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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Assessing the regional impact of Indonesian biomass burning emissions based on organic molecular tracers and chemical mass balance modeling" *by* G. Engling et al.

Anonymous Referee #2

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G. Engling, J. He, R. Betha, and R. Balasubramanian Assessing the regional impact of Indonesian biomass burning emissions based on organic molecular tracers and chemical mass balance modeling

the review of the paper

general comments: The paper is written by scientifically sound and concise way and brings new important data about the influence of biomass burning emissions in Indonesia influencing Singapore air quality. They provide broad range of chemical analysis data of ambient aerosol to support and prove the aerosol origin illustrating its biomass

combustion origin during polluted days.

Specific comments:

However, there is one part that might be improved. The analysis of metals provided several astonishing results that deserve more attention. Copper concentrations increased 30 times to the levels of matrix elements while common biomass tracer potassium was increased 4 times only. Although the explanation given in the paper is possible, it does not say where such high levels of copper may come from. (Are there any copper mines or any other (e.g. agriculture) possible copper sources?) There might be also copper sources emitting copper to the same air masses as those coming with biomass burning products. Zinc concentration is often elevated in biomass combustion emissions, but in this case they are even lower than in clean case. See et al. 2007 e.g. found enrichment factors for PM2.5 equal to 10ˆ7 for Zn, but only 10ˆ2-10ˆ3 for copper in peat fire episode in Indonesia. Coarse part of the aerosol may explain the difference, but this should be reflected in the text. The same results were used for CMB as peat burning source profile, how the Cu could be explained by this factor?

The other minor comments are bellow: p. 2775, line14: reference Muraleedharan et. al., 2000 is missing in reference list

p. 2776, line18: reference Sundarambal et. al., 2010 is missing in reference list

p. 2776, line 21: SI units are preferred nowadays

p. 2776, line 24 -25. It is not clear from the text when the filters were folded – before or after the analysis as I would expect.

p. 2777, line20: reference Birch and Carry , 1996 is missing in reference list

p. 2778, line4: references Engling et al. , 2006 and Iinuma et al. 2009 are missing in reference list

p. 2779, line 19, a short explanation to representativeness of US EPA data for Singa-

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pore emission profile should be given.

p. 2781, lines 23-24: OM/OC conversion factor should be mentioned instead of OC/OM factor if its value is 2.

p. 2781, line25: reference Turpin and Lim, 2001 is missing in reference list

p. 2781, line25: using value 2 as OM/OC conversion factor apparently leads to analysed mass concentration higher than gravimetric mass concentration (see Fig. 3), therefore, based on these data, probably lower OM/OC conversion factor would be more appropriate for this type and age of biomass burning plume.

p. 2782, line 3: a reference should be given after the world Literature.

p. 2782, line 22: reference Hanningan et al. should be Hennigan et al.

p. 2783, line 20: reference Zhang et al. 2010 should include" a "or "b".

p. 2784, Line 2: diagnostic ratios tend to be dependent on an aerosol age, it should be mentioned.

p. 2785, line 6: The sentence "Other than . . . " should be corrected.

p. 2788, line 11: the reference "Chandra. . ." is not mentioned in the text

p. 2788, line 18: the reference "Critical. . ." is not mentioned in the text

p. 2788, line 24: the reference "Duncan. . ." is not mentioned in the text

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