

Interactive comment on “Nepal Ambient Monitoring and Source Testing Experiment (NAMaSTE): Emissions of trace gases and light-absorbing carbon from wood and dung cooking fires, garbage and crop residue burning, brick kilns, and other sources” by Chelsea E. Stockwell et al.

Anonymous Referee #3

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Summary: This paper describes the measurements of trace gases and carbonaceous (BC, and BrC) aerosols (mass and optical properties) from a variety of bio and fossil fuel burning sources in an around Kathmandu valley of Nepal in the eastern Himalayas. These measurements formed part of a field campaign using a mobile laboratory and a set of state-of-the-art instruments. These measurements provide important and valuable data on light absorbing aerosols and trace gases over this part of the Himalayas,

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and is done so extensively perhaps for the first time and thus are, useful for environmental and climate impact assessment studies. Having said the above, the data should also be taken with the pinch of salt that the measurements have been for a very short duration (about a fortnight), the number of samples used to evolve the means are statistically not very high. How well these sample represent the regional population of these sources remains to be seen. In other words, the data emanates from a highly under-sampled source. Of course, the authors also seem to be aware of this. Moreover, the reported values correspond only to a particular period of time of the year (not even a full month). They also do not represent the strong seasonal variations in some of these sources and also changes caused by changes in synoptic meteorology and long-range transport; which are very important over this region. Their spatial representativeness also is highly limited to the urban region of Nepal and its southern slopes, which would be impact by transport of emission from the adjoining north Indian plains. Nonetheless, it remains that these are the first comprehensive set of measurements from several sources that are specific to this region (on which field measurements are not possible in other parts of the world), and provide information that could be used as inputs for regional climate and environment impact assessment and probably would lead to more such measurements. In other words, they provide some ball-park figure on these parameters, which were otherwise not available. In view of the above, the paper may be accepted for publication in ACP, provided the authors take care of the following specific concerns in their revised version 1. Make a clear statement of the limitation of the data (under sampling in time, space and sources) explicitly in the abstract and conclusions 2. Provide the fractional figures (to the extent accurate) of the sources sampled, against the total number of such sources present in Kathmandu (for eg % ge of brick kilns sampled vs the total no. available in Kathmandu, the no. of two-wheelers sampled vs the total two-wheelers plying in the city, the no. of gensets samples vs the total etc in a table or in the respective sub-sections. 3. For FTIR – please provide the actual averaging time used (for grab sampling), the best and worst S/N for the species being reported in this study and the resulting uncertainty in the derived concentrations.

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4. In the ER calculation, state explicitly how the average ER estimated from the FTIR around a given source, compared with the values obtained from WAS data, for completeness of information and also in view that WAS value represents the 'bulk'. 5. It is highly appreciable the way authors have described all the assumptions used in their estimates. Yet, it would be better if they can give an upper and lower bound for the estimates due to the specific assumption they have made (like 50% wood and dung in mixed fuels – suppose it is 80-20 or 30-70)

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