Supplementary of

The key role of atmospheric absorption in the Asian Summer Monsoon response to dust emissions in CMIP6 Models

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Figure S1. Models' simulated JJA climatology of dust aerosol optical depth (DOD) from the piClim-control.
Figure S2. Model’s simulated JJA climatology of precipitation (mm day\(^{-1}\)) derived from the piClim-control.
Figure S3. Model's simulated JJA climatology of sea level pressure (colours, hPa) and 850-hPa winds (vectors, m s\(^{-1}\)) derived from the piClim-control.
Figure S4. JJA mean changes in dust aerosol optical depth (DOD) due to doubled dust emissions in (a-g) individual models and (h) the multi-model mean. Purple hatches denote insignificant differences at the 10% level. Green hatches in (h) denote where ≤4 models have the same sign as the multi-model mean.
Figure S5. JJA mean changes in TOA clear-sky ERF (W m\(^{-2}\)) due to doubled dust emissions in (a-g) individual models and (h) the multi-model mean. Purple hatches denote insignificant differences at the 10% level. Green hatches in (h) denote where ≤4 models have the same sign as the multi-model mean.
Figure S6. JJA mean changes in TOA all-sky net ERF (W m$^{-2}$) due to doubled dust emissions in (a-g) individual models and (h) the multi-model mean. Purple hatches denote insignificant differences at the 10% level. Green hatches in (h) denote where ≤4 models have the same sign as the multi-model mean.
Figure S7 JJA mean changes in atmospheric absorption (W m⁻²) due to doubled dust emissions in (a-g) individual models and (h) the multi-model mean. Purple hatches denote insignificant differences at the 10% level. Green hatches in (h) denote where ≤4 models have the same sign as the multi-model mean.
Figure S8. JJA multi-model mean changes in all-sky (a) shortwave and (b) longwave atmospheric absorption (W m$^{-2}$) due to doubled dust emissions. Green hatches denote where ≤4 models have the same sign as the multi-model mean.
Figure S9. JJA mean changes in surface all-sky net ERF (W m$^{-2}$) due to doubled dust emissions in (a-g) individual models and (h) the multi-model mean. Purple hatches denote insignificant differences at the 10% level. Green hatches in (h) denote where ≤4 models have the same sign as the multi-model mean.
Figure S10. JJA mean changes in total cloud fraction (%) due to doubled dust emissions in (a-g) individual models and (h) the multi-model mean. Purple hatches denote insignificant differences at the 10% level. Green hatches in (h) denote where ≤4 models have the same sign as the multi-model mean.
Figure S11. JJA mean changes in vertically integrated moisture flux convergence (mm day$^{-1}$) due to doubled dust emissions in (a-g) individual models and (h) the multi-model mean. Green hatches in (h) denote where ≤4 models have the same sign as the multi-model mean.
Figure S12. JJA mean changes in 500-hPa vertical velocity (hPa day\(^{-1}\)) due to doubled dust emissions in (a-g) individual models and (h) the multi-model mean. Purple hatches denote insignificant differences at the 10% level. Green hatches in (h) denote where ≤4 models have the same sign as the multi-model mean.
Figure S13. JJA mean changes in sea level pressure (colours, Pa) and in 850-hPa winds (vectors, m s$^{-1}$) due to doubled dust emissions in (a-g) individual models and (h) the multi-model mean.