

SUPPLEMENTARY INFORMATION

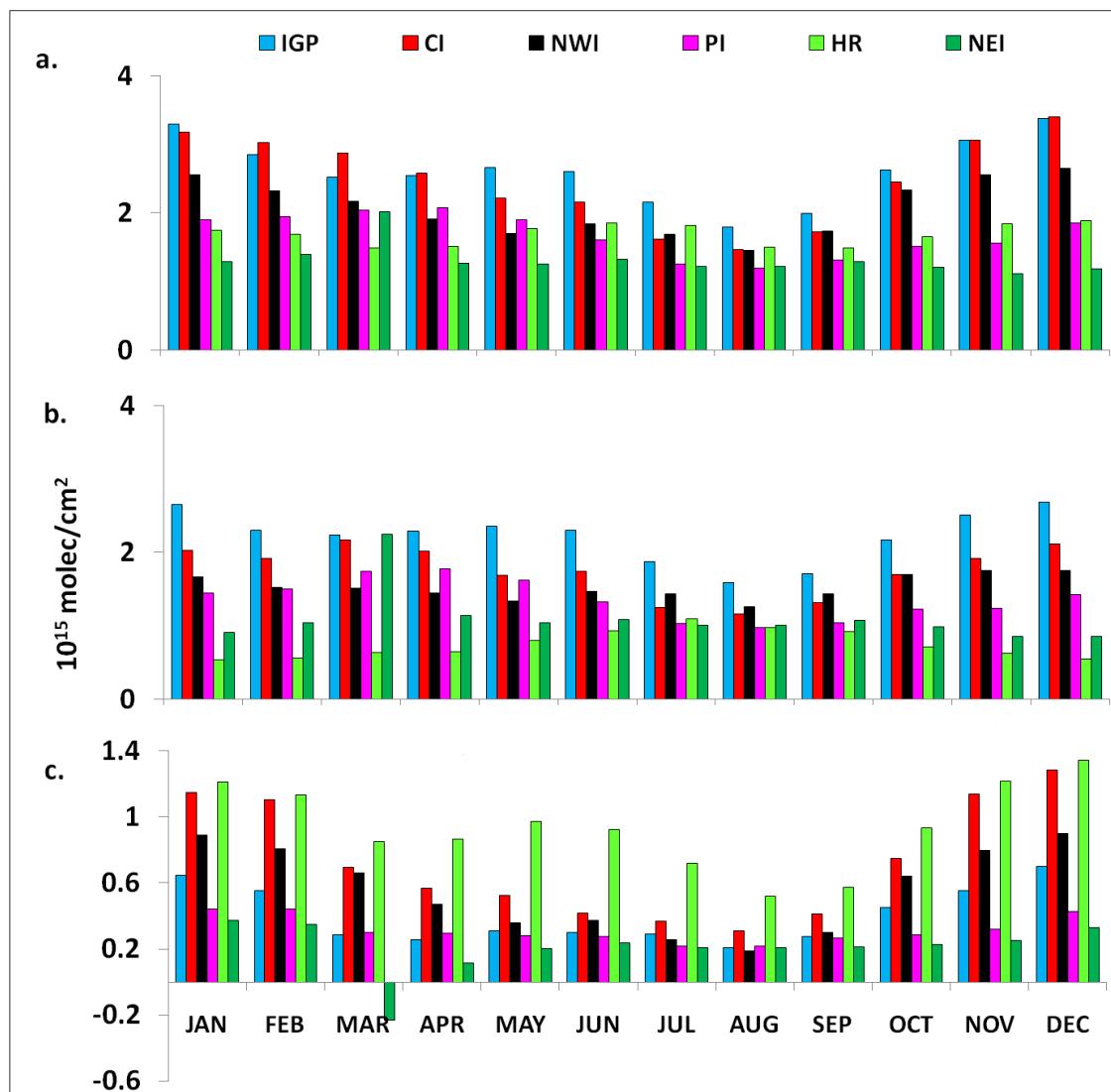


Figure S1. Monthly distribution of NO₂ in the urban regions of IGP, CI, NWI, PI, HR and NEI as derived from the TROPOMI data averaged for the period 2018–2021. (b) Same as (a), but for the rural India and (c) the difference between NO₂ in urban and rural regions.

