Atmos. Chem. Phys. Discuss.,
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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Simulations of Black Carbon Over Indian Region: Improvements and Implications of Diurnality in Emissions" *by* Gaurav Govardhan et al.

Anonymous Referee #2

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The manuscript evaluates the performance of WRF-CHEM with a new diurnal emission profile added to BC emissions over India and model sensitivity to increasing the emissions by a factor of three. As has been noted in literature in several publications, the model calculated and available measurements of BC in general don't agree over India. Several solutions including scaling the emissions between factors of 3 and 5 and possible errors in the humidity profile in the WRF calculations over the sub-continent have been used to explain the differences in AOD as very few direct observations of BC or other speciated aerosols are available. This manuscript uses the observations performed under ARFI to evaluate the BC concentrations over a wide range of locations. Overall this is a well written paper that explains the methodology and results clearly and

I don't find any problems with the manuscript as it is. The work is not novel as there have been several previous papers treading the same path and the only new innovation here is the use of ARFI collected data which has not been used for constraining the models before.

Correction: Please correct figure 2 caption to include the description of the black, blue and red lines used in the figure.

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