

***Interactive comment on* “The tropical forest and fire emissions experiment: laboratory fire measurements and synthesis of campaign data” by R. J. Yokelson et al.**

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This is a well written (with reservations referring to section 3.3, see below) and important paper well worth being published in ACP. However, many parts of the paper are a bit wordy, so my general suggestion to the authors is to shorten where possible and focus to the major messages.

In my opinion the strongest point is that the authors took a lot of effort to reconcile emission factors of individual species measured under different conditions (lab, ground based, and airborne). Their analysis is insightful and yields improved recommended overall emission factors that - despite all problems and uncertainties - can be used for

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more realistic modeling of global biomass burning emissions.

Their study allows new extrapolations to estimate a global NMOC source of ~500Tg/yr from biomass burning. This is a factor 5 higher than the widely accepted value from Andreae and Merlet, 2001! This major conclusion is unfortunately plugged into a section (3.3) containing unnecessary discussions on biogenic versus pyrogenic emissions and SOA formation. I strongly recommend to focus only on the biomass burning extrapolation in section 3.3 and delete all other discussion. This will also require a few adaption in other sections but overall the paper will benefit a lot.

In the following few specific comments:

Part of the introduction reads as if the authors seek justification for performing lab experiments. There is no doubt that lab- and field studies must complement one another. I recommend re-wording this part by objectively listing the respective strengths and weaknesses.

page 4224, line 6: briefly explain following statement: "Also, in the field the possibility exists for over-estimating flaming emissions from airborne platforms or under-estimating them from ground-based platforms."

Table 2: the difference between units "g/kg dry weight" and "g/kg dry fuel" needs explanation.

Section "2.4 PTR-MS" can be shortened. Just give details that are different from standard operation and specific to this experiment. The principal functionality of PTRMS does not need to be reproduced here.

Table 3: I suppose MCE, CO₂, CO are no FTIR species and PM_{2.5} is not a PTRMS species. Units are indicated to be g/kg - is this kg dry weight? For all species listed?

Section 3.2: On the discussion of HCN and acetonitrile it would be interesting to show a plot EF versus nitrogen fuel content. At least for acetonitrile I expect a good correlation. Biomass burning estimations using CH₃CN as tracer could probably be improved when

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the N-content of biomass is considered.

Figure 5: no unit is given for the y-axis

The last paragraph of section 3.2 ("We next compare...") is redundant in my opinion and can be deleted.

Page 4244 line12 : what is EFNMOOC?

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 4221, 2008.

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