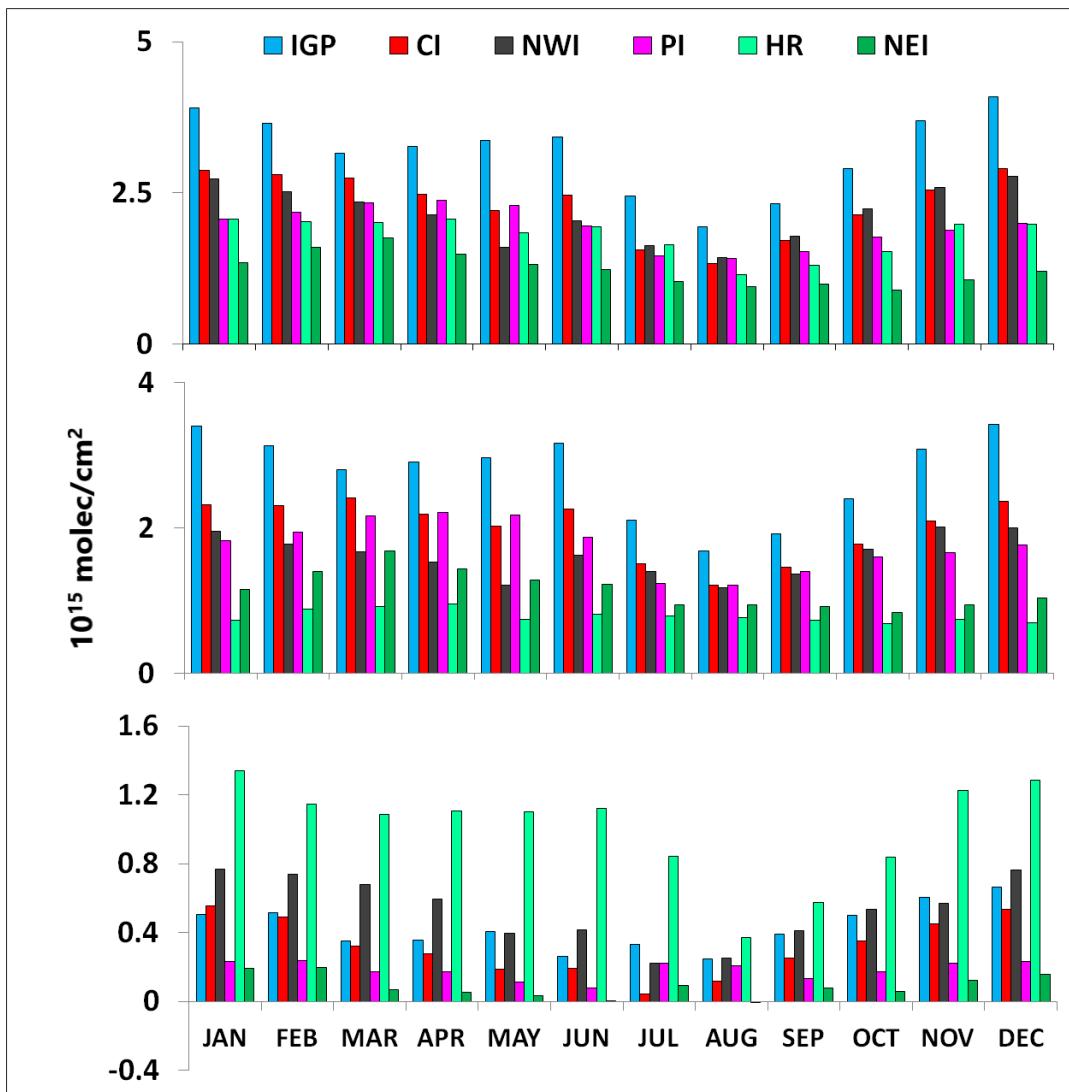


Figure S2.(a): Monthly distribution of NO_2 in the urban regions of IGP, CI, NWI, PI, HR and NEI as derived using merged data during 1997–2019; (b): Monthly variation of NO_2 over the same Rural regions and (c) the difference in urban and rural air quality for all the regions.

