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Evaluating tropospheric nitrogen dioxide in UKCA using OMI satellite retrievals over south and east Asia

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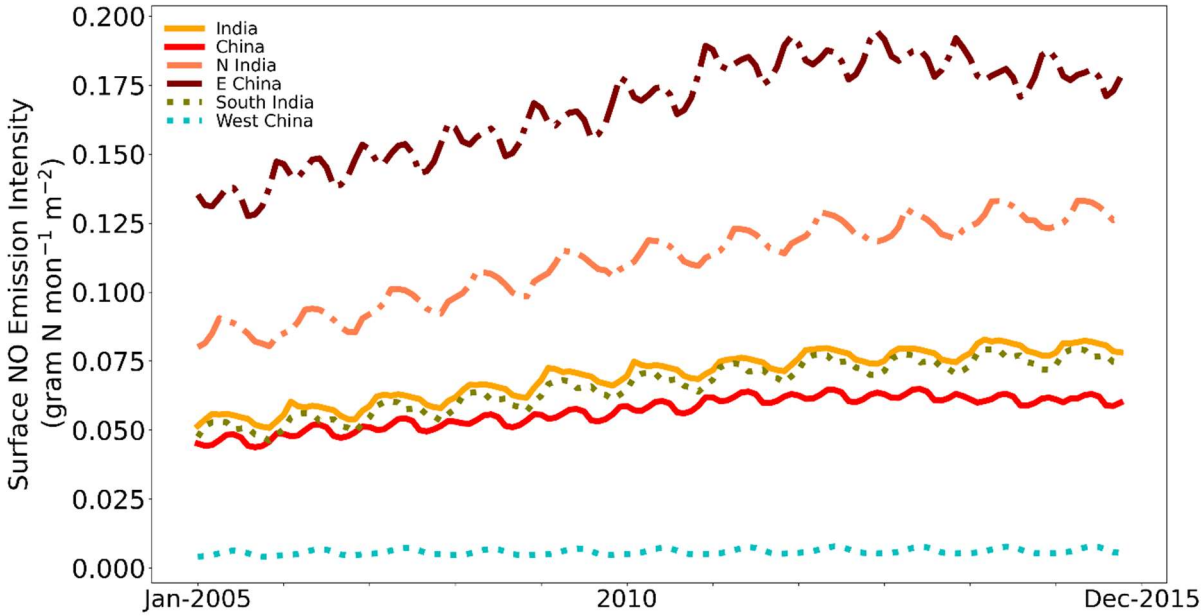

Figure S1 Trends of NO surface emission intensity (gram N month^{-1} m^{-2}) over India and China along with the polluted (North India and East China respectively) and relatively clean (South India and West China respectively) regions.

