

Interactive comment on “Investigating the two-component model of solid fuel organic aerosol in London: processes, PM₁ contributions, and seasonality” by D. E. Young et al.

Anonymous Referee #2

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The authors present a well-written introduction and motivation for studying the aerosol pollution resulting from solid fuel sources. The authors use organic aerosol data as measured by the AMS and also utilize an AMS PMF solution, in addition to potassium and levoglucosan measurements, to explore the role of wind-direction, atmospheric processing, fuel type, and burn conditions on two solid fuel organic aerosol factors during a London field campaign. The results are well quantified and are important for the continued understanding of aerosol from different sources.

The results of this paper rely upon the PMF solution presented in the complimentary paper. I recommend this paper for publication in ACP, contingent upon the PMF solution

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in the complimentary paper receiving a positive review.

Comments:

In section 3.1, the use of CO and NO_x as gas-phase tracers for comparison to the PMF solution is discussed. The authors state that these two gases come from more than one source, which is why they were compared to summed PMF solutions. Did the authors consider source apportionment on the gases? If not, explain why separating the gas-phase signals from different sources was not carried out.

In section 4, the ‘role of fuel type’ and ‘role of burn conditions’ are under the heading of ‘role of atmospheric processing’. It would be better to have the sub sections as their own sections.

Minor revisions:

Page 20854, Line 17-18: When discussing OOA1 and 2, also include the SVOOA and LVOOA terms since they are often used in other AMS publications.

Page 20860, Line 22: There is a typo. The reviewer thinks the author indented to say, “. . . well as f44 compared to SFOA2.”, instead of SFOA1.

Figure 1 caption: The reviewer realizes the PMF solution is in a complimentary paper; however, it would be good to include the fraction of mass that is remaining in the residuals. If it is zero, please state it in the figure caption, or alternatively, guide the reader to the complimentary paper.

Figure 2 caption: The author discusses south and east-west patterns in the paper and in figure 3. For clarify, explain the grid-lines in the wind-direction sub plot in the caption of figure 2.

Figure 4: For quick reference, include the O:C in the SFOA 1 and SFOA 2 sub plots.