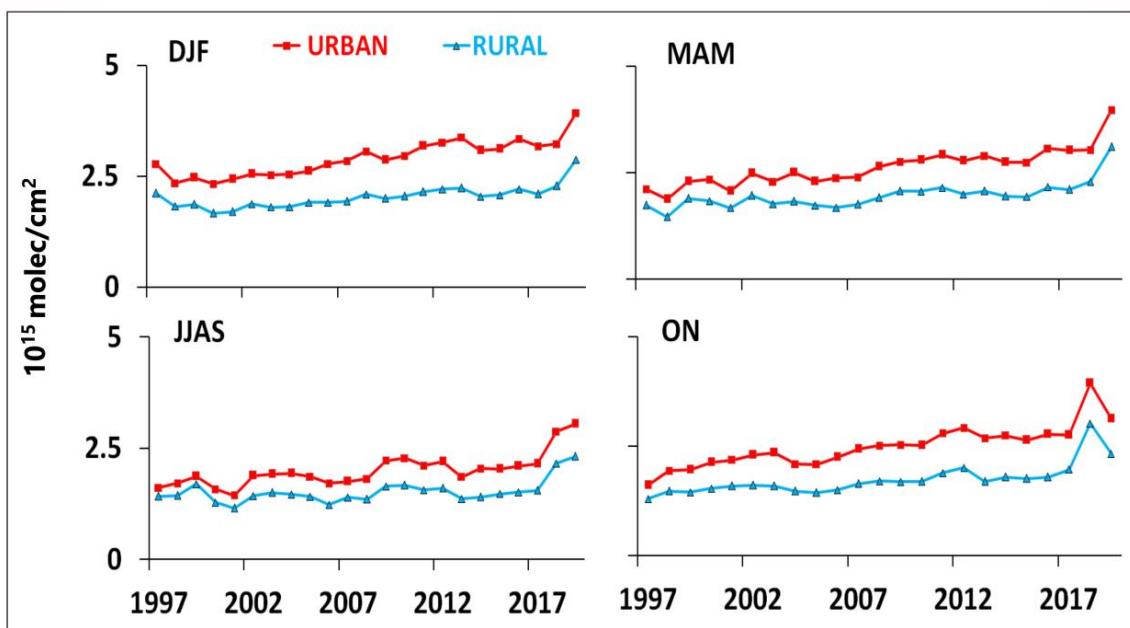


Figure S3. Tropospheric NO₂ over the urban and rural India for different seasons (DJF: winter, MAM: spring, JJAS: monsoon, ON: autumn) from 1997 to 2019 using the merged GOME/SCIA/GOME2 data.

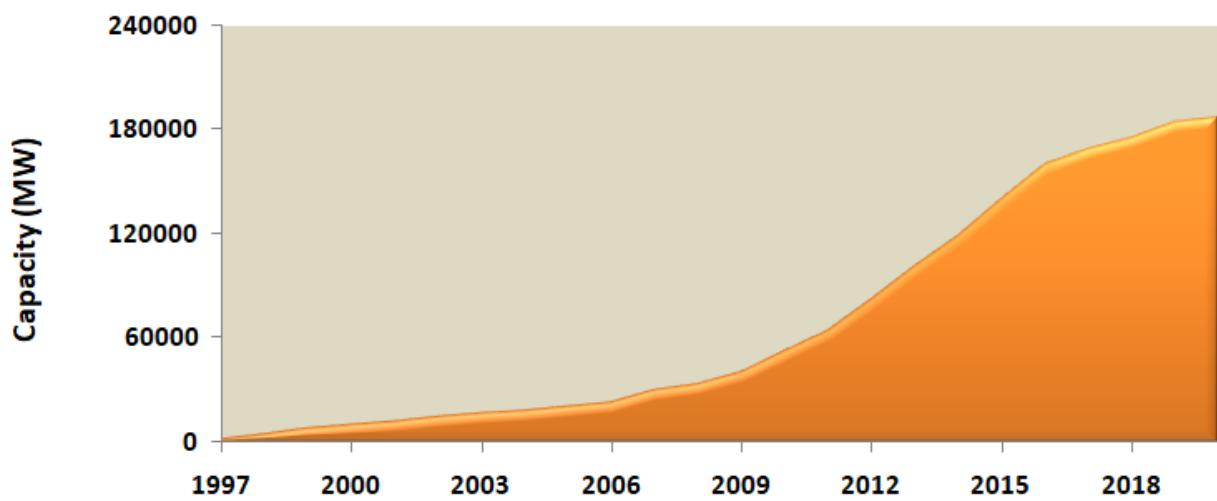


Figure S4. Thermal power plant capacity in India from 1997 to 2020.

