Atmos. Chem. Phys. Discuss.,
https://doi.org/10.5194/acp-2017-239-RC2, 2017

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Wintertime Aerosol Optical and Radiative Properties in the Kathmandu Valley during the SusKat-ABC Field Campaign" *by* Chaeyoon Cho et al.

Anonymous Referee #2

Received and published: 31 August 2017

Review: Wintertime aerosol optical and radiative properties in the Kathmandu Valley during the SusKat ABC field campaign Authors: Cho et al.

The paper presents surface and remote sensing aerosol optical measurements from an ABC campaign in Kathmandu from 2012 to 2014. Highlights from the study show diurnal and seasonal variation in the aerosol loading, AOD and intensive optical properties. Based on these measurements the authors calculate TOA and surface aerosol radiative forcing.

Aerosol optical and forcing information from this study is important for tying the results from other ABC studies together to form a comprehensive model of Asian aerosol

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Discussion paper

radiative forcing. I recommend the paper for publication after a few revisions.

A comparison of the surface and remote sensing aerosol intensive properties, single scatter albedo, Angstrom and radiative forcing efficiency, as well as a comparison of AOD and extinction integrated to the top of the boundary layer would give insight on the vertical mixing of aerosol, response of aerosol mixing to transport and diurnal changes in the BLH, as well as provide an informal validation of the Aeronet retrieval of the aerosol intensive properties. The high aerosol loadings provide a good opportunity for a robust validation of the retrievals as well as provide information on mixing.

Do the surface extinction and AOD have different seasonal and diurnal responses? What fraction of the time (# of days during the campaign) was the Kathmandu Basin under cloudy conditions?

The changes in aerosol properties over three short time periods (Dec. 21-Feb 14) don't add pertinent information to the paper. Instead focus on segmenting the data to identify unique aerosol optical signatures (finger prints) for brick factory, cook stove and wood burning emissions. Quantification of the mass absorption efficiency, single scatter albedo, Angstrom/asymmetry parameter, forcing efficiency, mass scattering efficiency for each of these sources, separate from the other, is incredibly useful for climate models.

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