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Interactive comment on "Organic Aerosol source apportionment in London 2013 with ME-2: exploring the solution space with annual and seasonal analysis" *by* Ernesto Reyes-Villegas et al

Anonymous Referee #4

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The work apportions the organic aerosol, measured with an ACSM in North Kensington, London, among five components. Two of the components (BBOA and COA) are clearly sources, while three are definitions of the nature of the organic composition, i.e. not specifically sources. The apportionment is used to identify the relative importance of diesel versus gasoline vehicles to the organic aerosol. The importance of the paper appears to be the detailed evaluation of the approaches including the use of the trilinear regression.

The first art of the paper is well written, giving the reader a clear and detailed discussion of the approaches. Given there are three other reviews, I have only a few minor comments.

C1

1) Line 20 – "detected in the combined March-December dataset."

2) Lines 47-49 – add Takahama et al., Organic Functional Groups in Aerosol Particles from Burning and Non-burning Forest Emissions at a High-Elevation Mountain Site, Atmos. Chem. Phys., 11, 6367–6386, 2011.

3) Line 110 – what is the difference between PM and aerosols?

4) Line 292 – "higher"

5) Line 298 – "The" rather than "All this"

6) Line 317 – I don't see BBOA, HOA or COA in Figure 4a.

7) Lines 318-319 - How do the connecting lines display variability? Are they intended to make the differences between the cluster of LVOOA and the wider spread of SVOOA points more obvious?

8) Lines 328-329 – could cloud processing also contribute to the higher 44 and lower 60?

9) Line 334 – the instead of that.

10) Line 359 – do you mean 1.36 rather than 1.136?

11) Lines 359 – 363 – you use "possible to observe" in a couple of places in this paragraph. I suggest re-writing those segments.

12) Line 369 – "analyzing the aerosol"

13) Line 375 – How do you derive PM1? It is a large unstated assumption if you mean that the ACSM measures PM1. It will measure a larger fraction of the PM1, but it is not a PM1 measurement.

14) Line 379 – Another unsubstantiated claim. Explain how you come to the conclusion that secondary aerosols are the main contributors to PM2.5 from particles smaller than the upper limit of the ACSM. Which components of Figure 6 do you consider secondary

and which do you consider primary?

15) Line 394 – higher

C3