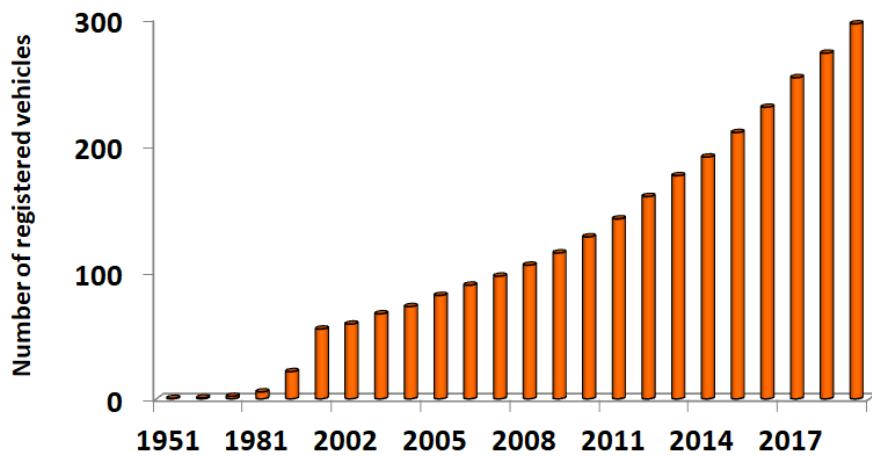


Figure S5: Number of registered vehicles in India during the period 1951–2019.

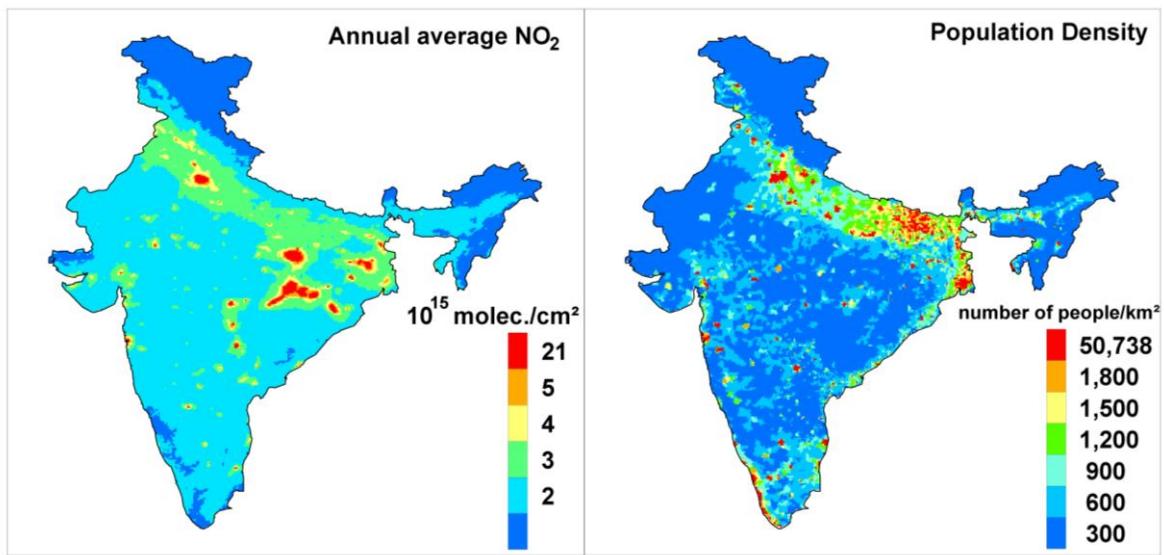


Figure S6: (Left) Annual averaged NO₂ over India using the TROPOMI data in 2018–2021 at a spatial resolution of $3.5 \times 5.5 \text{ km}^2$. (Right) Projected population density (number of person/km²) for 2020 based on the same spatial resolution.

