Reply to the Comments:

The authors are thankful and appreciated to the reviewer and editor for their suggestions and insights. We are happy to incorporate all the suggests for better and comprehensive representation of the present work, and for making it easier to reader prospective.

The Comments

This study analyzed the seasonal and annual variation of black carbon (BC) and brown carbon (BrC) in Gangtok, Sikkim. Authors characterized the sources of BC, and discussed how meteorological conditions affected BC based on correlation analysis. Although the topic of this paper suits for EGUsphere, most results are basic and the discussion is not enough, leading to limited scientific information. In addition, the manuscript is poorly written and the language should be improved. Therefore, I do not think this manuscript meets the requirements of EGUsphere. The questions are listed below:

Thank you for the suggestion we have addressed the issues and tried to rewrite the most part of the Manuscript.

S. No.	Comments	Replies
	Main comments:	
1.	The authors use the ERA-5 reanalysis data for meteorological analysis. How do authors consider the uncertainties of the data set?	*Thank you for the suggestion we have addressed the issues and tried to rewrite the most part of the Manuscript.* *We have Discussed about the ERA5 uncertainties in the data section, Cited Some of research in the same region used ERA5 data for the meteorological study.* *Sharma et al, 2022, Kumar and Sharma, 2023.* *We have added AWS data along with ERA5 for support even through AWS data have huge discontinuity. But it can be seen that both data have almost similar pattern.*
2.	Some results summarized in the abstract are not consistent with those analyzed in the paper. For instance, the authors mention when surface pressure is higher, the boundary layer is calmer, which results in the deposition of pollutants. In general, the deposition process leads to a decrease of pollutants. However, in the paper, the authors showed that higher surface pressure keeps the accumulation of pollutants, which is contradictory to the summary in the abstract. Please check these inconsistent contents.	*We have addressed the issues and incorporated the changes as per suggestion.* *The Sentence has been rephased. And also, explained more clearly this time.* *Also modified in the Abstract section.*

3.	The authors show many correlation efficiencies in the discussion section. Note that the correlation analysis indeed gives some evidence for what you observe, but they are not conclusive in this study. For example, the authors say 'The good significant correlation between BC and BCff suggested that the major contribution of the BC is fossil fuel burning'. The good correlation between BC and BCff does not necessarily mean that fossil fuel burning is the major contributor to BC. The authors should also give the proportion of BCff in BC to support this point. Please check other similar discussions in this section.	*Yes, we agree with reviewer. We have addressed the issue.* *Thank you, we have addressed on the basis of table of the data set the actual contribution of BC, BC_{ff}, BC_{bb}, and BB%. And tried to described using correlation matrix for the same.* *We also referred to the supplementary table S3 of monthly contribution of the BC, BrC, BCff, BCbb, and BB%.*
4.	Lines 273-275, the authors conclude that fossil fuel burning results in the increase of CO2 based on the good correlation between BC and BCff, and think that if the increase of CO2 is not caused by fossil fuel burning, BC and BCff have poor correlation. Please prove this point.	*The modification is made as mentioned here. And some explanation after the correction is added to the Manuscript see in track-change mode, as well as accepted in page no. 9.*
5.	Lines 287-292, please give the evidence that the decrease of surface pressure is caused by the vertical rising of air parcels. Authors mention that BC and BrC play important roles in cloud formation, please provide the evidence.	*The details discussion has been added to the discussion section with recent and relevant references. Please see page no. 10-11.*
Minor Comments:		
1.	Line 177 and line 184, equations (3.15) and (3.16) are not contained in the supplementary information.	*The modification is made as mentioned here. (Please see page no. 6).*
2.	Line 244, Table S11 is not found in the supplementary information.	*Thank you, yes it was typo mistake, now it is corrected.*
3.	Line 248, it seems strange that the temperature increases during night time. Please explain why.	*We made the correction and changed in figure, the time was written wrongly, it must have started from 12PM. Please see the figure as well as discussion.*
4.	Line 263, 'is' should be changed to 'are'	*Yes, we agree to suggestion, and changed.*
5.	Line 270, delete 'good' or 'significant'.	*We have changed the sentence and rephrase as suggested, and remover the good. And some places we delated significant as per relevancy.*