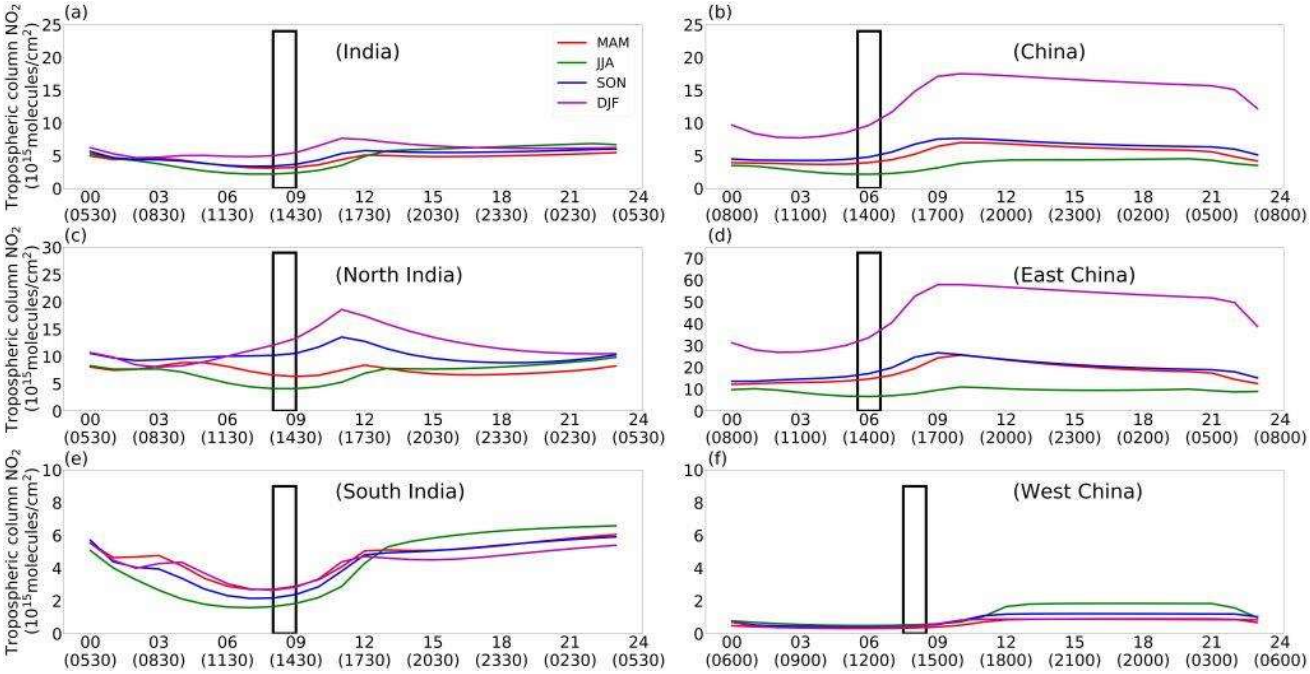

Figure S2 Seasonal average diurnal variations of tropospheric column NO_2 (10^{15} molecules/cm^2) in UKCA over (a) India, (b) China, (c) North India, (d) East China, (e) South India and (f) West China; The satellite overpass time is highlighted by the black rectangular box.