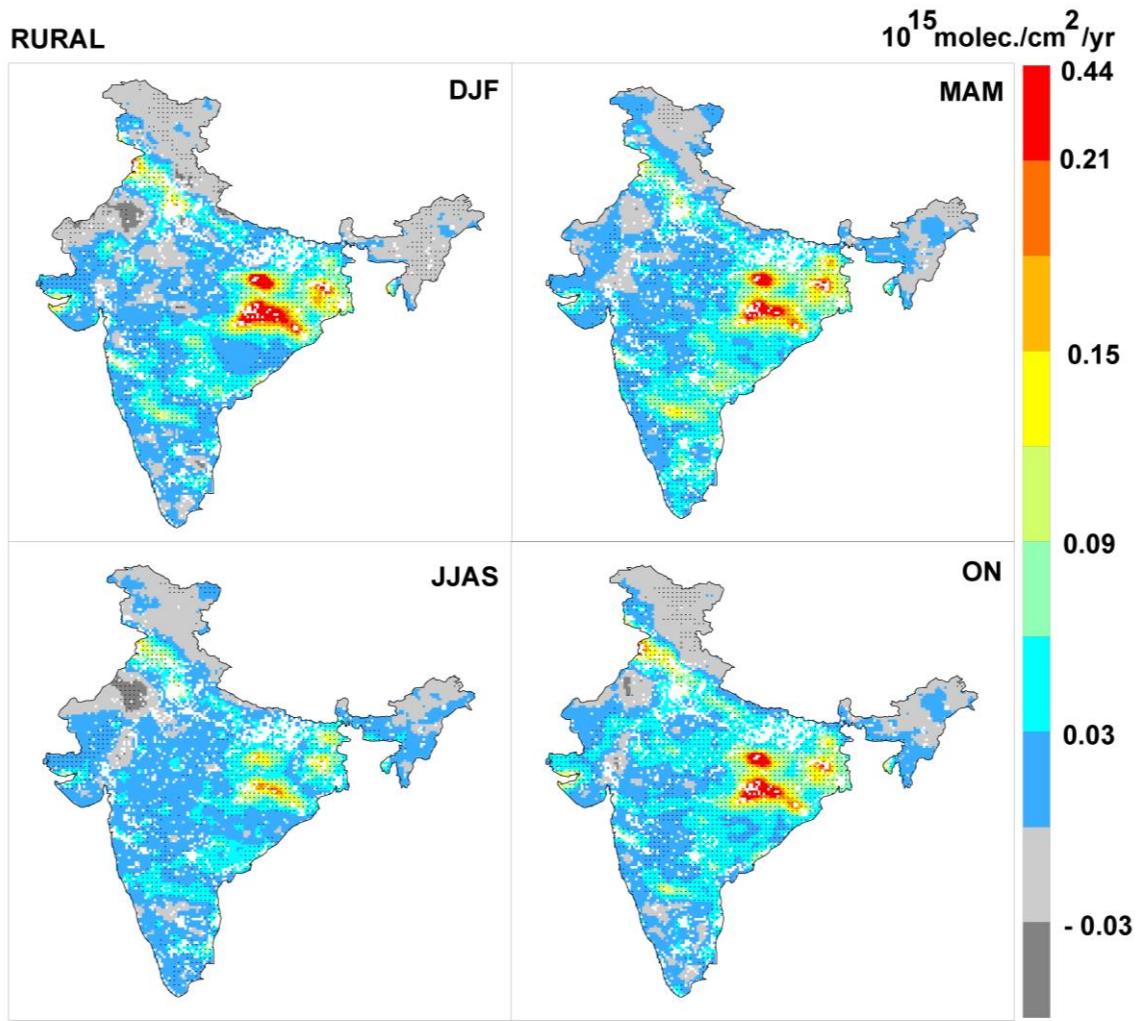


Figure S7: Seasonal trends in NO₂ over rural India as estimated using the merged data for the period 1997–2019. The hatched regions represent the statistical significance at the 95% confidence interval.

