

Atmos. Chem. Phys. Discuss., referee comment RC2
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Comment on acp-2022-20

Anonymous Referee #2

Referee comment on "Contribution of wood burning to exposures of PAHs and oxy-PAHs in Eastern Sweden" by Hwanmi Lim et al., Atmos. Chem. Phys. Discuss.,
<https://doi.org/10.5194/acp-2022-20-RC2>, 2022

The manuscript is well written and exposes results from the air monitoring campaign. In my opinion, the manuscript must be focused on that line of research and could be considered after major revisions.

Major comments:

The aim of the study is related to showing the results of the air monitoring campaign meanwhile the authors tried to include numerical simulation in their discussion-analysis with a small contribution to the analysis of the measurements during the campaign. The authors used a Gaussian Model without considering the photochemical reactions of PAHs in the air, even when they mentioned the formation of the OPAHS from the photochemical degradation of PAHs (Line26 p2). In my opinion, the authors must consider a more confident model (like Eulerians) to replicate the observations.

P7 L15 Could be more detailed about how the climatology data was used and applied in the study (ie: the data was averaged? are measured data in specific places? how many places?) How the historical data could fit the simulation in the period of analysis? The authors must justify this method to reduce the uncertainties about meteorological conditions for the PM dispersion.

P13 L15 The authors showed the causes for the poor correlation between modeled and observed values of PAHs. This result does not contribute to the analysis. The numerical simulation could probably be erased from the manuscript due to the several causes mentioned by the authors and the limitation of the model used.

Minor comments:

p4 subsection 2.2 Why only used the PM10 filter and not PM2.5? The PM2.5 sampling filter could indicate more confidence in the long-range transportation and source contribution of the PAHs and OPAHs.

p5 Title subsection 2.3.3 Change *Levoglucona* by ***Levoglucosan***