

## ***Interactive comment on “Near-field emission profiling of Rainforest and Cerrado fires in Brazil during SAMBBA 2012” by Amy K. Hodgson et al.***

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The manuscript presents biomass burning emission measurements during a series of research flights over several fires in Brazil. This is a region of global significance in terms of both total particulate matter as well as black carbon emissions. While there have been several previous campaigns focused on characterizing emissions in this region, none have used more modern instruments, and the relative scarcity of data from this area coupled with its importance certainly merits publication in my opinion.

I have little to add beyond Dr. Yokelson’s thorough comments, but do recommend addressing a couple of smaller issues/areas in more detail in the manuscript in a revised version:

It would be helpful to others in the SP2 community to know a bit more about how the

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instrument was operated in these more challenging conditions. Some small details regarding the sample flow rate and dilution (if any) could be provided. In addition, an estimate of the concentration limit where true particle coincidence (multiple BC present in the laser beam at the same time) would be helpful, and a verification that the field data remained below this value.

The manuscript mentions the use of dryers on the AMS and SP2 inlet line, but does not discuss losses. Deriving correction factors for losses in nafion dryers can be difficult, but some short discussion of potential impacts on measurement uncertainties would be useful. On a related point, I assume the nephelometer inlet line RH was at times quite different from the AMS/SP2 line, else the nephelometer could be used to apply corrections for the pin-hole issue earlier in the study at all times. I am curious if the pinhole blockage effects may have varied with sample line RH. Any systematic relationships between emission ratios to CO and RH might hint at this.

Suggest referring to BC "core" diameters rather than BC diameter to avoid potential confusion with the mixed particle size.

I recommend reporting an average OA mass concentration in Table 6. This can be useful for any future comparisons with EF measured at different concentrations and can help untangle potential impacts of semi-volatile partitioning.

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