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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Ambient air quality in the Kathmandu Valley, Nepal during the pre-monsoon: Concentrations and sources of particulate matter and trace gases" *by* Md. Robiul Islam et al.

Anonymous Referee #1

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This manuscript by Md. Robiul et al. comprehensively analyzed the concentrations and sources of non-methane volatile organic compounds, organic tracers and carbonacousous aerosols at Bode, Nepal. The results highlight that primary sources, including garbage and biomass burning, vehicle emissions, are the dominant sources of air pollutants at Bode. Meanwhile, the diurnal variation of meteorological condition (e.g., atmospheric boundary layer) may also accounts partially for the diel trend of particle abundance. Results in this study could provide insights into the chemical composition and source characteristic of air pollutant at Nepal and benefit the related modeling work. I recommend for publication of this manuscript after a minor revision.

Specific comments 1. Line 180-186, the authors mentioned the general PM1 observations by AMS will be currently used to provide higher time resolution context for the filter measurements discussed in detail. However, I didn't see the detail in the text. 2. Line 383, you listed "CO2, CO, CH4, and NMVOCs" in the title, but I didn't see the discussion of CO2 and CO. 3. Line 332-339, the description of organic species analysis in PM2.5 by GC-MS was too simple, please add the details, i.e., internal recovery standards, authentic standards, organic reagents, the GC temperature program, reproducibility, method detection limits. 4. Line 670-672, I am not quite understanding what the authors mean that "dung burning is not common in the Kathmandu Valley and its outskirts, dung is a more widely used fuel in rural areas of southern Nepal and India and may contribute to the observed dung burning tracers", you means the dung burning tracer was from long-range transport? 5. Line 420, Line 680-685, the authors speculated the lower isoprene was caused by the unusually cold weather during spring 2015, however, the temperature was 12 to 28 âĎČ according to Fig. 3 (a), which was higher than winter. The methyltetrols are mainly formed under low-NOx or NOx -free conditions. Therefore, could you please give some more reasonable explanation? 6. Line 694-695, do you think there is no transport of air masses passing over Kathmandu during the nighttime? 7. Section 3.3, The main pollution events during the 9-day festival affected the results of the CMB source apportionment, what's the source contribution excluding the main pollution events? 8. Section 3.4, it's better to add the discussion of reactive trace gases during the pollution events, which will make the MS full of logicality and tightness. 9. Line 815, why there is vegetative detritus contributing to EC? As we all know, the vegetative detritus is contributor to OC. Could you provide some other explanation or add some references? 10. Line 860-884, the conclusions were a little simple, the authors did long discussion of the data about the ambient air quality in the Kathmandu Valley from the concentrations and sources of particulate matter and trace gases, however, you only pointed out the garbage burning, biomass burning, and vehicle emissions are potential targets for emissions reductions to reduce ambient PM2.5 in Kathmandu Valley. I welcome seeing a more informative summary in the conclusions

section.

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