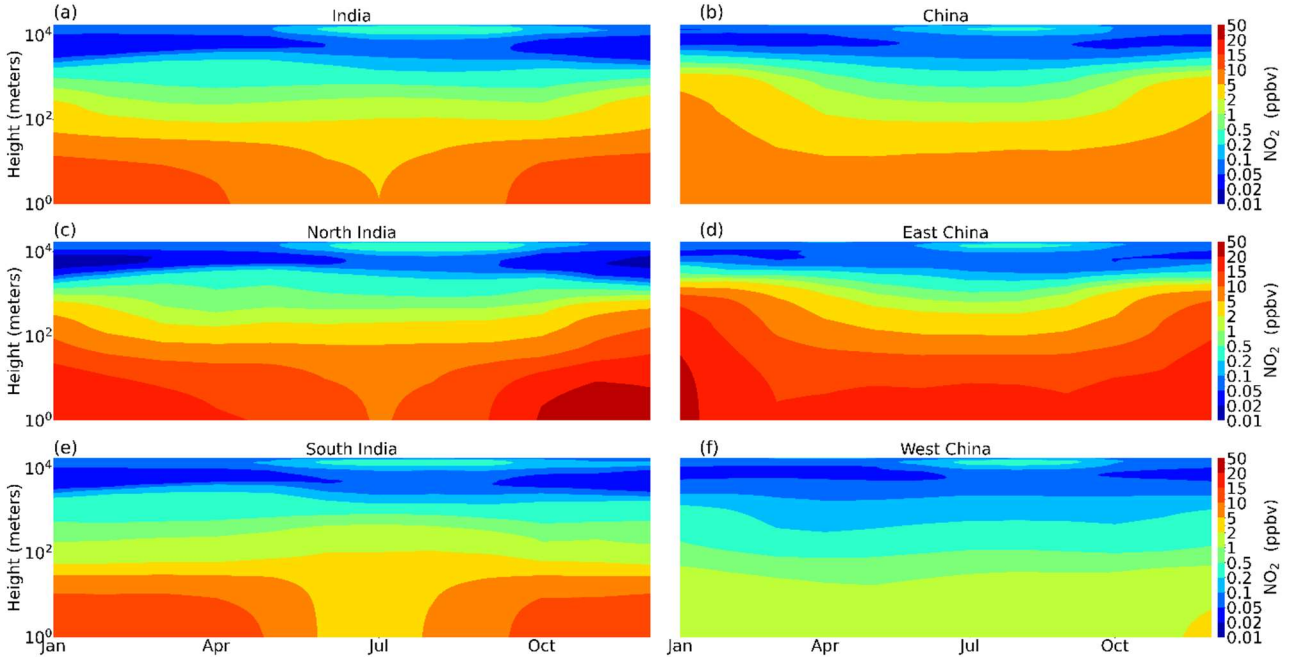

Figure S3 Average monthly mean vertical profiles (2005-2015) of NO_2 (ppbv) in UKCA over (a) India, (b) China, (c) North India, (d) East China, (e) South India and (f) West China.

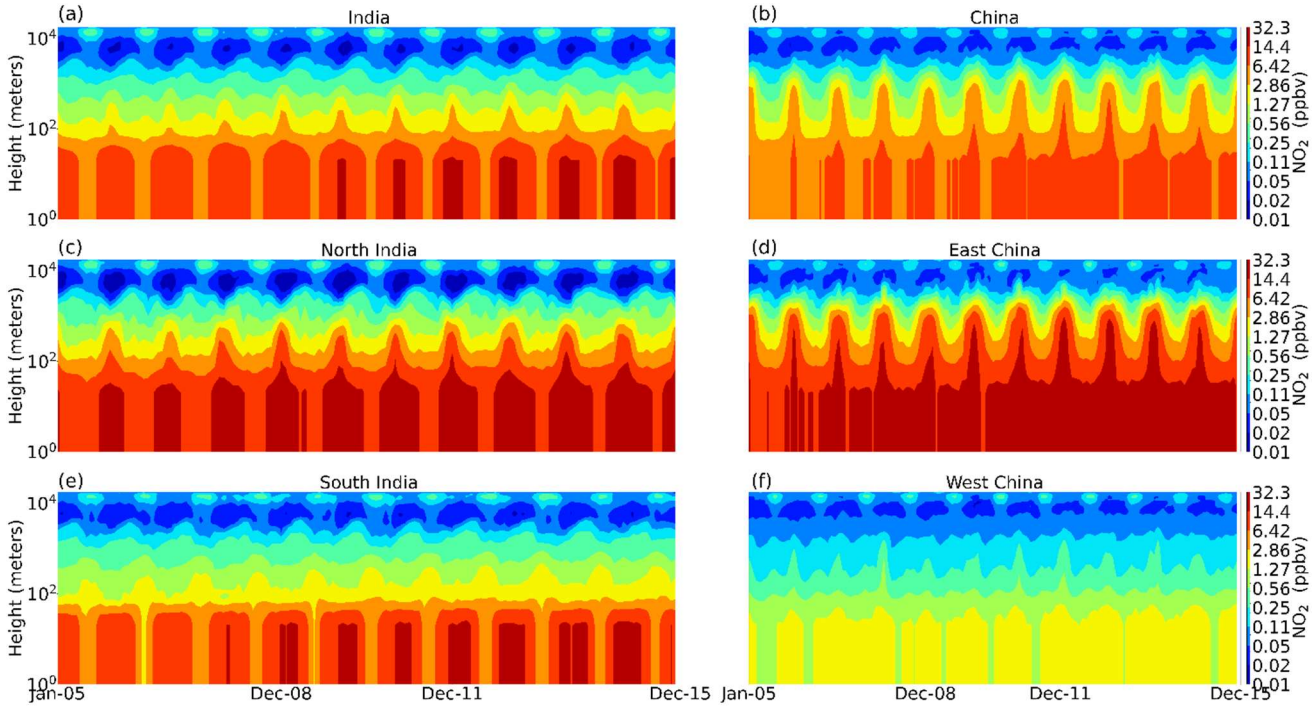

Figure S4 Vertical profile of NO_2 (ppbv) in UKCA (2005 – 2015) over (a) India, (b) China, (c) North India, (d) East China, (e) South India and (f) West China.

