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www.atmos-chem-phys-discuss.net/11/C4121/2011/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Boreal forest fire emissions in fresh Canadian smoke plumes: $C_{\vec{1}}$–$C_{\vec{10}}$ volatile organic compounds (VOCs), $CO_{\vec{2}}$, CO, $NO_{\vec{2}}$, NO, HCN and $CH_{\vec{3}}CN$" *by* I. J. Simpson et al.

Anonymous Referee #2

Received and published: 31 May 2011

This paper presents result from the 2008 ARCTAS B mission component that measured boreal fire emissions, presenting emission data for a number of compounds for the first time. The paper is well written and the measurements make a very useful addition to the literature. I recommend publication of this paper following the consideration of some minor comments, given below.

General Comments

Mixing of background air with the BB plumes could affect the calculated ERs, since

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the ratios of compounds to CO are often different in the background compared to the plume. Could the authors consider this effect and comment of its impact on their analysis?

Another possible effect in these studies is fire-induced convection, which would increase vertical transport of boundary layer air in the plumes relative to the mean transport that the un-perturbed BL experiences. Could this be the reason behind the slightly higher values for HCF-141b in plumes, and the slight apparent negative CH3CCl3 emissions in this study and the previous Australian study?

Specific Comments

Pg 9529, Line 17. I realize this is a standard quantity, but the Modified Combustion Efficiency" should be defined here.

References

"an der Werf" should be "van der Werf"

Figures

Figure 2: The text in the panels is a bit hard to read.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 9515, 2011.