Dear Referee,

Thanks for giving us an opportunity to revise our manuscript (ID: egusphere-2023-407). We appreciate your positive and constructive comments. We have studied these comments carefully and make revisions on the manuscript. We believe that the manuscript has benefited substantially from this revision with much clearer presentation. These comments and the corresponding replies are listed below.

The reviewer's comments are highlighted by gray. The symbol "≫" quotes the original texts in the manuscript. Followed by the comments are our responses (normal texts) and current texts in the manuscript (**leaded by line number in the manuscript with the tracked changes**). Some important revisions are colored by red.

With regards,

Chenwei Fang*, Jim M. Haywood, Ju Liang, Ben T. Johnson, Ying Chen and Bin Zhu*

Replies to Referee#1

1. Line 33 - the sentence starting with “Our findings suggest that…” is hard to read and unclear. Please rephrase it.

≫Line 33: Our findings suggest that emission controls that target e.g. emissions of black carbon that warm the climate would have a different response to those that target overall aerosol emissions.

We have corrected this sentence, as shown below:

Lines 33-34

The opposing adjustments of Asian rainy season forced by the ABS and SCT emission reduction suggest that emission controls that target e.g. emissions of black carbon that warm the climate would have a different response to those that target overall aerosol emissions.

2. Line 140: The authors mentioned that SSP3-7.0 represents a high baseline climate with strong pollution, which is obviously true. However, since the simulations included in this study stops in 2024, I guess the emission levels between SSP3-7.0 and the other SSP scenarios are largely the same, which may be worth noting.

≫Line 140: Hence, the control simulations based on SSP3-7.0 scenario represent a high baseline from which to assess the maximum climate response to strong pollution mitigation.

Thank you for this valuable suggestion. We have corrected this sentence.

Lines 142-144

However, the simulations in this study stop in 2024, when aerosol emissions in SSP3-7.0 are still close to those in other SSP scenarios according to the estimation of Lund et al. (2019). Hence, the control simulations based on SSP3-7.0 scenario give a reasonable baseline prediction of the period assuming typical levels of emissions persist.

3. Line 196: In addition to the positive difference between the model and ERA5 north of 40N, the negative difference at around 30N (jet core) should also be emphasized. Effectively, the model-simulated jet is wider but less intensive compared to observation, especially during the pre-monsoon season, if I read Fig2g correctly.

≫Line 196: However, it should be noted that the simulated upper-level westerly jet northward of 40°N from pre- to post-monsoon seasons are stronger compared to ERA-5 reanalysis (Fig. 2g-i).

Thank you for this valuable suggestion. We agree that the descriptions about the difference in upper-level jet between the model results and ERA5 are unclear. The relevant description has been added.

Lines 234-237

However, it should be noted that the simulated upper-level westerly jet shows a positive difference northward of 40°N and a negative difference around 30°N from pre- to post-monsoon seasons compared to ERA-5 reanalysis (Fig. 2g-i), indicating a slightly wider but less intensive westerly jet in the UKESM1 simulation, especially for the pre-monsoon season.

4. Line 199 - “Southerly wind prevailing over East Asia is slightly underestimated”: this is unclear to me: which region is mentioned here? Please clarify.

≫Line 199: The lower-level southwest monsoon flow over South Asia is also overestimated in the model, while the monsoon southerly wind prevailing over East Asia is slightly underestimated (Fig. 2q).

We have corrected this sentence, as shown below:

Lines 237-239

The lower-level southwest monsoon flow over South Asia is also overestimated in the model, while the monsoon southerly wind prevailing over East Asia between 20 and 40°N is slightly underestimated (Fig. 2q).

5. Paragraph starting at line 218: The discussion on the box plots needs more clarification from my perspective. The authors argued that W2009 and N2016 share similar statistical results, but I feel less confident about this. For example, the SCT-driven extension of the SASM duration is less obvious based on W2009 (Fig3a). I would recommend adding more quantitative descriptions, and including more comparisons between the two methods as well as explaining the possible reasons.

≫ Paragraph starting at line 218: The SASM duration and precipitation in Fig. 3(a) and (b) show similar changes, although they are based on different definitions. Compared to the SASM in the control case, reduction in SCT extends the temporal extent of the SASM duration and enhances the monsoon precipitation, while reduction in ABS shortens the SASM and reduces the monsoon precipitation. With the combined effects induced by SCT and ABS aerosols, reduction in total aerosols has negligible impacts on the temporal extent of SASM and enhances the monsoon precipitation although the enhancement is weaker than pure SCT reduction.

Thank you for this valuable suggestion. We agree that using different definitions of monsoon onset/withdrawal dates may result in the variations in the monsoon duration response range although the SASM duration and precipitation adjustments in W2009 and N2016 are qualitatively consistent. According to your suggestions, we (1) changed the scale for left y-axis of Fig. 3(b; N2016) from day to pentad for better comparison and consistency between Fig. 3a (W2009) and 3b (N2016); (2) added more quantitative descriptions and make a comparison between the Fig. 3(a) and (b) in Lines 271-286; (3) showed the possible causes for the difference in the SASM duration response between W2009 and N2016 in Lines 271-286.