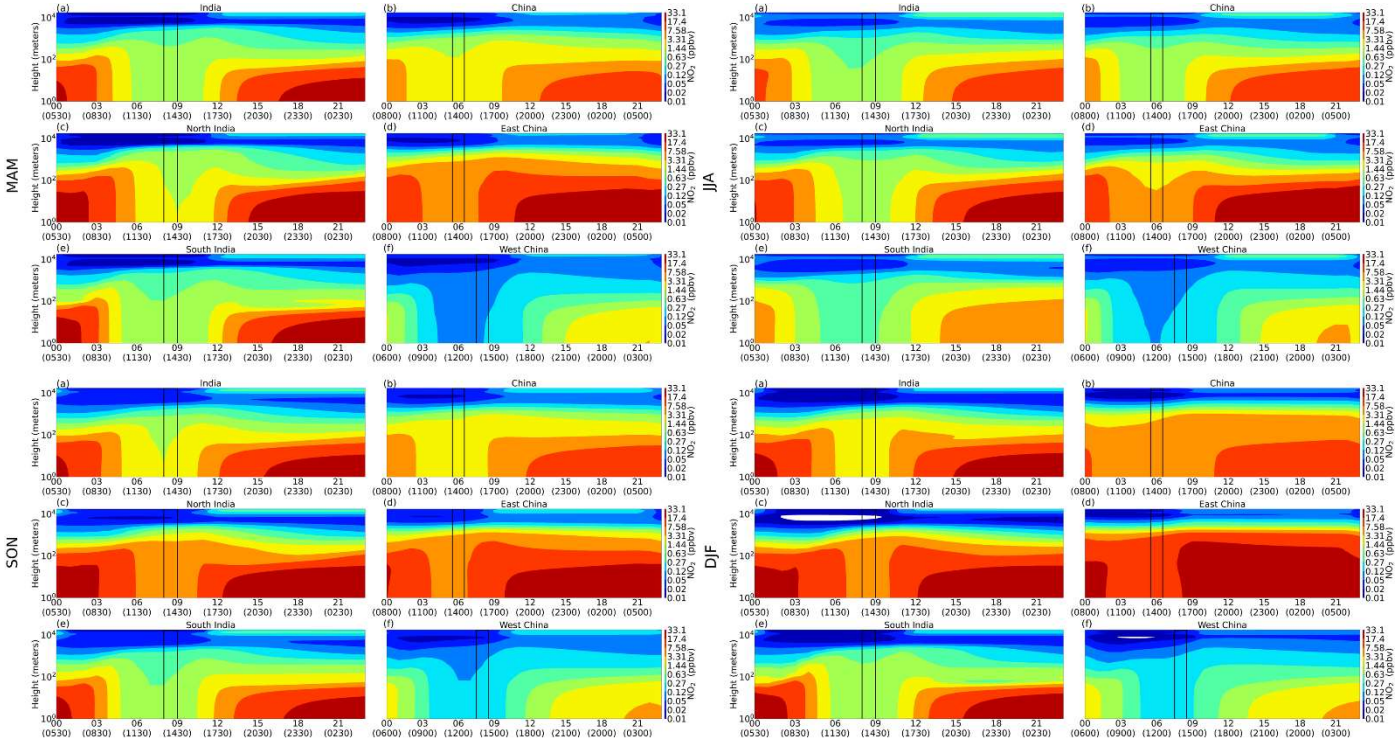

Figure S5 Diurnal vertical profiles of NO_2 (ppbv) in UKCA over (a) India, (b) China, (c) North India, (d) East China, (e) South India and (f) West China in MAM, JJA, SON and DJF.

