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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Scattering and absorption properties of near-surface aerosol over Gangetic–Himalayan region: the role of boundary layer dynamics and long-range transport" *by* U. C. Dumka et al.

Anonymous Referee #3

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There are many critical errors with use of the data. It doesn't seem as though the authors used the most recent edited, corrected data from the ARM archive.

The data during this campaign were compromised and require substantial corrections. Even with these corrections I have reservations about the data quality. A few comments on the paper.

In the " Measurements and Techniques" section there are several errors which led me to believe that the authors didn't use corrected data from the ARM data archive. 1.

The inlet pipe was not "Stainless steel" but powder-coated aluminum pipe with a 8.0 inch or 20.32 cm ID. This is standard sewer pipe for the US. I don't know where they obtained the other descriptions. 2. There was no metal screen on the inlet as stated by the authors for this deployment. 3. The data alternate every 30 minutes between sub 10 and sub 1 um aerosol and not every 5 minutes as stated in the paper. This leads me to believe that they didn't correctly parse the data along the aerosol cut size. As there was a substantial difference in the signal in these two size modes, I question the accuracy of the data. 4. The PSAP was operated at a flow rate of 0.7 to 0.8 lpm and not 1.5 lpm as stated in the paper. The flow rate is in the PSAP data file which makes me question if the data was accurately flow-corrected. 5. The authors didn't use the Bond et al. correction to subtract the effect of aerosol scattering in the filter medium. They state that this is an "additional bias". This is substantial bias and will affect calculation of the wavelength dependence or absorption angstrom, AAE. 6. The CO2 provided at the site for the nephelometer calibration was either mixed with another gas or was of too low quality to provide a good calibration. As access to the data was denied during the field deployment this error wasn't discovered until the end of the field campaign and the data had to be corrected. This is problem is reported in a data quality report that accompanies data downloaded from the ARM archive. Data that doesn't use this correction has a 10-15 percent error.

In the "Extensive Properties" section the authors report on an "absorption efficiency" for the aerosol. This parameter requires measurement of the aerosol black carbon. Such measurements were not available during that field campaign.

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 21101, 2014.