(1) Lines 988-996 (Figure 3)

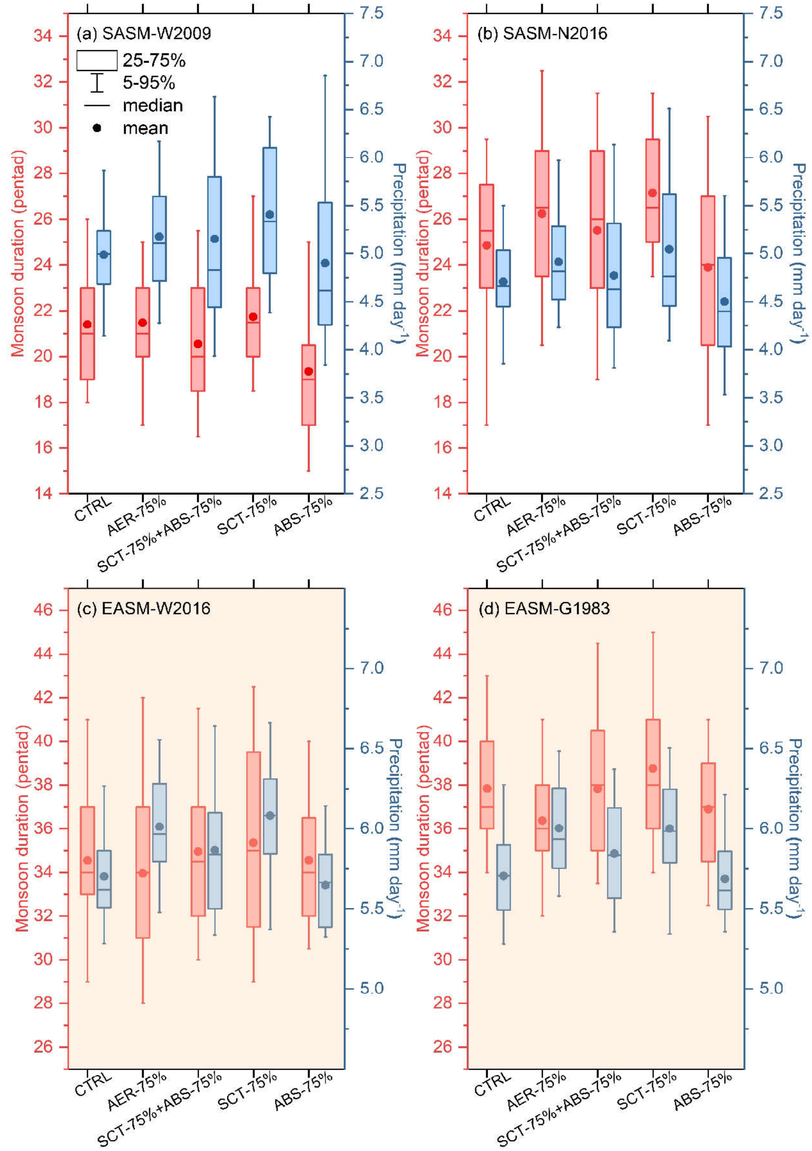

Figure 3: Box diagrams of the monsoon duration (red; unit: pentad) and precipitation (blue; unit: mm day^{-1}) over South Asia (a and b) and East Asia (c and d) in different simulations. Dots and middle horizontal lines inside boxes indicate mean and median values, respectively, and lower and upper sides of boxes indicate 25 and 75% range, respectively, and top and bottom line represent 5% and 95%, respectively. The boxes labelled SCT-75+ABS-75% in each panel are the linear addition of the impacts of the reductions in the SCT and ABS. Panel (a) is derived based on the definition from Wang et al. (2009; hereafter referred to as W2009). Panel (b) is derived based on the definition from Noska and Misra (2016; hereafter referred to as N2016). Panel (c) is derived based on the definition from Wang, D. et al (2016; hereafter referred to as W2016). Panel (d) is derived based on the definition from Guo (1983; hereafter referred to as G1983).

(2)-(3) Lines 271-286 (The differences between the Fig. 3(a) and (b) and the possible causes. Note that the discussions involved the monsoon onset and withdrawal adjustments shown in Fig. 4)

Note that using different definitions of monsoon onset/withdrawal dates may result in the variations in the monsoon duration response range although the SASM duration and precipitation adjustments in W2009 and N2016 are qualitatively consistent. The SASM durations in N2016 from different simulation sets are basically 4-5 pentads longer than those in W2009 (Fig. 3a and b). The SCT-driven extension of the SASM duration based on N2016 (2 pentads) is also longer than that in W2009 (0.4 pentads). The difference in the SASM duration adjustments between W2009 and N2016 can be attributed to the distinct selection of monsoon feature to characterize the monsoon subseasonal variations. Syroka et al (2004) pointed out that the withdrawal of the SASM defined by the precipitation is much later than that defined by the monsoon circulation due to the late decrease in precipitation in southern India. The precipitation continues to increase in southern Indian after September associated with the winter monsoon (Bhanu Kumar et al., 2004), while the SASM-related circulation characteristics becomes unclear in the meantime. Therefore, the SASM onset dates based on N2016 is roughly the same with those based on W2019, but the withdrawal date is about 5 pentads later, resulting in the longer monsoon duration (Fig. 4a and b). Moreover, there exists an additional enhancement of monsoon precipitation over SA in the “SCT” set, which further leads to the later SASM withdrawal and longer SASM duration in N2016 (Fig. 4b). Besides, the precipitation during early autumn is sensitive to the location and synoptic/sub-synoptic systems (tropical cyclones, depressions, easterly waves, north-south trough activity and coastal convergence, etc; Bhanu Kumar et al., 2004), which possibly contributes to the larger variation range in the monsoon withdrawal date in N2016.

