

***Interactive comment on* “Trace gas and particle emissions from open biomass burning in Mexico” by R. J. Yokelson et al.**

Anonymous Referee #2

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The authors present a new compilation of emission factors for the most important fire types occurring in Mexico. It includes a large number of airborne, in terms of sampling and measurement techniques largely consistent measurements, a large fraction of which is first published in this work. The manuscript is very well structured and written. The results are presented and discussed in a very concise manner. This work is a very valuable contribution to an improved understanding of factors influencing emission production (e.g. the relation between emission factors and MCE) and to more accurate emission estimates. I therefore recommend this manuscript for publication in ACP. I only have minor comments:

General comments:

In section 3.1.3, emission factors for mixed crop residue and tropical dry forest fires are

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presented. Emission factors of this category are not used in the estimate of primary emissions from open burning in Table 8. What is the recommended usage of this category?

In section 3.2 the dependency between MCE and the contribution of soot (and OA) particles to the total number of biomass burning particles in individual samples is discussed. The dependency in Figure 6 is visible; however, only 35 and 39% of the variations in the contribution can be explained by variations in the MCE. Possibly, it would be helpful to add a sentence that the contribution of soot and OA particles is apparently also determined by other influencing factors.

In Section 3.3 you estimate total biomass burning emissions for Mexico using biomass burnt estimates from the FINN inventory. Adding the corresponding GFED inventory estimates (van der Werf et al., 2010) for comparison would possibly be of great interest to many readers.

Technical comments:

I sometimes encountered a semicolon in sentences where I doubt it is correct, e.g. page 7343 line 13, page 7344 line 6, page 7345 lines 11 and 17. Please check if a comma is more appropriate in these cases.

Page 7341 line 4: Table 8 includes values from Tables 2,3,5,6,7.

Tables 2 to 7: Would it be possible to add a label why values are not listed (e.g. measured but below the detection limit, not measured)?

Figure 3: Not using abbreviations for Africa and Mexico in the legend would probably look nicer.

Figure 4: You may consider exchanging “high MCE point” with “high MCE points”.

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