



Supplement of

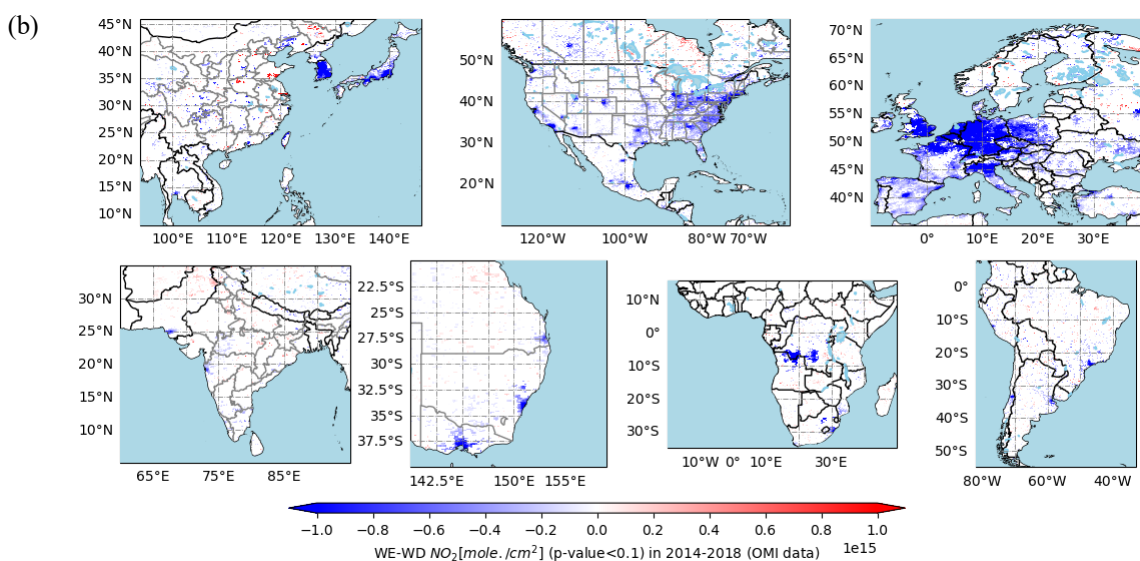
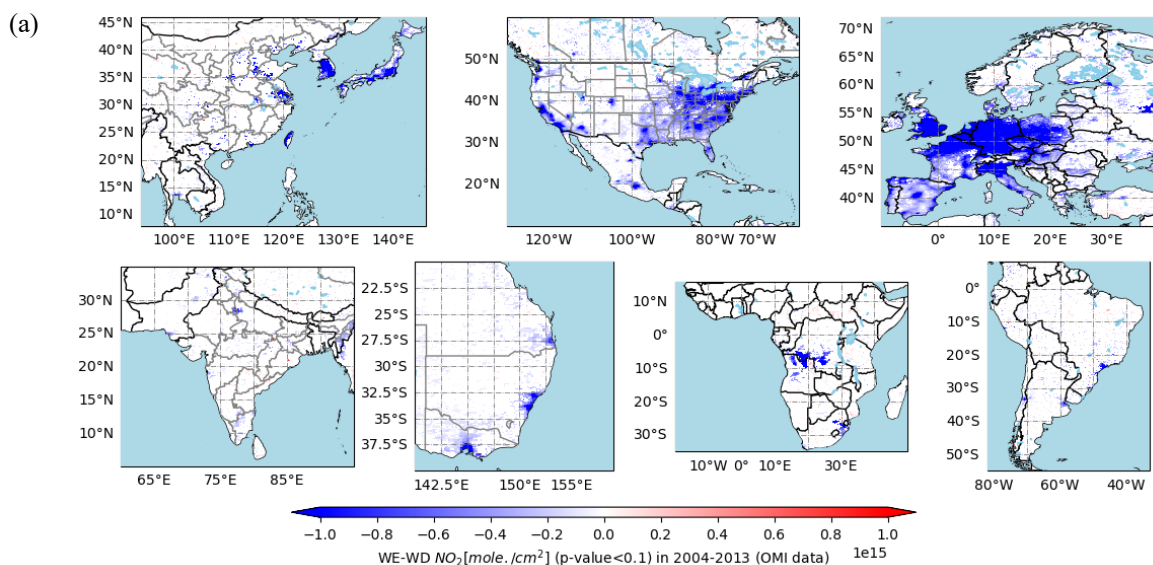
Global patterns and trends in ground-level ozone chemical formation regimes from 1996 to 2022

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Supplementary Information for “Global Patterns and Trends in Ground-Level Ozone Chemical Formation Regimes from 1996 to 2022”