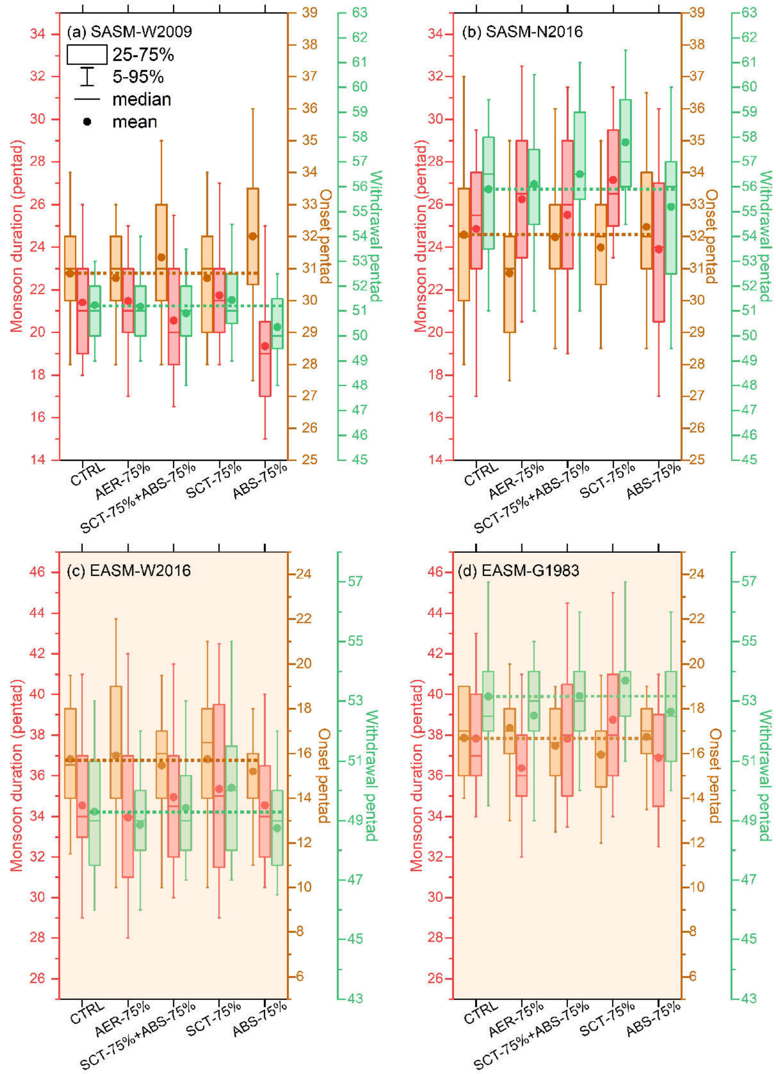

Figure 4: Same as Figure 3, but for the monsoon onset dates (yellow; unit: pentad), withdrawal dates (green; unit: pentad) and duration (red; unit: pentad). The yellow and green dashed lines denote the mean values of monsoon onset and withdrawal in the CTRL simulation set, respectively.

6. Fig4 and other contour figures: How are the precipitation and wind response calculated? Are they the difference between control runs and aerosol-cut runs? Please clarify this in either the caption or method section.

Sorry, we didn't make it clear. The precipitation and wind response are the difference between aerosol-cut runs and control runs. The relevant description has been added in the method section and caption of Fig. 5-13.

For example:

Lines 156-157 (Methods)

The Asian monsoon adjustments forced by pollution mitigation are diagnosed as the difference between the aerosol-emission-perturbed and control runs.

Lines 1011-1012 (caption of Fig. 5)

……The SASM adjustments forced by emission reductions in different aerosol types are the difference between the aerosol-emission-perturbed and control runs.

7. Fig4c & g: the wind responses over the Indian Ocean (10N-20N) are quite different between W2009 and N2016, which also significantly affect the patterns in Fig4b&f. Can you explain the possible reasons and guess which method is potentially better representing the general structure of SASM? I suggest mentioning this issue in the relative paragraph and adding some discussions.

Thank you for your remind. We have added a paragraph (Lines 309-324) mentioning the wind response difference between W2009 and N2016. In this paragraph, (1) Lines 309-321 includes the relevant description and the possible causes for the wind response difference between W2009 and N2016; (2) Lines 321-324 gives the advantages and disadvantages of W2009 and N2016 in defining the SASM onset and withdrawal. **Note that in the revised manuscript, the serial number of Fig. 4 is changed to Fig. 5.**

Lines 309-324

Fig. 5 and 6 show the spatial patterns of the opposing changes in the precipitation and the 850-hPa circulation of the SASM and EASM induced by the SCT and ABS reductions. The monsoon precipitation changes over SA are consistent in W2009 and N2016, showing significantly increased (decreased) precipitation due to SCT (ABS) reduction. The low-level SASM circulation is also enhanced (weakened) over the Indian peninsular with the reduced SCT (ABS) based on W2009, while the wind response is different in N2016. The wind field adjustment in N2016 is characterized by a weak southwesterly anomaly over the north-central part of the Arabian Sea (north of 20°N) but an easterly anomaly over the south India and south Arabian Sea (10-20°N). The enhancement of easterly flow over SA could be associated with the relatively late monsoon withdrawal dates (58th pentad; Table S1) based on N2016 in the “SCT” set. The continuously increasing precipitation related to winter monsoon in the southern part of SA after September (Syroka et. al, 2004) and the SCT-reduction-induced increased precipitation in SA (Fig. 4g) jointly lead to the delay of the SASM withdrawal date to October based on N2016. At this time, the low-level circulation over south SA and south Arabian Sea is dominated by the prevailing easterly (October-December; Sengupta and Nigam, 2019) although the local precipitation remains elevated, and is associated with the summer monsoon precipitation according to the N2016. Hence, the onset is better defined than the withdrawal based on the precipitation definition adopted in N2016, especially over southern SA. The W2009 definition is more widely applicable over SA, and the summer monsoon precipitation increase is more logically coherent with the circulation enhancement based on this definition.

