

Interactive comment on “Physical and optical properties of atmospheric aerosol by in-situ and radiometric measurements” by M. Calvello et al.

Anonymous Referee #2

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Review of “Physical and optical properties of atmospheric aerosol by in-situ and radiometric measurements” by M. Calvello et al.

The paper focuses on analysis and discussion on aerosol measurements provided by in-situ and radiometric techniques in SW Italy. It provides interesting information on physical and optical properties of aerosols in a central Mediterranean area which is a unique environment for such studies as local pollution/smoke, Saharan dust and marine aerosols can be frequently interact. The paper is well written and provides interesting aerosol information, so I recommend the publication of this paper after taking into account some minor suggestions/comments.

Introduction The area under investigation is a semi-rural area in SW Italy. Authors have to point out the geographical complexity of this Mediterranean environment due to the

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mix of aerosols originating from different sources.

One of the main aspects of the authors is to suggest the combination of in-situ and columnar aerosol properties accompanied by air mass back trajectories, in order to discuss vertical optical and physical properties. Partly, they cover an area that LIDAR systems are used. I suggest that the mention such an important issue in the introduction. An example of three recent publications dealing with similar subjects over the particular area, are given below:

Barnaba F., A. M. Tafuro, F. De Tomasi, and M. R. Perrone, "Observed and simulated vertically resolved optical properties of continental aerosols over southeastern Italy: A closure study", *J. Geophys. Res.*, 112, D10203, doi:10.1029/2006JD007926, 2007.

Amiridis V., D. Balis, S. Kazadzis, A. Bais, E. Giannakaki, A. Papayannis and C. Zerefos, Four years aerosol observations with a Raman lidar at Thessaloniki, Greece in the framework of EARLINET, *J. Geophys. Res.*, Vol. 110, D21203, doi:10.1029/2005JD006190, 2005

Papayannis A., D. Balis, V. Amiridis, G. Chourdakis, G. Tsaknakis, C. Zerefos, A. Castahno, S. Nickovic, S. Kazadzis, and J. Grabowski, Measurements of Saharan dust aerosols over the Eastern Mediterranean using elastic backscatter-Raman lidar, spectrophotometric and satellite observations in the frame of the EARLINET project, 5, 2065-2079, *Atmos. Chem. Phys.* 2005

Page 25573 description of figure 2. The authors use specifically days/case studies in order to discuss aerosol optical and physical properties information for transported dust. For some reason figure 2 is not providing a strong evidence of such an event as for some reason that the authors have to comment on that Hysplit back trajectories and Dream results are not showing similar results, making the whole dust cases discussion not so strong.

25574: "our area" -> "the area"

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