

Interactive
Comment

***Interactive comment on* “Changes in particulate matter physical properties during Saharan advections over Rome (Italy): a four-year study, 2001–2004” by G. P. Gobbi et al.**

Anonymous Referee #2

Received and published: 17 April 2013

The paper "Changes in Particulate Matter Physical Properties during Saharan Advections over Rome (Italy): A Four-Year Study, 2001-2004" is an interesting improvement of the existing method for estimating Saharan dust contribution to surface PM concentration in Central Mediterranean areas. The study combine the results of lidar observation and BSC-DREAM8b regional dust model to evaluate the additional aerosol load during Saharan dust events. An interesting improvement is the change of the number of days considered to evaluate the reference PM value during non-dusty days: the method followed in the paper (average of PM concentration during the 5-7 days preceding the event) seems to be more suitable than the method suggested in EU guidelines (average of PM concentration recorded during the 15 days before and after

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the event). Also, the "local station" approach is demonstrated to be as valid as the "regional background" approach, opening the interesting possibility of evaluating the spatial variability of Saharan dust effects on PM concentration. The paper is clear and well written, its overall quality is very good. It is recommended for publication, after addressing the specific minor comments reported below.

Specific comments

page 4967, line 3: Time and altitude characterization... (please complete: i.e of the event); line 4: changes in PM10 (please add: concentration)

page 4967, line 13: the variability in the number of days chosen to calculate the no-dust PM concentration (5-7 days) is not clear at this initial point of the discussion

page 4971, lines 26-27: general information about the time length of the events (as reported at page 4975, line 13) could be useful to the reader

page 4972, lines 25-29: the authors should be more clear about the recommended length of the averaging period in the lucky case of full data availability (5, 6 or 7?)

page 4974 lines 21-23: the sentence "i.e., it counts as..." is not clear to me

page 4976, line 9: 3550 ug/m3 exceedances???

Table 1 requires units; I would also suggest to decrease the number of significant figures from two to one

Table 3: I would suggest to decrease the number of significant figures of concentrations and number of exceedances from two to one (lines 4-8, 10-11, 14-15)

Figure 2: please, add units to both axis and use the same scale for Y-axis

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 4963, 2013.

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