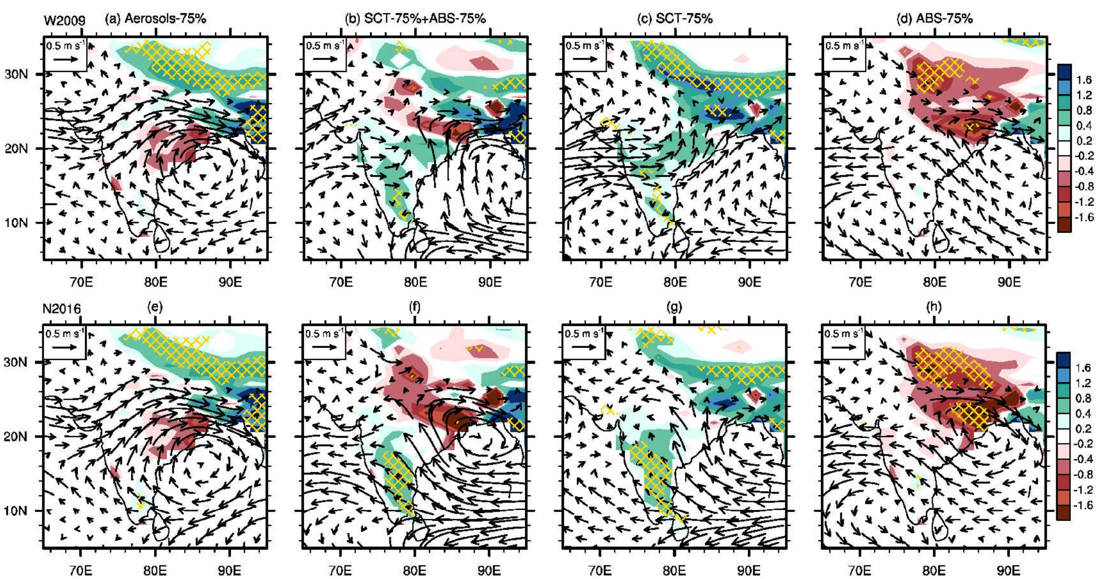

Figure 5: Spatial distributions of the monsoon precipitation (shading; unit: mm day^{-1}) and 850-hPa wind fields (vector; unit: m s^{-1}) responses to the reductions in total aerosols (a and e), scattering aerosols (SCT; c and g) and absorbing aerosols (ABS; d and h) over South Asia. Panels (b) and (f) are the linear addition of the impacts of the reductions in the SCT and ABS. Hatched regions denote where the precipitation change is statistically significant at the 95% confidence level according to a Wilcoxon rank sum test. Panels (a)-(d) are derived based on the definition from W2009. Panels (e)-(h) are derived based on the definition from N2016. The SASM adjustments forced by emission reductions in different aerosol types are the difference between the aerosol-emission-perturbed and control runs.

8. Line 240: according to Fig5d&h, The decreased precipitation induced by ABS seems to be insignificant. Please double check and clarify the descriptions.

≫Line 240: …… Reduction in ABS mainly induces a decrease of precipitation in different subregions over East Asia.

Thank you for this valuable suggestion. The relevant description has been modified. Note that in the revised manuscript, the serial number of Fig. 5 is changed to Fig. 6.

Lines 328-331

Reduction in ABS mainly induces a decrease of precipitation in different subregions over East Asia, but the decrease is significant only in the regions with large changes. There are also some regions with increased anomalous precipitation, but most of the precipitation increase was not statistically significant in this study ($p < 0.05$).

