Other Changes in the Manuscript

The mapping of anthropogenic emissions from the raw emission files to the WRF-Chem domain was based on a nearest-neighbor algorithm in this study. While analyzing the model results further in response to the reviewer's comments, we found that this mapping has led to an overestimation of anthropogenic emission in the WRF-Chem domain compared to the original emission inventory. The total anthropogenic emissions mapped on the WRF-Chem using the nearest neighbor algorithm were 229 Gg for South Asia while they were 203 Gg in the original inventory. Further, we found that our mapping resulted in about 10% error in the mapping of emissions from different sectors. For example, the contribution of residential sector to the total anthropogenic emissions in South Asia is 62% in the original emission inventory but it reduced to 51% after our mapping.

After the original submission, our group has developed a mass conserving emission preprocessor to map emission data from the raw files to the WRF-Chem domain. Therefore, we decided to run our simulations again with anthropogenic emissions prepared using the mass conserving emission preprocessing. The spatial distributions of BC anthropogenic emission rates mapped over the model domain using the nearest neighbor methodology and the mass conserving emission preprocessor are very similar but there are some differences (Figure R1).

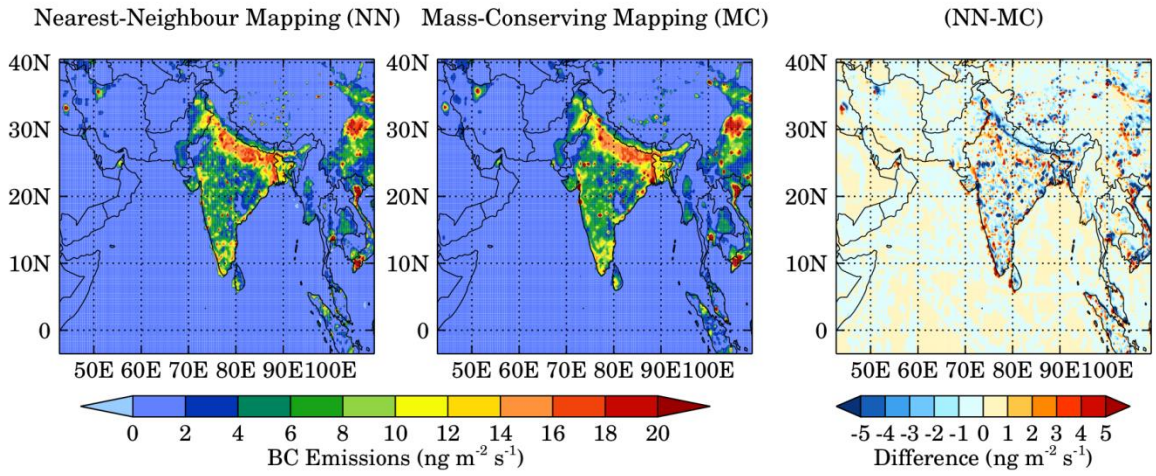

Figure R1: Spatial distribution of anthropogenic BC emissions mapped over the WRF-Chem domain using the nearest neighbor and mass conserving approach. The absolute difference between the BC emission rates is also shown.

This change did not affect the conclusions drawn from this study but affects the magnitude of numbers presented in the manuscript. All the numbers in the manuscript along with Tables and Figures are corrected for the new results.

We have also included Z. Lu and D. G. Streets as co-authors in the revised version considering their efforts in preparing the SEAC4RS emission inventory.