

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.

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Reviewer 1

This is a very good paper presenting the influence of biomass burning on regional air quality in Southeast Asia. The authors address a need for identifying suitable organic molecular tracers for peat fires in Indonesia, considered as a major source of smoke haze in the region, as well as quantifying its contribution to the atmospheric PM loading. All sections of this manuscript are scientifically sound and interesting to read. I only have a few minor issues to address.

C2749

Response: We thank the reviewer for the constructive comments on the manuscript. We have provided our point-by-point responses to the comments and suggestions of the reviewer below and will incorporate the changes into the manuscript accordingly.

Comment #1: Page2780 Lines8-9: The authors might consider using 'ends' instead of 'starts'. Of course for back trajectories the sampling point is the releasing point for calculations, but still the trajectory ends at that point.

Response: We have made appropriate changes in the manuscript text as per the reviewer's suggestion.

Comment #2: Page2782 Line24: It might be useful for the reader if the authors were to explain what 'shorter' denotes. This could be discussed more in detail by referring Hennigan's studies on levoglucosan degradation in the atmosphere.

Response: We have added the following discussion to the manuscript in accordance with the reviewer's suggestion. "Henningan et al. (2010) reported that nearly 30-75% of levoglucosan would react within one day at typical atmospheric OH levels while Hoffmann et al. (2010) estimated the half-life of levoglucosan to be 12.7 – 83.2 h (0.5 – 3.5 days) at 90% relative humidity. From the backward trajectory analysis, it was observed that the air masses from the source regions of biomass burning reached Singapore within 2 – 3 days, which falls in the range of the half-life of levoglucosan according to Hoffmann et al. (2010). We would like to emphasize here that the ambient concentrations of anhydrosugars were up to two orders of magnitude higher during the haze period relative to the clear days, indicating a massive impact of biomass smoke emissions."

Comment #3: Page2782Line22: 'Hennigan' instead of 'Hannigan'..

Response: We have rectified the typographical error.

Comment #4: Page2785 Line6: 'Beside' instead of 'Other than'. 'Other than' only when the copper discussion comes earlier than that on Al, Fe and Ti.?

C2750

Response: "Other than" was a typographical error and was therefore deleted. The sentence now reads as: "Cu, Al, Fe, and Ti were the most abundant trace metals found in haze samples."

Comment #5: Page2780Line7: remove 'very'. Page2782Line21: remove 'strong'..

Response: We have removed the words as suggested by the reviewer.

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 2773, 2014.

C2751