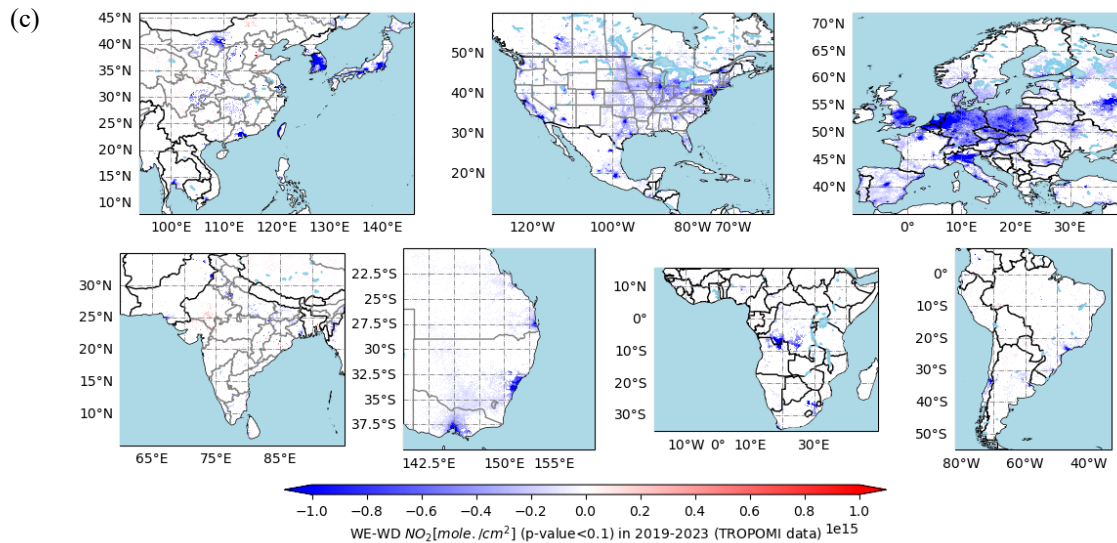


Figure S 1: Two-decade evolution of WE-WD NO_2 differences by region across three distinct period: 2004-2013, 2014-2018, 2019-2023 for grid cells with p-value < 0.1.