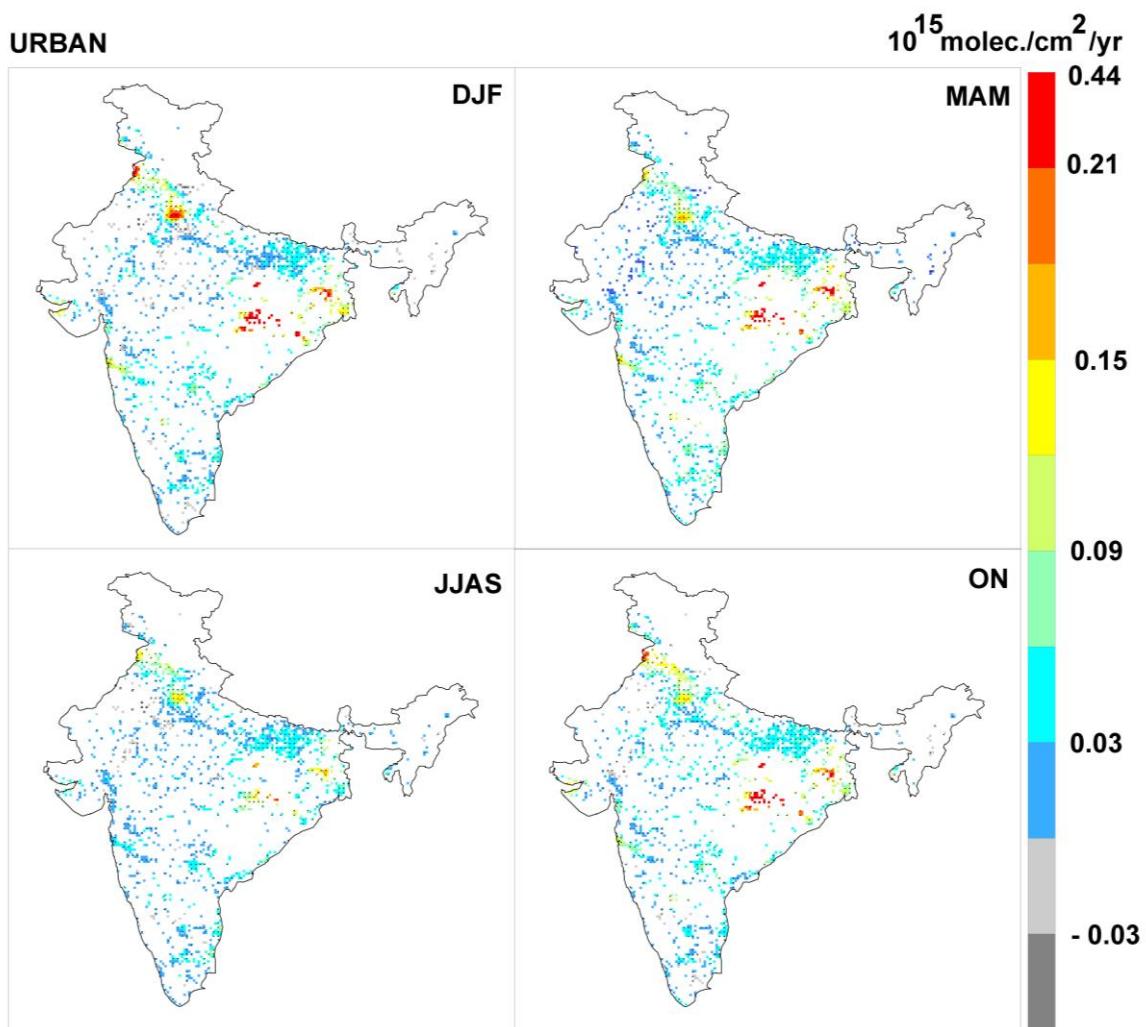


Figure S8: Seasonal trends in NO₂ over urban India as calculated using the merged data for the period 1997–2019. The hatched regions represent the statistical significance at the 95% confidence interval.