

Interactive comment on “Urban increments of gaseous and aerosol pollutants and their sources using mobile aerosol mass spectrometry measurements” by M. Elser et al.

Anonymous Referee #1

Received and published: 29 February 2016

This paper uses mobile measurements to spatially map aerosols and trace gases in two Estonian cities. The use of high time resolution instruments means that good spatial resolution is obtainable and the results are systematically analysed to present statistics on the urban increments. The use of source apportionment techniques on the AMS and Aethalometer data adds extra depth to the results. Overall, the analysis appears solid and the results are well presented. I recommend publication subject to minor (mostly technical) revisions.

Page 1, line 1: Please be more specific when referring to ‘polluted continental areas’.

Page 2, line 18: PM_{2.5} has been the major focus for over 20 years now, so can hardly be described as ‘recent’.

C1

Page 6, line 20: Remove the word ‘highly’.

Page 11: More explanation and justification of the P05 method should be given. Why was the 5th percentile chosen? What specific effect was the subtraction expected to achieve? Given that the base of the sigmoid fits was allowed to vary, why is this even necessary?

Page 12, line 13: The use of the median does not completely rule out the influence of the kerbside increment because street canyon effects (e.g. when the local wind is perpendicular to a road) can cause on-road emissions to persist in this microenvironment and the increment to no longer manifest itself as discrete spikes in the data. This would cause the median to increase over what would be expected of the urban background. Because these measurements are taken on-road, it is perhaps inevitable that estimates of the urban background will be biased slightly high because of the influence of traffic sources, so this should be added as a caveat. It may be possible to exclude this by selectively averaging the less-busy roads.

Page 12, line 3: Replace ‘component’ with ‘components’.

Page 15: How was the temperature difference between 0 and 22m measured?

Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-31, 2016.

C2