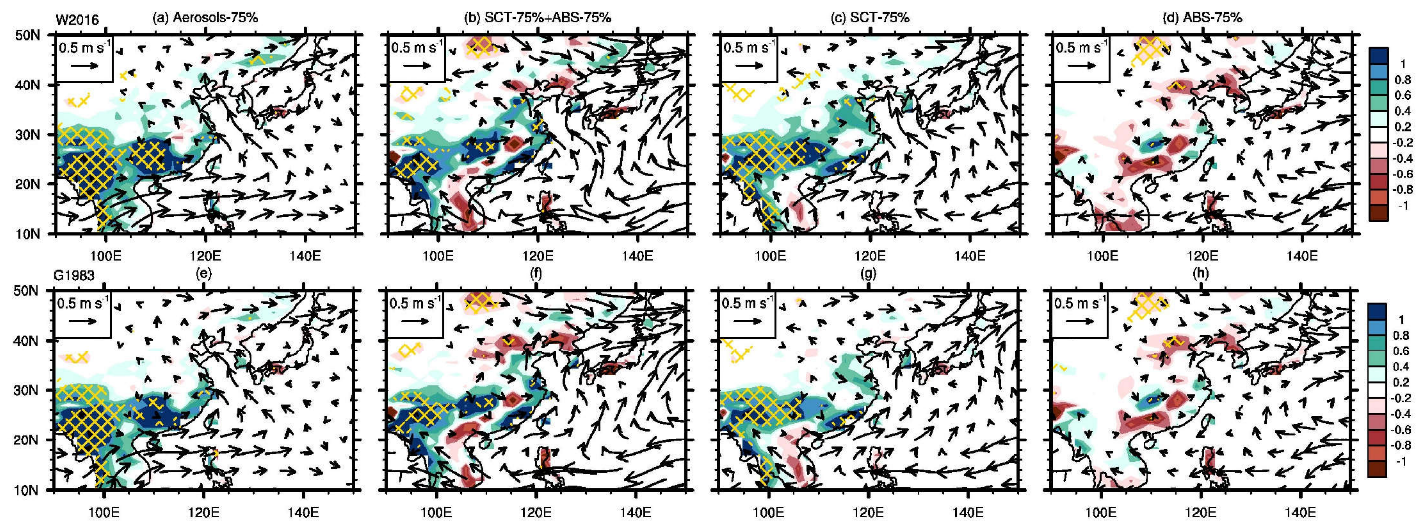

Figure 6: Same as Figure 5, but for East Asia. Panels (a)-(d) are derived based on the definition from W2016. Panels (e)-(h) are derived based on the definition from G1983.

9. Line 242: The SCT seems to only dominate the precipitation over the north-eastern regions in Fig4, while the decrease in precipitation at around 20N seems to be related to ABS, are nonlinear effect between ABS and SCT. Please double check and clarify.

≫ Line 242: In general, the impacts of the SCT reductions dominate both the SASM and EASM adjustments related to the monsoon precipitation and circulation changes induced by short-term total aerosols mitigation.

Thank you for this valuable suggestion. The relevant description has been modified in Lines 336-340. Note that in the revised manuscript, the serial number of Fig. 4 is changed to Fig. 5 (see 7^{th} Reply).

Lines 336-340

In general, the impacts of the SCT reductions dominate both the SASM and EASM adjustments related to the monsoon precipitation increase and circulation enhancement induced by short-term total aerosols mitigation. It should be noted that the SCT reduction only dominate the precipitation increase over the north-eastern SA (north of 22°N) induced by the total aerosol reduction. The precipitation decrease over central SA (south of 22°N) is contributed by the impacts of ABS reduction and non-linear effects between the SCT and ABS, but the decrease is insignificant in both W2009 and N2016 (Fig. 5).

10. Paragraph starting at line 244: Similar to my previous concerns about the box plot. W2009 seems to show very small differences between control runs and aerosol-cut runs (e.g., the SASM duration in the SCT run). Do the differences mentioned in this paragraph pass the significance test? Please clarify.

≫ Paragraph starting at line 244: To determine the SASM and EASM duration changes, the variations in monsoon onset and withdrawal dates are further examined (Fig. 6). The mean values and the 25th-75th percentile ranges of the monsoon onset date, withdrawal date and duration over South and East Asia are also summarized in Table S1. Reduction in SCT advances the SASM onset but delays the SASM withdrawal, thus extending the SASM duration to a certain extent (0.4 pentads in W2009 and 11.4 days in N2016)……

Thank you for your remind. We have added a paragraph to discuss the difference between W2009 and N2016 you mentioned in this comment and in the 5^{th} comment. **Note that in the revised manuscript, the serial number of Fig. 6 showing the monsoon onset and withdrawal responses to aerosol reductions is changed to Fig. 4.**

We agree that W2009 seems to show a very small difference in the SASM duration between the SCT-reduction runs and control runs compared to that in N2016 (Fig. 4a and b). According to your suggestions in this comment and in the 5^{th} comment, we (1) change the scale for left y-axis of Fig. 4b (N2016) from day to pentad for better comparison and consistency between Fig. 4a (W2009) and 4b (N2016); (2) add more quantitative descriptions and make a comparison between the Fig. 4(a) and (b) in Lines 271-286; (3) show the possible causes for the longer SASM duration and later

SASM withdrawal responses in N2016 compared to those in W2009 in Lines 271-286. **Note that the added texts in Lines 269-282 has also been shown in the 5th Reply.**

(1) Lines 999-1002 (Fig. 4)