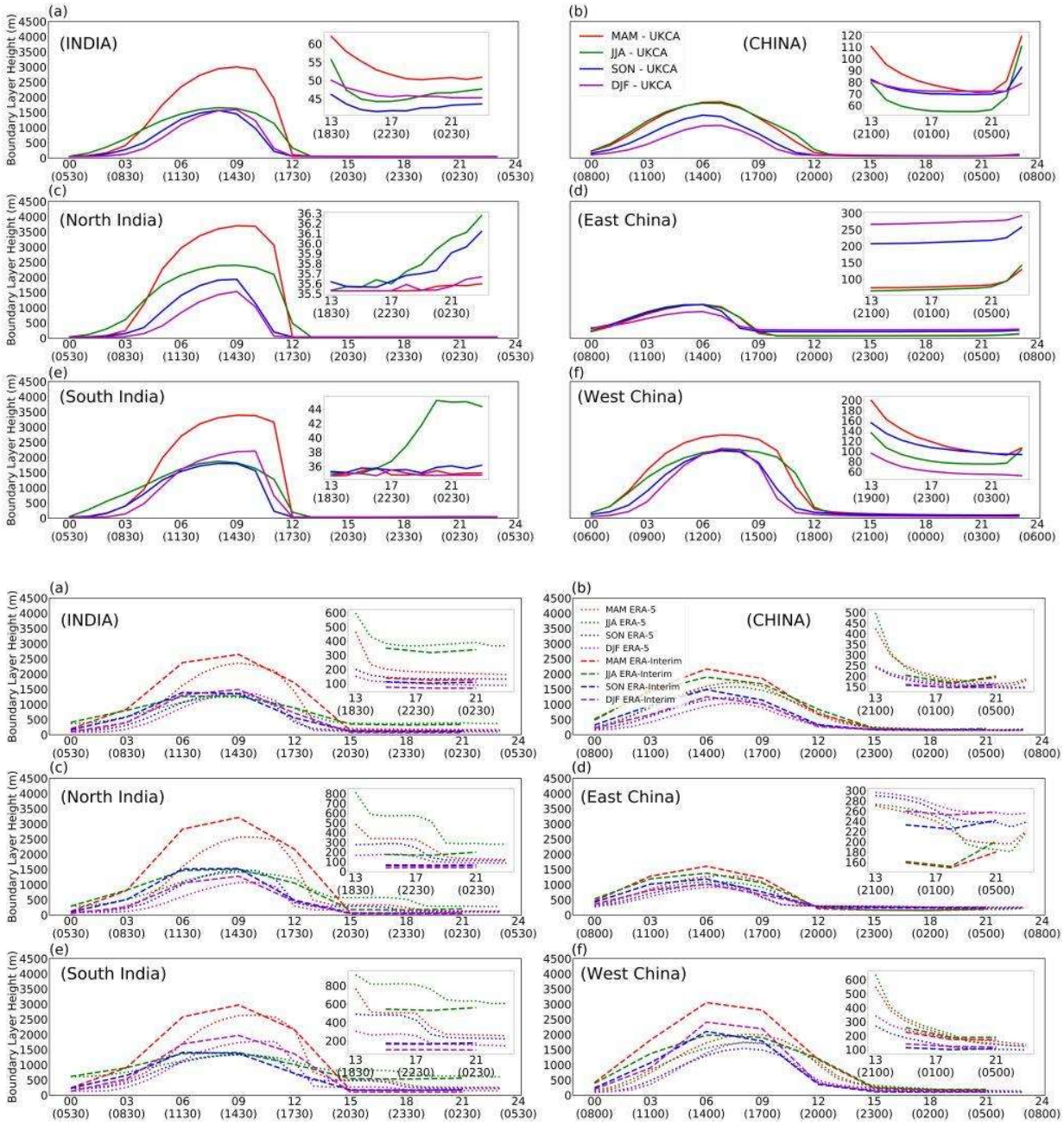

Figure S6 Diurnal variations of boundary layer height (m) in UKCA, ERA-Interim, and ERA-5 over India, China, North India, East China, South India and West China for the four seasons. Insets show an expanded vertical scale for night-time values.

