

**Review of “Snow-darkening versus direct radiative effects of mineral dust aerosol on the Indian summer monsoon onset: role of temperature change over dust sources” by Shi et al.**

The authors provided detailed answers in the response and made corresponding revisions to the manuscript in the second-round revision. But there still some problems with the main conclusions of the manuscript. Thus, the manuscript needs major revisions before it could be accepted. Please see the detailed comments below.

**Major comments:**

The authors emphasized the role of warming around Caspian Sea in dust SDE impacts. Unlike black carbon, dust SDE can induce a warming around Caspian Sea (central Asia) and weakens Indian summer monsoon, as proposed by the authors. The authors also provided detailed physical explanations and the role of snow fraction reduction was emphasized. But there is barely none dust SDE around Caspian Sea (Figure 9E). The snow darkening effect means the snow can absorb more solar flux with the deposition of absorbing aerosols on snow. The solar flux change (Figure 9E) are very small and insignificant around Caspian Sea, which may not explain the warming there. Moreover, the snow fraction change (Figure R2b, Figure 12b) is also very small around Caspian Sea. Please provide more evidences that the warming around Caspian Sea and Central Asia is due to dust SDE.

In my opinion, there are no distinct differences between spatial distribution of dust and BC SDEs. And the difference in ISM response may not be attributed to their different spatial distributions. Please make a detailed comparison of BC and dust SDE and show there is significant difference between them. The SDE could be directly evaluated by the BC/dust snow forcing outputted by SNICAR.

**Other comments**

Figure 12: Please check the time of figure captions and title.

Figure 12: Please show positive values in the color bar. The color bar could be misleading.