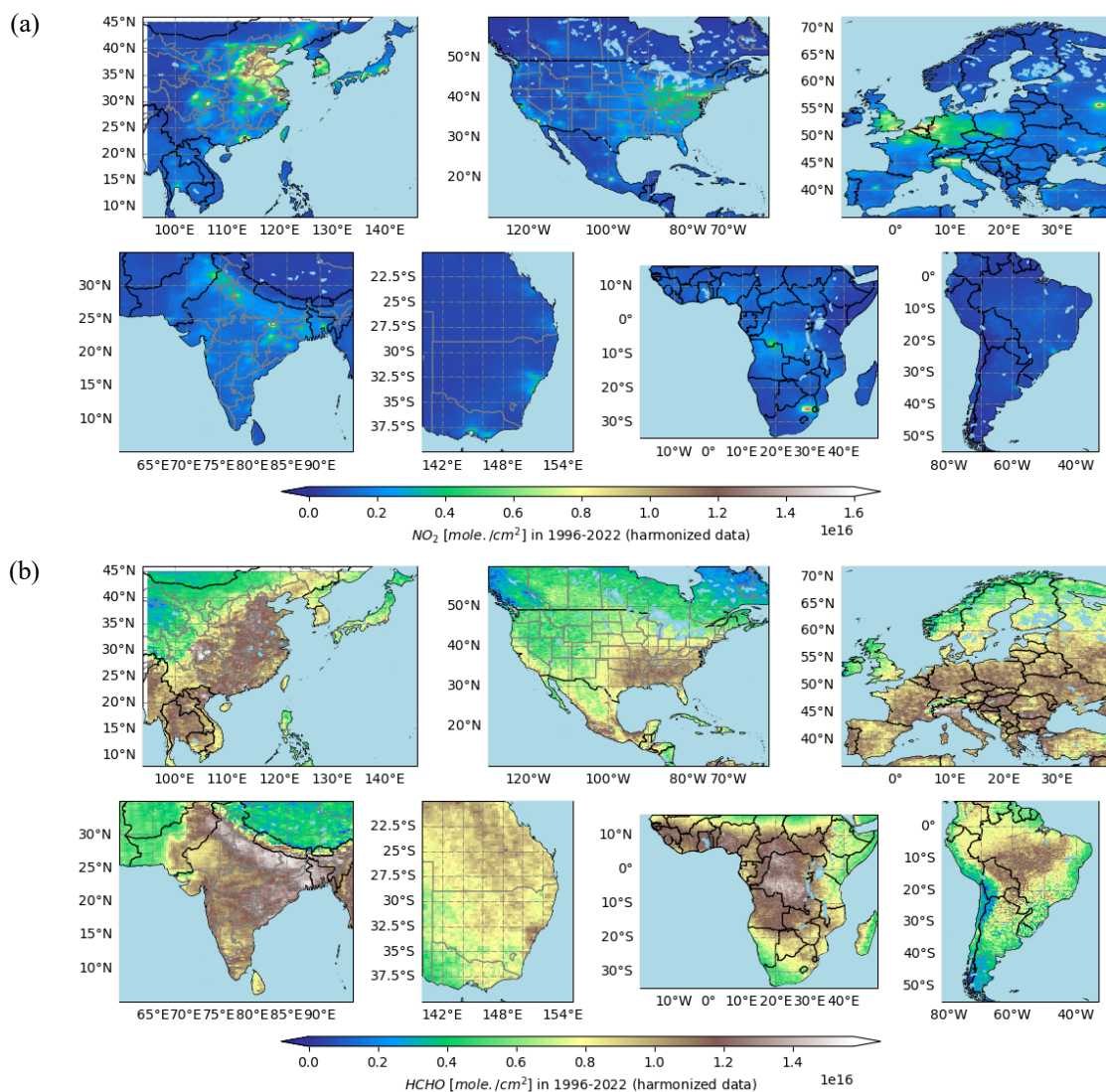


Figure S 2: Tropospheric NO₂ and HCHO patterns as seen using the harmonized satellite data for the combined period 1996–2022.

