

## ***Interactive comment on “Source apportionment and seasonal variation of PM<sub>2.5</sub> in a Sub-Sahara African city: Nairobi, Kenya” by S. M. Gaita et al.***

### **Anonymous Referee #2**

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Dear Editor,

this MS presents a source apportionment analysis with PMF for 2 locations in Nairobi (Kenya) over 2 years. Even though neither the idea or the methods applied are novel, the MS is of interest due to the study location. In general, African studies should be encouraged due to their general absence in the literature (in my opinion).

Some specific comments: - page 9566, line 4, "particles" should be "particulate"

- page 9569, section 2.1 could be summarised

- section 2.2 could be shortened

- page 9570, line 12: 3 lpm is a very low flow, did the authos take positive artefacts

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for OC into account? They did not measure OC (which is a pity), but this may have affected particle mass.

- page 9570, line 16: what was the total number of valid samples collected for each location? were they daily samples?

- page 9572, section 3.1: does any Kenyan legislation exist? if s, what are the limit values?

- page 9574, line 13: shouldn't there be larger biomass bunning contributions in the background area than in the city centre? If not, please clarify here why.

- page 9574, line 16: what sort of combustion?

- page 9576, lines 1-7: the profile of this source could be mistaken for traffic based on its tracers. Do the back-trajectories support this interpretation?

- page 9577, line15: what is the mean Pb/PM<sub>2.5</sub> ratio?

- page 9577, lines 26-27: please remove "due to prevailing.....(Querol et al., 2001)" and substitute with "due to the S emissions from vehicles, as described in sections above."

- page 9579, lines 1-2: "traffic factor compared to other sources...", but this is the background site, how do the authors explain that the Pb/PM<sub>2.5</sub> ratio is higher at UNEP? Shouldn't this ratio be higher in the city centre?

- page 9579, line 8: does this factor correlate with the traffic one, then? They should if this interpretation is correct.

- page 9579, lines 8-9: this statement is too vague, please elaborate or remove

- page 9580, lines 2-3: but the authors stated above that they are 2 independent factors, and that road dust is included in the traffic source. Then why does the mineral source decrease on the weekends? If this is regional dust then there should be no weekly trend.

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- page 9580, line 14: a similar situation here: it was stated that S from traffic was included in the traffic source, therefore it cannot be included again in the secondary aerosol factor. If the secondary aerosol factor is of regional (or possibly industrial) origin, then it should not have a weekly trend. The interpretation of this source should be revised
- A deeper analysis of back-trajectories vs. sources would be extremely helpful to further understand and confirm the nature of the sources. I would suggest to add a section on this.
- page 9580, line 23: "value", which value?
- page 9582, line 12: I think "but lower" should be "and thus higher"?
- page 9582, line 18: "mineral dust", what are the natural and anthropogenic sources of the mineral dust factor? This should be clarified earlier in the text.
- page 9582, line 22: this is an interesting conclusion, how would it be done (reducing the lead content)?
- page 9583, lines 3-4, also an interesting recommendation.

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Interactive comment on Atmos. Chem. Phys. Discuss., 14, 9565, 2014.