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Interactive comment on "Near-road sampling of PM$_{2.5}$, BC, and fine particle chemical components in Kathmandu Valley, Nepal" *by* Kabindra M. Shakya et al.

Anonymous Referee #1

Received and published: 13 January 2017

The manuscript by Shakya et al. presents near-road measurements of PM2.5 and BC concentrations along with chemical composition analysis for filter samples collected in Kathmandu Valley, Nepal. The data were collected by traffic polices using portable instrument packages. Concentrations and chemical compositions measured in two different seasons were compared (spring vs. monsoon). Possible sources of atmospheric particulate matter were analyzed. The reported results can represent personal exposure of aerosol pollutions for traffic personnel in a heavily polluted South Asian city. The dataset can be valuable for assessment of health effects. In general, I found the topic is interesting and the manuscript is clearly written. I would recommend publication in ACP once the authors address the following comments.

Major concerns:

1. PM2.5 concentrations were measured using portable scattering nephelometers. This type of instruments can significantly overestimate PM concentrations at high relative humidity (RH) conditions due to the hygroscopic growth of aerosol particles. Were the data corrected for RH? What were the typical RH values during the study periods? Did the continuous measurements for PM2.5 in general agree with the concentrations derived from filter measurements?

2. The measurements were carried out by mobile personnel. Do their daily activities (e.g., indoor during sleeping and outdoor during working) influence the measured diurnal variations (as shown in Fig. 3 and Fig. 4)? The author should mention some caveats.

Minor comments:

1. I suggest the authors also report the climatic meteorological conditions (temperature and RH) for the two seasons. This information can be helpful in several aspects, e.g., formation of secondary inorganic species, artifacts of PM2.5 measurements, etc.

2. Section 3.6: please specify how COD is calculated.

3. Table 1: the information "n=70 for Phase 2" for carbonaceous seems redundant because these samples were contaminated and not usable.