Atmos. Chem. Phys. Discuss., 6, S2521–S2523, 2006
www.atmos-chem-phys-discuss.net/6/S2521/2006/


Atmospheric Chemistry and Physics Discussions



# *Interactive comment on* "Aerosol physical and optical properties in the Eastern Mediterranean Basin, Crete, from Aerosol Robotic Network Data" *by* A. Fotiadi et al.

**Anonymous Referee #3**

Received and published: 17 August 2006

General comments: Although the publishing of this data is important to the ACP community, the current organization of this paper is poor. Because of this, the reader encounters the same points several times throughout the paper. Poor organization is compounded by the fact that the paper is too wordy. The purpose of the paper is to summarize observations; not much new science has gone into producing the results. With this goal in mind, the results can and should be stated much more simply and succinctly. The observations are grouped into several modes, which are seasonal. Each season appears to have a dominant dynamical climatology, which, to first order, controls the aerosol type as well as the amount of aerosol. This seems the most important finding of your study. Organization of the paper around the seasonal variability would

allow many repetitive sections to be cut.

Specific comments: I found that averaging findings in the 'annual mean' is not illustrative, given the large seasonal variability. The conclusion in particular focuses too much on the annual means.

The paper states that the observations are similar to those 'computed' by others - which could be due to biases in models and retrieval algorithms based on previously collected data. Is there any independent calibration (satellites, in situ measurements)?

As a form of validation, the paper does present a comparison with other AERONET sites in eastern Mediterranean. This comparison could be much better accomplished using plots than with the page of wordy text currently in the paper.

I felt that the paper did not address in any detail the sunphotometer used to take the measurements or the algorithm used to determine aerosol parameters. Although the authors provide references where the measurement and data analysis techniques are discussed in detail, a brief introduction to each should be given within the paper itself.

The significance of understanding aerosol climatology in this part of the world is addressed in the introduction, but the paper did not address how the observations over the past two years have contributed anything new. How does the FORTH AERONET station contribute to scientific understanding of the effect of aerosols on climate above/beyond other stations in E Mediterranean?

Figure 6, the scatterplot of Angstrom parameter versus AOT was not particularly helpful. The reader cannot identify clear groups, and the authors use previous studies to make assumptions about the relationships between Angstrom exponent and AOT at your site. Principal component analysis or some similar tool should be used to properly distinguish the groupings referenced in the text. In Section 3.3, the authors state 'combined information from these two physical parameters allows a rough characterization of aerosols. Different modes of aerosols can be identified'. I think it is more proper to



ACPD
6, S2521–S2523, 2006





EGU

say that known correlations between angstrom exponent and AOT, complemented by Hysplit trajectories and general knowledge about the prevailing seasonal winds allow these inferences to make. All this information is stated before discussing the Hysplit results.

Minor details:

I am not sure if the autumn data can be called a secondary maximum given the error bars on the data.

What is the instrumental detection limit?

Figure 6, the scatter plot of Angstrom parameter versus AOT was not particularly helpful. Section 3.3, your text is not supported by your figure.

Section 3.3, 'Both pathways suggest active mixing processes of aerosols' Why is this active mixing suggested?

Figure 8.c is mislabeled; should be angstrom parameter.

Labels on Figure 5 could be much more clear (larger).

---

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 7791, 2006.