Reply to the Comments:

The authors express gratitude to the reviewer and editor for their valuable suggestions and insights. We are pleased to incorporate all recommended changes to enhance the clarity and comprehensiveness of the present work, thus facilitating easier understanding for readers.

The Comments

S. No.	Comments	Replies
	egusphere-2023-702-referee-report-1	
	Major comments:	
1	For the discussion of the effects of BC and BrC on CCN formation and precipitation, I still think that the conclusion is arbitrary, and the description dangers the manuscript.	*Thank you for your thoughtful comments regarding the discussion of the effects of BC and BrC on CCN formation and precipitation in our manuscript. Your input is greatly appreciated, and we have carefully considered your concerns.*
2	Authors insist that BC and BrC, no other aerosols, prompt CCN formation and precipitation in the study region. Yes, we believe that BC and BrC can act as CCN. However, the ability of BC and BrC to form CCN is not necessarily stronger than that of other aerosol s with different compositions.	*We have addressed the issues and incorporated the changes as per suggestion. The discussion is added to the main manuscript. Please see line no 302-308, page no. 10, as highlighted in yellow colour.*
3	However, the ability of BC and BrC to form CCN is not necessarily stronger than that of other aerosols with different compositions in addition, authors mention that the study region is significantly affected by fossil fuel combustion and biomass burning.	*We have addressed the comments and added some point to the conclusion. Please see line no 396-401, page no. 13, as highlighted in yellow colour.*
4	The primary aerosols (except for BC and BrC) and secondary aerosols (such as nitrate, sulfate) formed from their precursors might have stronger effects on CCN formation and precipitation. Although authors have added the discussions of the ability of BC and BrC to form CCN, the conclusion is not persuasive for not considering the effects of other aerosols.	*We have addressed the comments and added some point to the conclusion as per suggestion. Please see line no 396-401, page no. 13, as highlighted in yellow colour.*
	Minor Comments:	
1	Line 237 '. Which' change to ', which'	*The modification is made in manuscript as mentioned. Please, see as highlighted in line no. 239 in yellow colour.*

2	Line 285 and 288 delete ‘strong’ or ‘significant’	*The modification is made in the manuscript as mentioned. Please, see as highlighted in yellow colour. (Line 287 and 290)*
egusphere-2023-702-referee-report-2		
Minor Comments:		
1	Page 5 line 124: “It is well well-established” removed the first well.	*We have made the change, please see the page no. 4, line no 113. Highlighted in the manuscript as yellow colour.*
2	Page 6 lines 154-161: “One of the main sources of uncertainty in using aerosol absorption measurements to estimate the BrC absorption coefficient at 370 nm BrC mass concentration is the fact that other species, such as black carbon and dust, can also contribute to the measured absorption. This can lead to overestimation of BrC mass concentration, particularly in environments where these species are also present. However, in the Sikkim region has one of the higher highest precipitation regions in the world and negligible contribution of to the dust pollution. Furthermore, there must be lesser over/under estimation. Therefore, the present study used mass concentration.” The reviewer agrees with the first part of this statement about the dust not interfering with the absorption in the UV. On the other hand, the authors chose to report mass concentrations, but it is not mentioned how they pass from the BrC absorption coefficient at 370nm obtained in Eq. (4) to BrC mass concentrations. It would be nice to have at least a small line indicating the mass absorption coefficient (m2 g−1) used as such value can vary a lot based on compounds/sources/combustion process/fuels and lead to large uncertainties in BrC mass concentration estimation.	*The specific formula for the conversion is determined by the type of regression model utilized, such as linear regression in this case.* *For example,* *BrC concentration = m × Absorption coefficient + b,* *Where:* *‘m’ is the slope of the regression line (related to the sensitivity of the method).* *‘b’ is the y-intercept of the regression line.* *Absorption coefficient is the measured absorption coefficient at 370nm.*
3	Page 11 line 313: “A similar has been found for temperature”, a word may be missing here.	*The modification is made in MS as per suggestion. Please, see as highlighted in yellow colour, page no. 9, line no.* 286-287.
4	Page 11 line 322: “A similar has been”, a word may be missing here.	*The modification is made in MS as per suggestion. Please, see as highlighted in yellow colour, page no.10, line no.* 295-297.

5	Figure S5: The BC and BrC data seem to still have zero did you estimate the limit of detection of the instrument? Should those points be included in the comparison? Yes, it is included. Zore is there because of two-digit values because the values were 0.00000x likewise. Regarding this answer, the reviewer strongly suggests to have a look at the limit of detection of the instrument for BC, as 0.00000x seems fairly low.	*Yes, we agree to reviewer's suggestion, and we tried to address the comments, and corrected as per suggestion.* *The Aethalometer AE33 is an aerosol instrument with a detection limit of <0.005 µg/m³ for a 1-hour period and a measuring range of 0.01 to 100 µg/m³. It has a programmable measuring frequency of 1 second or 1 minute and a programmable flow rate of 2 to 5 lpm.* *Please see page no. 5, line no. 135-137. Please, see as highlighted in yellow colour.*