

## ***Interactive comment on “Source sector and region contributions to BC and PM<sub>2.5</sub> in Central Asia” by S. Kulkarni et al.***

### **Anonymous Referee #1**

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This manuscript describes an effort to quantify concentrations and sources of PM in Central Asia. This region appears to not be specifically target by air quality model applications, so this work seems to be a good contribution in that sense. Regional contributions were obtained using the simple “zero-out” method. Future emissions scenarios were also considered. I suggest the following items for the authors to consider:

- 1) How are the winter heating emissions currently quantified? This would be good to know since the authors point to this as one of the reasons for underestimations in the PM concentrations.
- 2) The BC surface mean values was found to be around 0.1 ug/m<sup>3</sup>. That seems very low. Do you have confidence in your apportionment models at such low values?

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- 3) It is not clear to me why the authors chose to have different source regions for anthropogenic emissions, biomass burning emissions, and dust emissions instead. Perhaps the value gained in the analysis overcomes the confusion, but it is not clear.
- 4) Why were residential and transportation emissions portioned between model layers 1 and 2? 10% seems like a lot to inject higher up. How high was level 2?
- 5) How were back (and forward) trajectories calculated? This does not seem to be described in any deal.

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