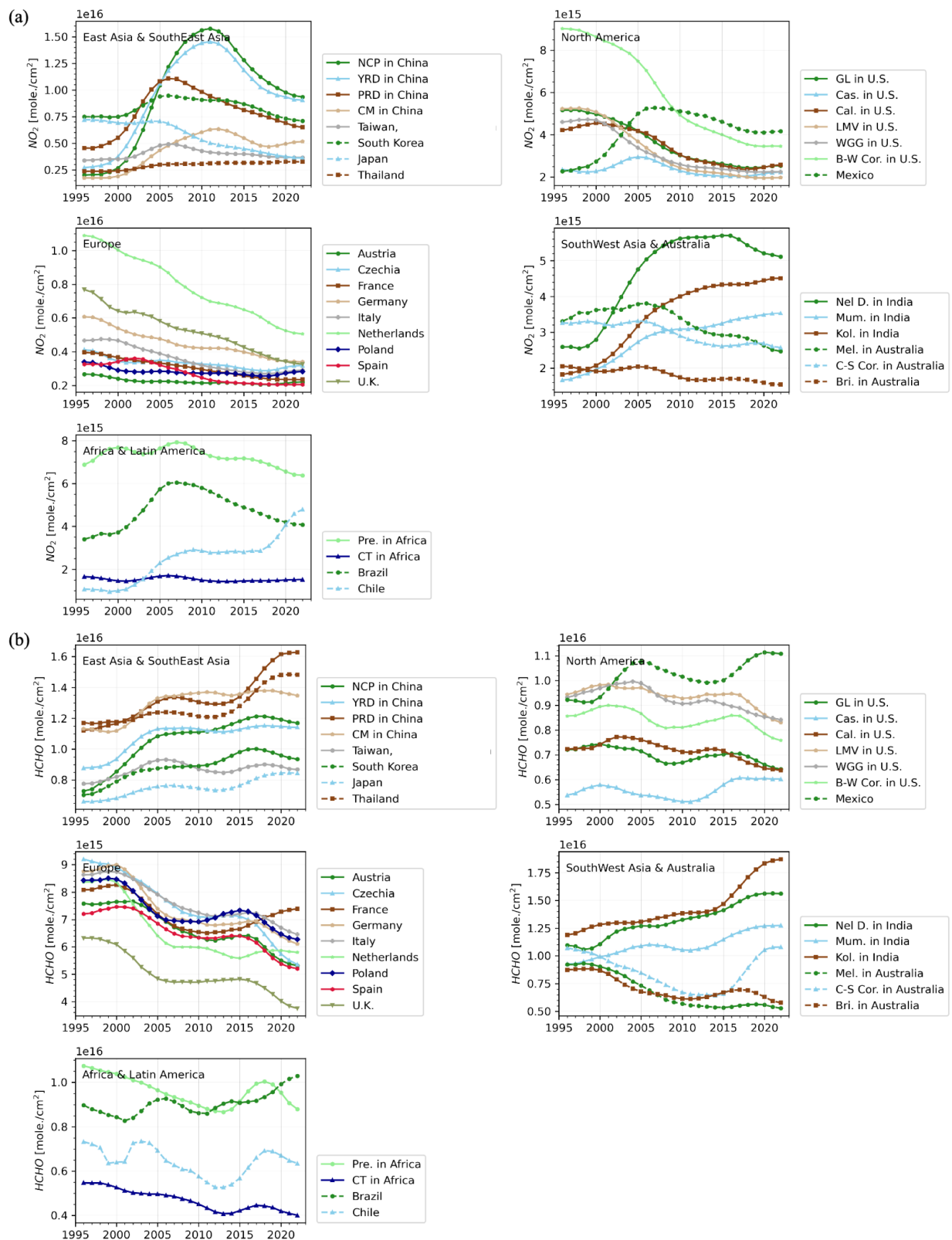


Figure S 3: Long-term trends of tropospheric NO_2 and HCHO across major economic regions and selected countries based on the harmonized satellite data.

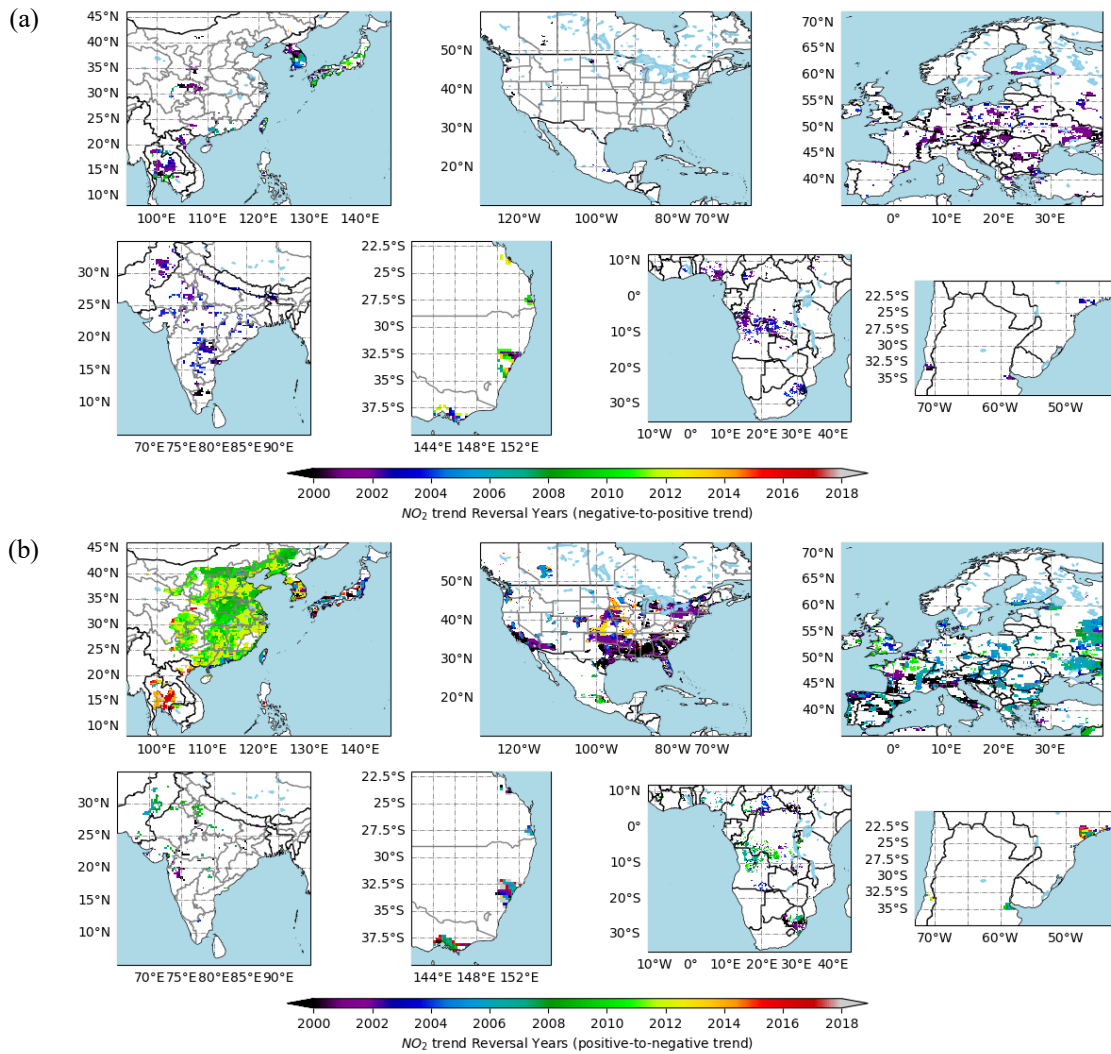


Figure S 4: Persistent trend reversals of tropospheric NO₂ ratio: (a) from negative to positive and (b) from positive to negative. Only grids with a with a long-term mean NO₂ VCD $> 1.5 \times 10^{15}$ (molecules \cdot cm⁻²) and statistically significant trends with p value < 0.05 for the period before and after the year of reversals are shown.

