

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

Anonymous Referee #3

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General Comments

This paper describes measurements from campaigns in and around Rome during different seasons. It predominantly considers HR-AMS data but also incorporates estimates of Saharan dust convection and aerosol size distribution. It offers valuable insights relating to the impact of different sources on PM₁ in urban areas in Europe and builds on my previous studies. It makes particular advances in the consideration of cigarette smoke and its measurement using HR-AMS. As with many short seasonal campaigns it is difficult to draw firm conclusions due to the large variation in meteorological conditions, however, the authors have contrasted different seasons without over-interpreting.

Specific Comments

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Labelling NO₃ as 'home made' (pg 11 line 16). Although the formation of NO₃ from gaseous precursors occurs over a short time scale and will be partially 'home made', it is affected over large distances and a portion is likely to be advected. This will impact on your % estimates and should be discussed and altered appropriately. Two modes in particle size distribution (pg 14 line 1). The second 'peak' in size distribution at 0.6 μm may be an influence of reduced counting efficiency to aerosols in this size range. Bivariate polar plots (Fig 8) NH₄ is reported for 2013 but not 2014.

Technical Comments

pg 11 line 4 'lowered' should read 'lower' pg 12 line 3 'always was' should read 'was always' Table 5 'PM₁₀ in PM₁' should read 'PM₁ in PM₁₀' Pg 17 line 19-20 'probably less precursors are' should read 'lower concentrations of precursors are probably' and 'more precursors' should read higher concentrations of precursors Pg 19 line 26 'aging level' should read 'degree of aging'

Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-441, 2016.

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