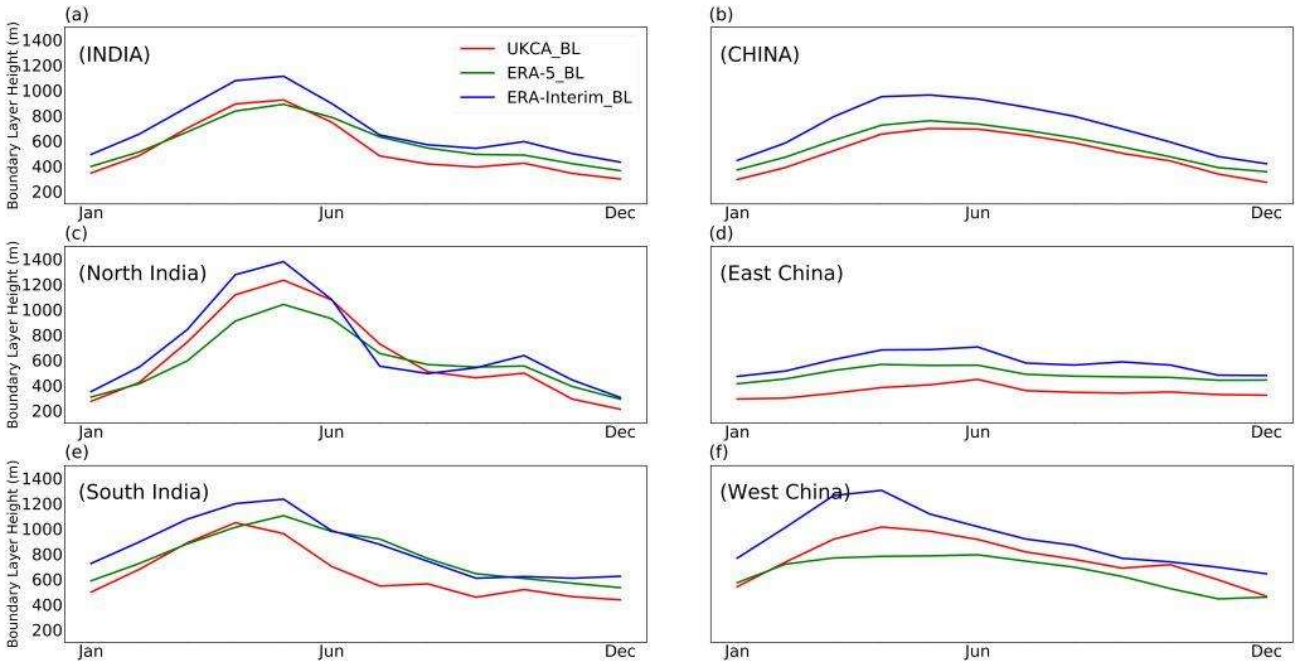

Figure S7 Seasonality of monthly mean boundary layer height (m) in UKCA, ERA-5, and ERA-Interim over India, China, North India, East China, South India and West China.

