Response to Dr. S. K. Sharma:

Thanks very much for your comments, suggestions and recommendation with respect to improve this paper. The response to all your comments are listed below. There was an extensive discussion among the authors regarding how to revise the content, and this paper is subjected to a major revision for addressing the concerns by all the referees and You. Thus, the response is delayed, and we are sorry for this.

The paper presents the comprehensive analysis of the source and transport of atmospheric CO over the Himalayas and Tibetan Plateau (HTP) and its potential implications on the melting of glaciers, damaging air quality, water sources, grasslands, and threatening climate on regional and global scales. The diurnal, seasonal, and interannual variability of CO over the HTP is also investigated from January 2015 to July 2020. The GEOS-Chem model has been used and further validated with the ground-based observations. This study concluded that the anthropogenic and oxidation sources originating either local or in the SEAS region dominated the surface CO over the HTP, which is different from the black carbon that is mainly attributed to BB source from the SEAS region. The authors have made a good effort and demonstrated the transportation of CO and NOx mainly from biomass burning and primary sources to the HTP region.

Fig. 5 should be plotted in 1:1 also (in situ: GEOS-Chem).

Response: As recommended by referee #1, we have used IASI CO total column from 2015 to 2020 over the HTP to evaluate the model performance in the specifics of the HTP. The new Fig. 5 is plotted in 1:1 basis.

For Fig6, the only correlation coefficient can be used in the text, and Fig 6 may be deleted.

Response: In addition to correlation coefficient, the slope $\Delta NO_2/\Delta CO$ is also used. We would like to keep this figure which can visually show how much these two gases are correlated in each city over HTP.

The sub-section: Concluding remarks should be Conclusions

Response: Done.