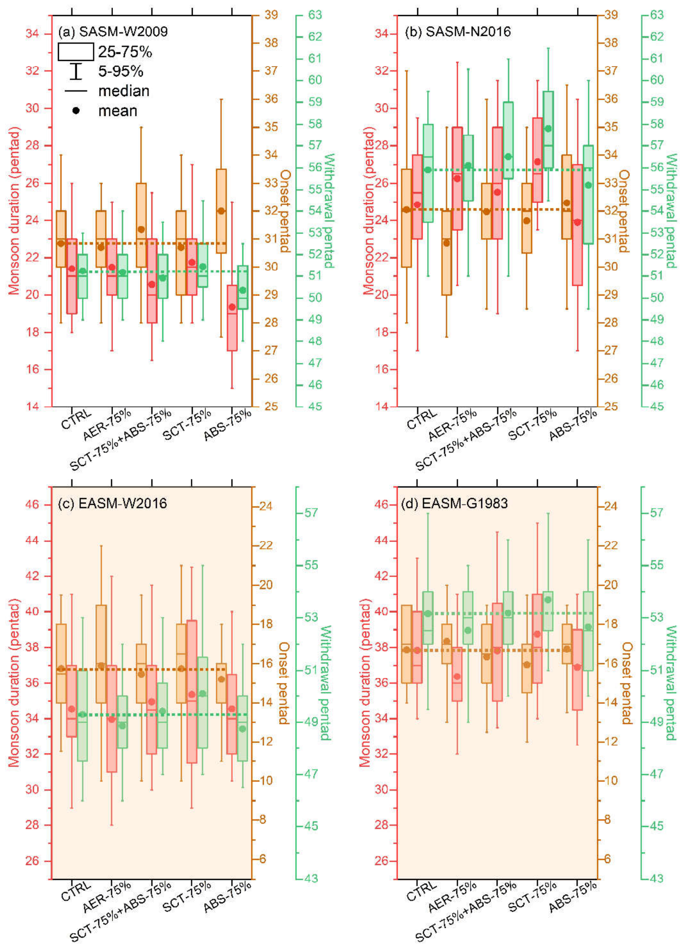

Figure 4: Same as Figure 3, but for the monsoon onset dates (yellow; unit: pentad), withdrawal dates (green; unit: pentad) and duration (red; unit: pentad). The yellow and green dashed lines denote the mean values of monsoon onset and withdrawal in the CTRL simulation set, respectively.

(2)-(3) Lines 271-286 (The differences between the Fig. 4(a) and (b) and the possible causes)

Note that using different definitions of monsoon onset/withdrawal dates may result in the variations in the monsoon duration response range although the SASM duration and precipitation adjustments in W2009 and N2016 are qualitatively consistent. The SASM durations in N2016 from different simulation sets are basically 4-5 pentads longer than those in W2009 (Fig. 3a and b). The SCT-driven extension of the SASM duration based on N2016 (2 pentads) is also longer than that in W2009 (0.4 pentads). The difference in the SASM duration adjustments between W2009 and N2016 can be attributed to the distinct selection of monsoon feature to characterize the monsoon subseasonal variations. Syroka et al (2004) pointed out that the withdrawal of the SASM defined by the precipitation is much later than that defined by the monsoon circulation due to the late decrease in precipitation in southern India. The precipitation continues to increase in southern Indian after September associated with the winter monsoon (Bhanu Kumar et al., 2004), while the SASM-related circulation characteristics becomes unclear in the meantime. Therefore, the SASM onset dates based on N2016 is roughly the same with those based on W2019, but the withdrawal date is about 5 pentads later, resulting in the longer monsoon duration (Fig. 4a and b). Moreover, there exists an additional enhancement of monsoon precipitation over SA in the “SCT” set, which further leads to the later SASM withdrawal and longer SASM duration in N2016 (Fig. 4b). Besides, the precipitation during early autumn is sensitive to the location and synoptic/sub-synoptic systems (tropical cyclones, depressions, easterly waves, north-south trough activity and coastal convergence, etc; Bhanu Kumar et al., 2004), which possibly contributes to the larger variation range in the monsoon withdrawal date in N2016.

11. Line 273 - “lowers SLP anomaly over Asian continent compared with that over Indian and western Pacific oceans”: maybe worth noting the opposite changes over the Indian Ocean and western Pacific in Fig8g.

≫Line 273: The SCT reduction induced land warming yields a lower SLP anomaly over Asia continent compared with that over Indian and western Pacific oceans, which is favourable for the early/late transition of land-sea pressure difference in pre/post-monsoon season and a stronger SASM and EASM circulation in monsoon season.

≫Fig. 8:

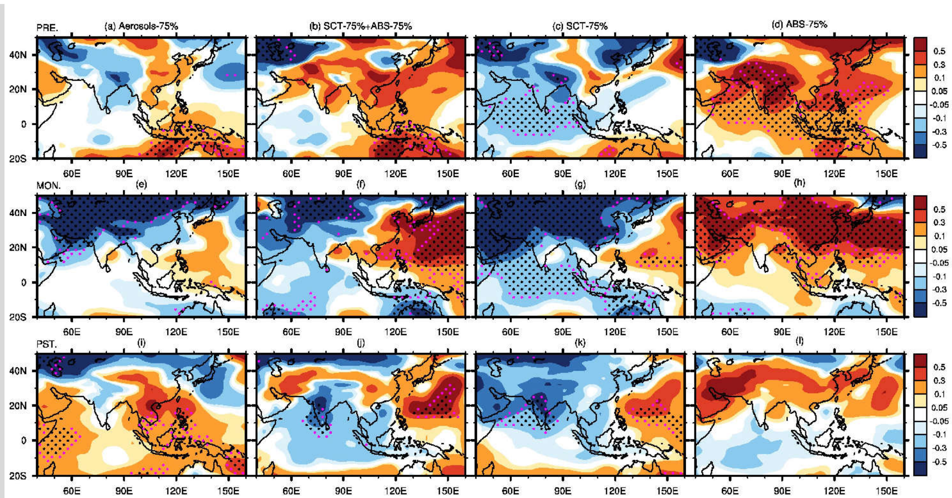

Figure 8: Spatial distributions of the sea level pressure (unit: hPa) responses to the reductions in total aerosols (a, e and i), SCT aerosols (c, g and k) and ABS aerosols (d, h and l) over Asia during pre-monsoon (April-May; a-d), monsoon (June-August; e-h) and post-monsoon (September-October; i-l) seasons. Panels (b), (f) and (j) are the sum of the impacts of the reductions in the SCT and ABS. Black and pink dotted regions denote where the sea level pressure change is statistically significant at the 95% and 90% confidence level, respectively, according to a t-test.

