

Interactive comment on “Trends and variability of atmospheric PM_{2.5} and PM_{10–2.5} concentration in the Po Valley, Italy” by A. Bigi and G. Ghermandi

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Firstly we want to thank the referee for his/her positive comments and his help in improving the study.

General comment: It is not completely stated what the added-value of the new manuscript is, compared to the complementary one of Bigi and Ghermandi (2014). Is it the fact that the present one focuses more on the fine fraction? If this is the case, it should be highlighted more and maybe even present a comparison between findings for PM₁₀ vs PM_{2.5}.

In the revised manuscript in the Introduction we added this two sentences (line 16 page 2):

[. . .] make air quality of this region one of the worst in Europe (EEA, 2010; Bigi et al., 2012). In a companion study Bigi and Ghermandi (2014) performed a detailed analysis of the long term trend and variability of PM_{10} across the Po valley. The study found a large and valley-wide decline in PM_{10} atmospheric levels and partly ascribed it to the regulatory forced renewal of the vehicular fleet, leaving undetermined the role of SIA and of primary emissions. Main aim of the present study is to complete the previous analysis of PM_{10} over the Po valley by investigating in detail a dataset comprising 44 $PM_{2.5}$ and 15 $PM_{10-2.5}$ monitoring sites, with $PM_{10-2.5}$ being the mass of coarse particles i.e. with aerodynamic diameter between $2.5 \mu m$ and $10 \mu m$. The present study allows a better understanding of the role of emissions in the previously observed PM_{10} trends, and, together with the companion study, will provide an up-to-date and comprehensive representation of the trend and the variability of PM in the Po Valley. Most of the methods used in the present study follow the [. . .]

We did our best to compare findings for $PM_{2.5}$ and PM_{10} throughout the text: comparison for weekly pattern results is in page 7 (lines 1-3). Comparison for cluster analysis results is in page 7 (lines 20-25). Comparison for trends in concentration and emissions is in page 9 (lines 13-22). We actually believe to have compared and discussed the results from the two studies as much as possible.

TECHNICAL CORRECTIONS: we included all corrections suggested by the referee, but one: in page 9 line 29 original manuscript with “[. . .] the several fog precipitation events [. . .]” we really meant precipitation of fog and not precipitation of rain (WMO, 2008).

References

WMO, Guide to Meteorological Instruments and Methods of Observation. 2008. url: https://www.wmo.int/pages/prog/gcos/documents/gruanmanuals/CIMO/CIMO_Guide-

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