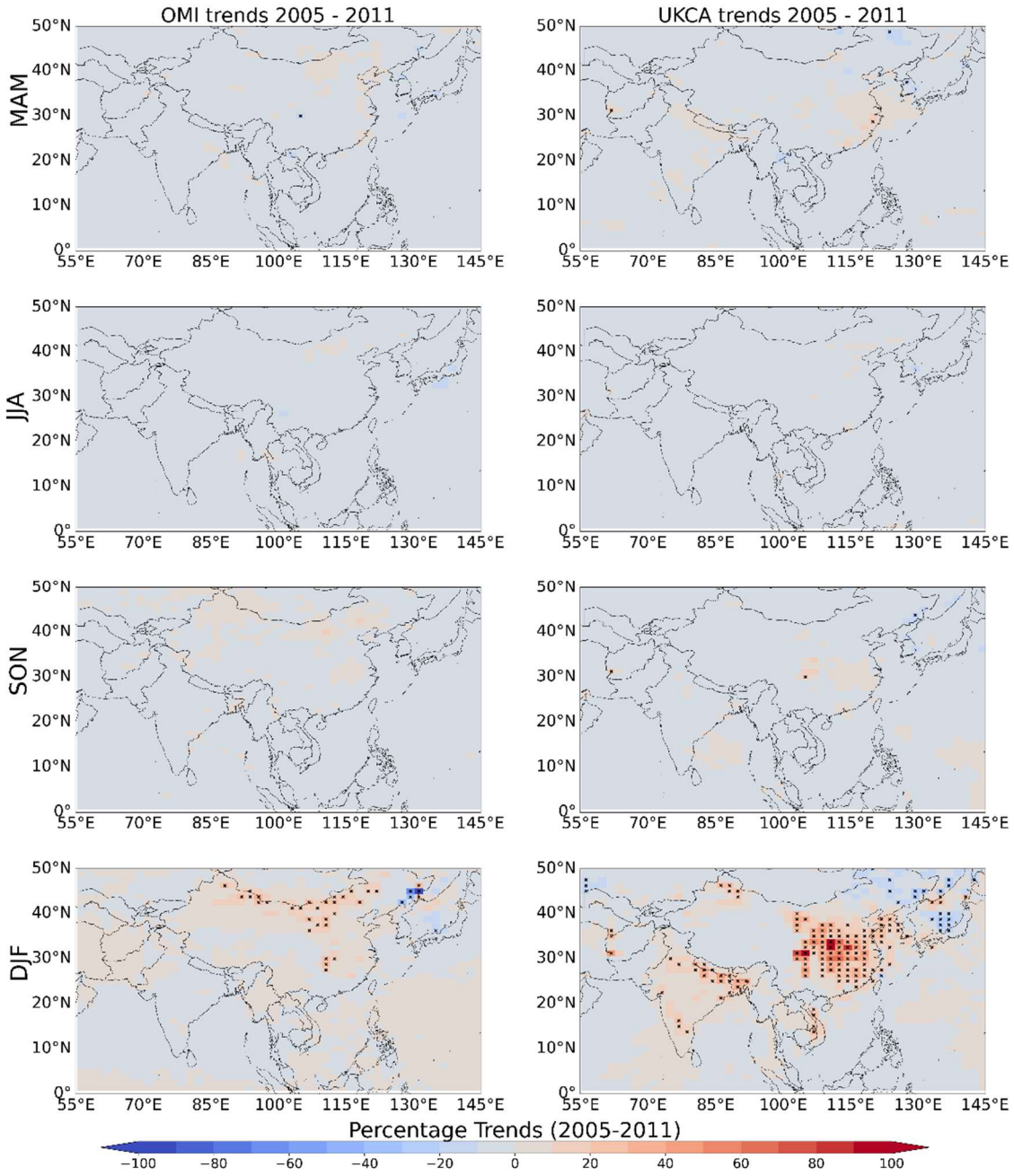

Figure S8 Percent trends of tropospheric column NO_2 from 2005 to 2011 from OMI (left) and UKCA (right) for the four seasons. Absolute trends are available in the main manuscript Figure 9. Crosses indicate significant trends.