Thank you for this valuable suggestion. We have modified the Fig. 8 in order to show the changes in sea level pressure (SLP) caused by aerosol emission reductions more intuitively. Only the SLP changes with a confidence level of 95% or 90% according to the t-test are shown in the new Fig. 8 (Lines 1032-1038). We also added a new figure (Fig. S3 in Supplement) to quantitatively examine the anomalous land-sea SLP difference between the Asian continent and its surrounding oceans and seas. The descriptions and discussions about the opposite changes over the Indian Ocean and western Pacific in the new Fig. 8(g) are added in Lines 396-405.

Lines 1032-1038 (new Figure 8)

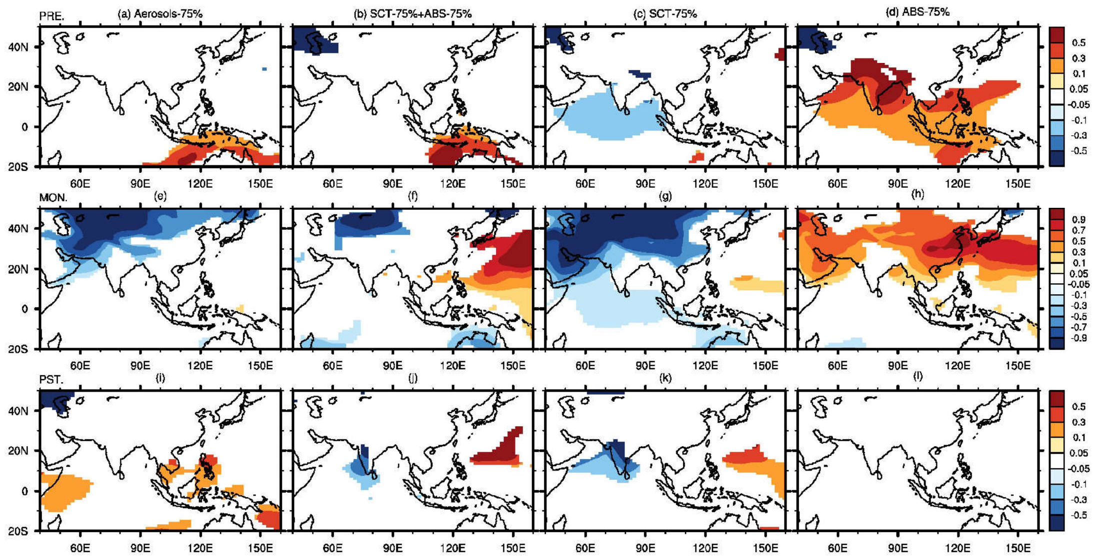

Figure 8: Spatial distributions of the sea level pressure (unit: hPa) responses to the reductions in total aerosols (a, e and i), SCT aerosols (c, g and k) and ABS aerosols (d, h and l) over Asia during pre-monsoon (April-May; a-d), monsoon (June-August; e-h) and post-monsoon (September-October; i-l) seasons. The sea level pressure responses are the difference between the aerosol-emission-perturbed and control runs. Panels (b), (f) and (j) are the sum of the impacts of the reductions in the SCT and ABS. Only the sea level pressure changes with a confidence level of 95% or 90% according to the t-test are shown.

Lines 48-56 (Fig. S3; Supplement with tracked changes)

