

# ***Interactive comment on “Evaluation of the impact of wood combustion on benzo(a)pyrene concentrations, using ambient air measurements and dispersion modelling in Helsinki, Finland” by Heidi Hellén et al.***

## **Anonymous Referee #2**

Received and published: 8 December 2016

The manuscript presents an interesting overview of measurements of PAHs and particles (PM<sub>2.5</sub>) in Helsinki Metropolitan area. The most notable about the study is that it covers eight years of measurements at several sites and the results are then combined with modelling to evaluate the levels over the whole area. As such the study is interesting and should be published. The largest problem with the manuscript is the inadequate treatment of uncertainty/variation in the presentation. Averages should be presented together with the uncertainty/variation related to the data, in both text and figures. Typically the standard deviation should be given. Furthermore the text should be checked by a native English-speaking person to correct grammatical errors. I have

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noted a few here, but not all.

Specific comments:

Abstract: Explain all abbreviations the first time they occur.

Page 2 line 8-9: "This could be related to the ongoing and not decreasing sources." This is an unspecific and unclear statement. Please clarify.

P2 line 15: Change to: If we consider the reference level...

P2 line 20: Add relevant references to the first sentence. The first sentence of this paragraph is on PAH, while the rest of the paragraph presents the study of Butt et al. on PM, not PAHs. I suggest to gather the discussion of previous studies according to the components. It would also be useful to present information on emission inventories, especially for Finland.

P3 L9: Please consider the effect of improved stoves leading to lower emissions per kg wood combusted.

P3 L11: Unclear sentence which needs revision.

P3 L24-25: Please indicate here how this is overcome in the present work.

P4 site descriptions: It would be useful to provide more information on the distance between measurement sites in non-urban areas and nearby houses with wood stoves.

P5 Section 2.2: Please provide more information on the measurement methods, especially the analysis methods for both PAH and levoglucosan (columns, temperature program, standards and so on). Line18: Did you really use deionized water and not MilliQ water?

P6 L5: the amount of the wood combusted -> the amount of wood combusted...

P6 L19-22: Please provide the standard deviations for these averages.

P8 L19: have been -> are

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P9 L5-6: Is this data shown?

P10 L1-4: Please clarify this paragraph.

P11 L19: Please discuss the uncertainty associated with this approach.

P11 L30: Is there previous studies that show this effect?

P11L31: In general -> Furthermore. Since this is a different problem you discuss.

P11 L34. Please cite relevant literature here.

P12 : Please discuss your results compared to other previous studies.

P13 L7-8: Please improve this sentence.

Table 1 and figures: Please provide standard deviations when possible. The points in Figures 2 and 3 are annual values and the variation should be clearly stated (even though it might not be feasible to make box and whisker plots). Bars in Fig. 5 also lacks indication of the associated variation.

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Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-780, 2016.

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