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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Characterization of carbonaceous aerosols during the MINOS campaign in Crete, July-August 2001: a multi-analytical approach" *by* J. Sciare et al.

J. Sciare et al.

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GENERAL COMMENTS:

As reported in the conclusions of our manuscript, we do agree with the referee that complex aerosol mixture (as observed in the Mediterranean area) should be analysed by a range of different and "widely used" EGA protocols instead of an universal method (that could be sensitive to a specific source and thus not be representative of the aerosol mixture).

SPECIFIC COMMENTS:

1. Following the comments of the reviewer, the next sentence has been added to the revised version of the manuscript: "When the 3 anthropogenic periods reported

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in Fig.2 are delineated and analysed separately, correlation between BC(Thermal) and nss-SO4 becomes even more significant (correlation coefficients of 0.77, 0.95 and 0.95 for the 3 periods respectively)."

2. Following the comments of the reviewer, the next sentences have been added to the revised version of the manuscript: "When the 2 biomass burning periods reported in Fig. 2 are delineated, corresponding data (BC(IMPROVE) and nss-K) shows an even better correlation (rˆ2=0.91)."

3. Following the comments of the reviewer, the next sentences have been added to the revised version of the manuscript: "This correlation reaches 0.93 (n=15) when the dataset is restricted to the two biomass burning events (Fig.2)."

Note that we have decided to use the whole dataset to compare Abs(PSAP) and BC(IMPROVE) since the biomass burning influence, if particularly important for 2 periods (Fig.2), was also observed through the major part of the campaign (report to Salisbury et al., this issue). As mentioned in the manuscript, the correlation between Abs(PSAP) and BC(IMPROVE) is not surprising (even for low concentrations) since both measurements are based on absorption properties of the carbonaceous aerosols that are dominated by Biomass Burning for almost the whole duration of the campaign.

4. Following the comments of the reviewer, the results from Liousse et al. (1993) were highlighted in the revised version of the manuscript

Technical Points/Queries, typing amendments, errors, etc: ALL the points have been addressed in the revised version.

3377 L17. We do agree with the referee that care should be taken to discuss on the origin of air masses from back trajectory analysis. However, different back trajectory analysis models and met data used during MINOS have led to similar results (ECMWF in Salisbury et al., this issue; Hysplit 4.0, Sciare et al., unpublished data and results reported on the MINOS web page; http://www.mpch-mainz.mpg.de/˜reus/minos/) and

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have shown to be particular accurate to depict the two biomass burning events reported in the manuscript (Fig 5b for the first event). The air masses characterization performed from the aircraft all along the campaign evidenced two different aerosol layers (e.g. from two different origins) located in the MBL and in the lower FT respectively, and suggested that FT was more influenced by westerlies as mentioned in our manuscript (Lelieveld et al., 2002; Lawrence et al., this issue; Traub et al., this issue). This section has been rewritten in the revised version.

Interactive comment on Atmos. Chem. Phys. Discuss., 3, 3373, 2003.