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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Speciated On-line PM_1 from South Asian Combustion Sources: Part I, Fuel-based Emission Factors and Size Distributions" *by* J. Douglas Goetz et al.

Anonymous Referee #1

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This paper reports the AMS, Aethalometer and PAX data from the NAMASTE experiments, deriving emission factors for various small-scale pollution sources in Nepal. There are already other papers arising from this experiment, but presenting data from different instruments, so this work stands on its own right. The work is methodically presented and thorough, and is well within ACP's remit as there is relatively little authentic data on these sources, which are prominent in developing countries. I recommend publication after minor corrections.

Comments:

Because a technical citation for the mini AMS is not given, more of the specific technical

details should be listed, in particular the new data acquisition system. Is it the same ADQ system as the new system on newer models of AMS?

How confident that the Li-Corr factory calibration is still valid? Technical data to back up this assumption should be given, especially because this was operated under very different conditions to the laboratory. Was a post-calibration performed? Were any low pressure calibrations done in the laboratory? Ideally, an uncertainty estimate should be attached to this.

The uncertainty estimate attached to the OM:OC estimation based on f44 should be qualified better. Is this precision or accuracy? I would expect the accuracy to be questionable; it is known the relationship between OM:OC and f44 is both instrument and aerosol type specific and there are some types here that are new to the AMS. I would add additional caveats to this effect.

When describing the Lungdren plots, the authors fail to draw the distinction between continuum/transition aerodynamic used by impactors and vacuum aerodynamic diameters used by the AMS. Which is strange, considering the corresponding author was the first author on the definitive paper on this topic.

A moderate AAE does not necessarily imply the presence of BrC; BC particles with non-absorbing coatings can also exhibit this, depending on the primary spherule size (Liu et al., Geophys. Res. Lett., 42, 613-619, 10.1002/2014GL062443, 2015). While the authors touch on this, it isn't very clear.

Figure 1: The acronyms next to the mudstoves should be explained in the caption.

Figure 4: Reporting the local time of the measurement is not meaningful. It would be better to use 'time since ignition' as the x-axis.

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