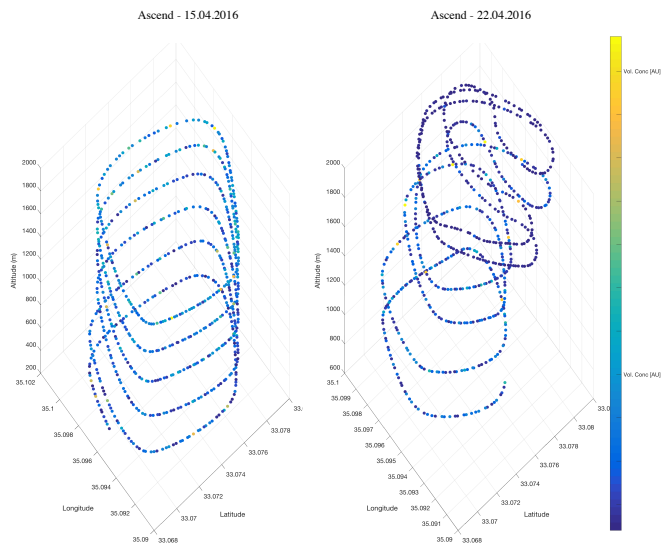


Fig. 1.