**Atmospheric
Chemistry
and Physics
Discussions**

Interactive
Comment

Interactive comment on "Comparison of methods
for evaluation of wood smoke and estimation of
UK ambient concentrations" *by* R. M. Harrison
et al.

Anonymous Referee #2

Received and published: 24 April 2012

The paper is an interesting contribution to the field. Wood burning has been shown
at many places to be important. The comparison of different methods is important as
well.

I recommend publication after taking the following comments (mostly minor but some
major) into account:

- page 6808, lines 9-16: Are the two studies using the same levoglucosan/PM2.5 ratios?

- Page 6810, line 13: QMA instead of QM-A

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Interactive Discussion

Discussion Paper

- Page 6810, line 16: instead of fine particle fractions: be specific about the diameter

- Page 6811, line 13: please list the [K/Ca]soil values at the different locations

- Page 6811, lines 22-23: Are losses for the internal standard the same as for levoglucosan

- Page 6812, line 8: change derivatied

- Page 6812, line 11: Is the recovery the same for 1-phenyl dodecane as for levoglucosan

- Page 6813, line 3: trifluoroacetamide

- Page 6813, lines 8-10: How good was the comparison? What is the uncertainty, precision?

- Page 6815, line 12: Where is the CM(PM2.5) coming from? How was it calculated?

- Page 6815, line 12: This formula is only valid for a location where other carbonaceous sources (OM and BC) than traffic and wood burning are negligible. I assume that secondary organic aerosol is not negligible at these locations here. The formula cannot be used here this way. An option is to show only babs instead of mass. Otherwise one needs to discuss how C1 and C2 were obtained here properly.

- Figure 2: Were orthogonal regressions used? As both x and y have errors, this should be done.

- Page 6816, lines 11-14: The choice of alpha(traffic) is probably crucial here. One should discuss if and at which values of alpha the dips disappear.

- Page 6817, line 3: How mass determined? What light absorption efficiency was used?

- Page 6817, line 4: How was PM2.5 traffic determined?

- Page 6817, line 6: Please compare also to real measurements (e.g. Chirico et al.,:

Aerosol and trace gas vehicle emission factors measured in a tunnel using an aerosol mass spectrometer and other on-line instrumentation, Atmos. Environ., 45, 2182-2192, 2011). - Page 6817, lines 16,17: Did you use orthogonal regressions? It should be used.

- Page 6817, lines 21-26: Is the uncertainty and/or precision of the levoglucosan measurements higher than for potassium?

- Page 6826, line 5: How are the 14% calculated?

- Page 6826, lines 12-14: The missing seasonality could be due to compensation by other effects like more secondary aerosol in summer. Try to make the argument stronger.

- Page 6826 conclusions: It would be good to make in the conclusions or somewhere else the link to studies in Paris. E.g. Favez et al.: Evidence for a significant contribution of wood burning aerosols to PM(2.5) during the winter season in Paris, Atmos. Environ., 43, 3640-3644.

- Page 6827, lines 8-19 The discussion of the aethalometer method should be toned down as the C1 and C2 values used here are likely not appropriate.

- Table 1: some numbers contain too many numbers after the comma.

- Figure 5: The inverse relationship is not so obvious in this graph. Maybe add a Figure on potassium or on the ratio versus temperature?

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 6805, 2012.