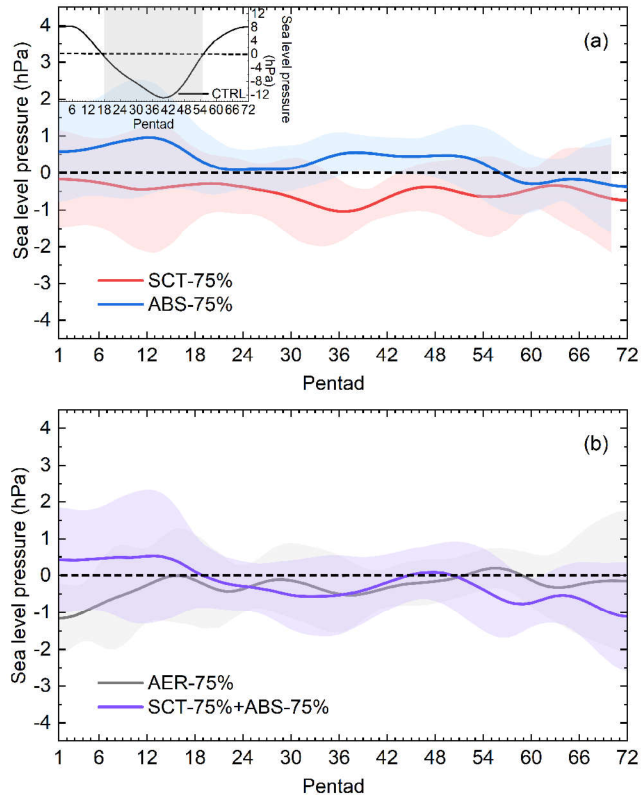

Figure S3. Time series of the anomalous land-sea sea level pressure (SLP) difference (unit: hPa) between the Asian continent part (including South Asia, East Asia, Tibet Plateau and East-Central Asia) adjacent to the ocean and its surrounding oceans and seas (including Northwest Pacific, tropical Indian Ocean, Bay of Bengal and Arabian Sea) to the reductions in total aerosols (b; gray line), SCT aerosols (a; red line) and ABS aerosols (a; blue line). The x-axis denotes the time (unit: pentad). The land-sea SLP difference responses are the difference between the aerosol-emission-perturbed and control runs. Purple line in Panel (b) represent the sum of the impacts of the reductions in the SCT and ABS. The shading area denote the standard deviation of the land-sea SLP difference anomaly. The sub-panel attached to Panel (a) gives the climatological land-sea SLP difference (unit: hPa) from control simulations. The region division used in this study refers to the sixth IPCC assessment report and is shown in Fig. S1.

Lines 396-405

The SCT reduction induces a negative land-sea SLP difference anomaly throughout the year (Fig. S3 and Fig. 8c, g and k), which is favourable for the advance in the land-sea SLP difference transition from positive to negative in spring and the delay in the transition from negative to positive in autumn. The negative anomalous land-sea SLP difference also leads to bigger land-sea SLP contrast and a stronger SASM and EASM circulation in the monsoon season. Note that the SLP changes in part of the oceanic areas adjacent to the SA region are consistent with the continental SLP changes, albeit with a smaller range of decrease (Fig. 8c, g and k). This could potentially be attributed to the reduced ACT that transported from Asian continent. However, the SLP decrease over these oceanic areas exerts negligible influence on the overall SCT-reduction-induced anomalous negative land-sea SLP difference between the Asian continent and adjacent oceans (Fig. S3).

12. Line 277: The reduced land-sea pressure contrast is not shown in Fig8h, as both land and sea show increases in SLP.

≫Line 277: The reduced land-sea pressure contrast during monsoon season also weakens the Asian monsoon intensities.

Thank you for this valuable suggestion. Considering the increased SLP both over land and sea, we have added a new figure (Fig. S3 in Supplement; see 11th Reply) to quantitatively examine the anomalous land-sea SLP difference between the Asian continent and its surrounding oceans and seas. The ABS reduction induced a positive land-sea SLP difference anomaly during monsoon season (Fig. S3a), although the SLP increases over Asian land and part of its surrounding seas (Fig. 8h; see 11th Reply). Hence, the land-sea SLP contrast is reduced during monsoon season and weakens the Asian monsoon intensities because of the positive land-sea SLP difference anomaly.

13. Line 282: How do you get the conclusion that Fig8a & i show patterns with combined effects of SCT and ABS? Do you calculate the map correlation or any other regression methods? It seems to me that the pre and post-monsoon patterns are more complicated. For example, Fig8a is very similar to Fig8c but shows an insignificant pattern over the Indian Ocean. I would suggest a more careful statement here; otherwise, more analyses are necessary.

≫Line 282: In other seasons except summer, the land-sea SLP adjustments over Asia is controlled by the combined effects of SCT- and ABS-reductions (Fig. 8a and 8i).

Sorry, we didn't make it clear. We have added more analysis and made a more careful statement. Besides the new added Fig. S3 (Supplement; see 11th Reply; quantitatively examine the anomalous land-sea SLP difference induced by reductions in total, SCT and ABS aerosols reductions) and modified Fig. 8 (see 11th Reply; only show the SLP changes with a confidence level of 95% or 90% according to the t-test to have a clearer presenting of SLP adjustments), we have added discussions about the Fig. 8 (a and i) to clarify the dominant effects in regulating the SLP responses over Asian continent and its surrounding oceans and seas in Lines 411-421.

Lines 411-421

In addition, the anomalous land-sea SLP difference between the Asian continent and the topical Indian and Northwest Pacific Oceans caused by the short-term total aerosols mitigation during monsoon season is dominated by the SCT aerosols and enhances the monsoon circulation over South and East Asia (Fig. 8e). There is also a negative land-sea SLP difference anomaly due to the total aerosols mitigation in pre- and post-monsoon seasons (Fig. S3b), which is governed by the impacts of SCT-reduction. However, the spatial pattern of SLP adjustments during pre-monsoon season induced by total aerosol reduction shows a SLP increase over the seas of Southeast Asia, and both the impacts of SCT- and ABS-reduction (Fig. 8 c and d) contribute to the SLP increase over this region. Besides, the ABS-reduction has no significant impacts on the SLP adjustments during post-monsoon season (Fig. 8i). But the regions with significant SLP changes caused by total aerosol reduction are also inconsistent with those caused by the SCT reduction (Fig. 8i and k), indicating the strong non-linearity of atmospheric system.

14. Fig8: Are these values over land surface pressure instead of sea level pressure? Also, the color bar for panels e-h should be extended since it is hard to see more detailed patterns in panels e and g.

The sea level pressure (SLP) shown in Fig. 8 refers to the concept of the "corrected pressure", in which the surface or station pressure (P) is corrected to sea level by estimating the weight of an imaginary column of air that extends from surface or station to sea level: $SLP = P + h\rho g$, where h is height of the land surface or site above sea level, ρ is the air density and g is the acceleration of gravity. In this way, the pressure in different areas can be compared without the impacts of terrain. Besides, the color bar for panels e-h is extended in new Fig. 8 (see 11th Reply). Thank you for this valuable suggestion.