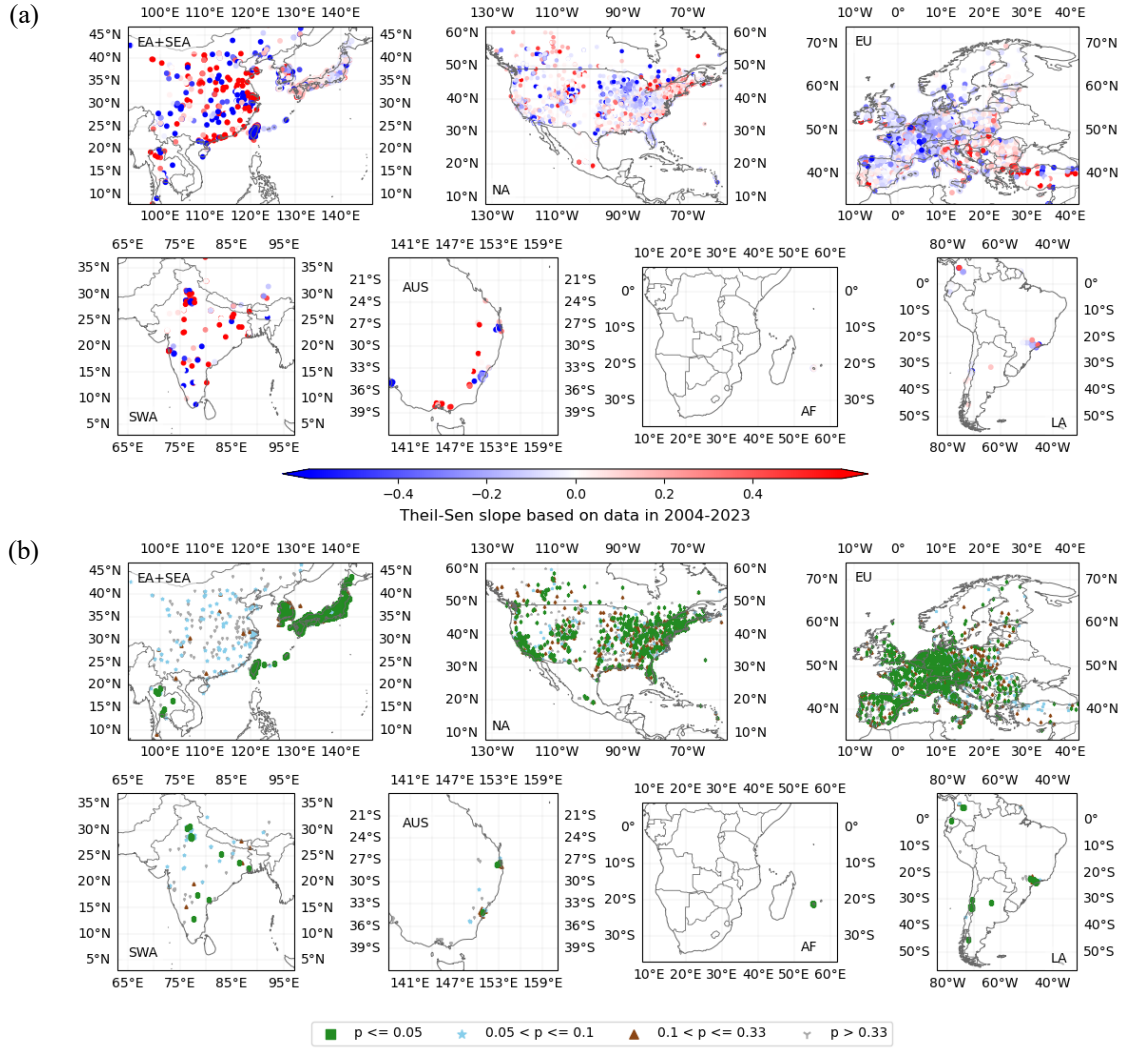


Figure S 5: Map of WE-WD O₃ Theil-Sen slope (upper panel) and p-value for the trend of timeseries using Mann-Kendall test (lower panel).