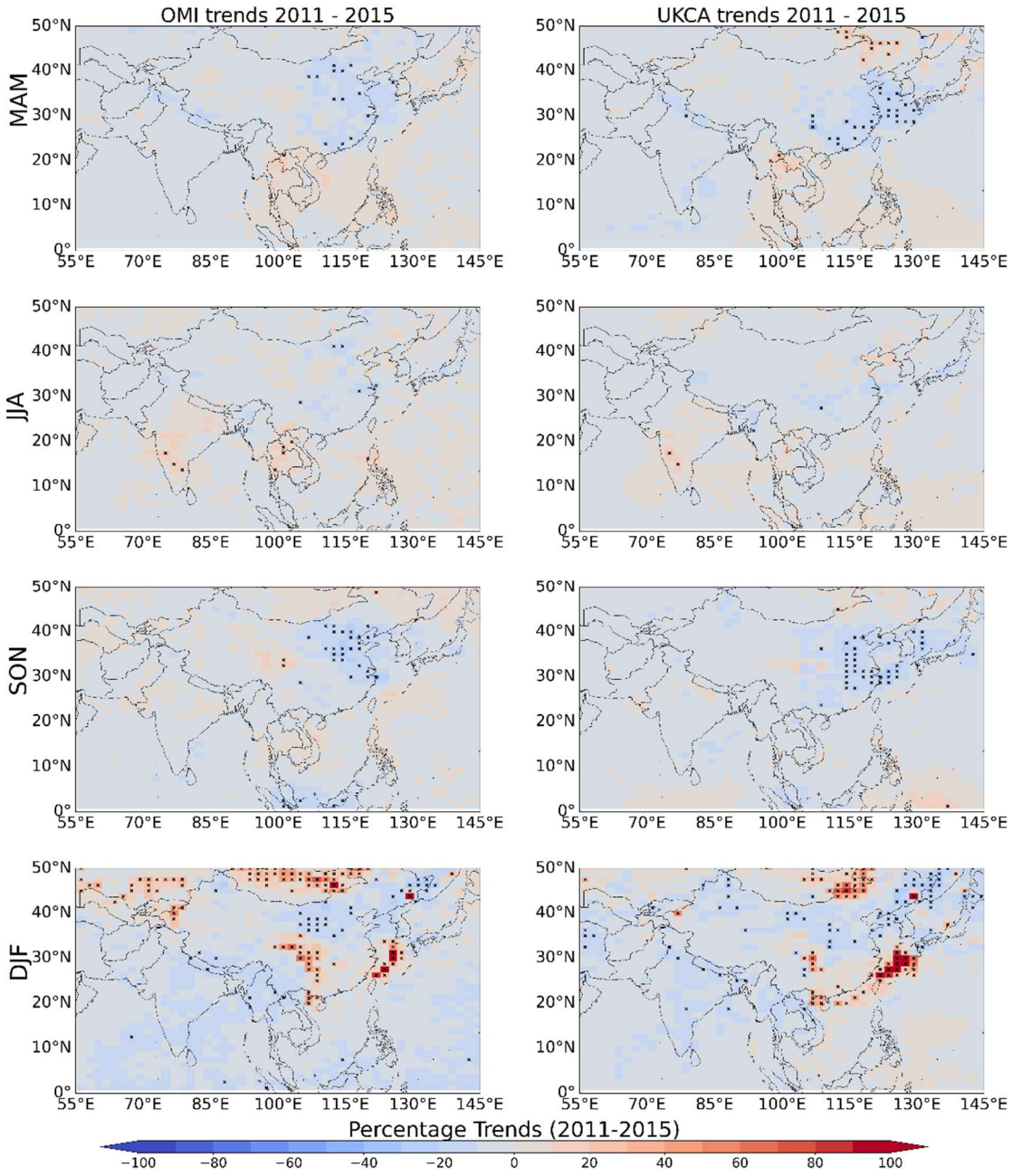

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Figure S9 Percent trends of tropospheric column NO_2 from 2011 to 2015 from OMI (left) and UKCA (right) for the four seasons. Absolute trends are available in the main manuscript Figure 10. Crosses indicate significant trends.