

## Editor Comments

Dear Authors,

Please improve the colour schemes used in your maps and charts as indicated by the Editorial office.

There are COVID-19 related studies that can be referred and discussed in the paper, e.g.,

Wei, L., Lu, Z., Wang, Y. et al. Black carbon-climate interactions regulate dust burdens over India revealed during COVID-19. *Nat Commun* 13, 1839 (2022). <https://doi.org/10.1038/s41467-022-29468-1>.

Xiaohong Liu

## Author Response

Dear Dr. Liu,

Thank you for the publication decision, and for these notes. We have made the following changes:

*Colour schemes:*

1. The colour scheme in Figures 1-3 has been updated to use a subset of the colourblind-friendly rainbow scheme by Paul Tol (<https://personal.sron.nl/~pault/>), and the results checked using the Coblis colour blind simulator.
2. The colours in Figures 4, S06, S11, and S12 have been updated to be compatible with the new choice of colours for CanAM5.0, and the results checked using the Coblis colour blind simulator.
3. The colours in Figure S01 are left unchanged, but the green line denoting monthly-mean quantities has been made thicker to distinguish it from the thinner orange line.

*Wei et al. (2022) publication:*

- Thank you for bringing this study to our attention. We have cited it in our discussion of the anomalously low dust over India in 2020 (lines 343-345):

*This improvement is partially due to the fact that the observed dust optical depth was anomalously low in 2020, as seen in our results and as reported elsewhere (Smith et al., 2022; Wei et al., 2022).*

- We have also cited it in our comparison with other published results (lines 583-584):

*In India, AOD reductions have been reported by Acharya et al. (2021); Gouda et al. (2022); Ranjan et al. (2020); Rani and Kumar (2022); Smith et al. (2022), and Wei et al. (2022).*

*Minor text change:*

- We have made the following minor modification to lines 516-518 to improve clarity (bold words added):

*Models appear to overestimate the COVID-19 response in the Northern Hemisphere **generally** and in East China **specifically**, although our results suggest that a more accurate emissions inventory can reduce this discrepancy.*