Supplement of Atmos. Chem. Phys., 26, 5355–5373, 2026
https://doi.org/10.5194/acp-26-5355-2026-supplement

Atmospheric Chemistry and Physics
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EGU

Supplement of

Multi-decadal ozone air quality and the role of temperature in Switzerland during summertime

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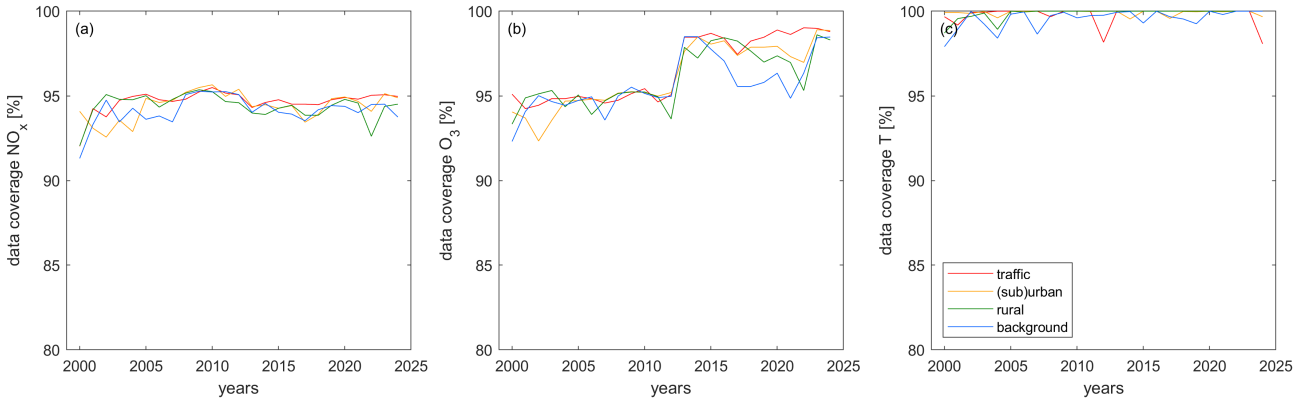

Figure S1. Data coverage over time for (a) NO_x, (b) O_3 and (c) temperature at traffic (red), (sub)urban (orange), rural (green) and background (blue) sites. The traffic category contains data from two stations, rural and background from three and (sub)urban from four.

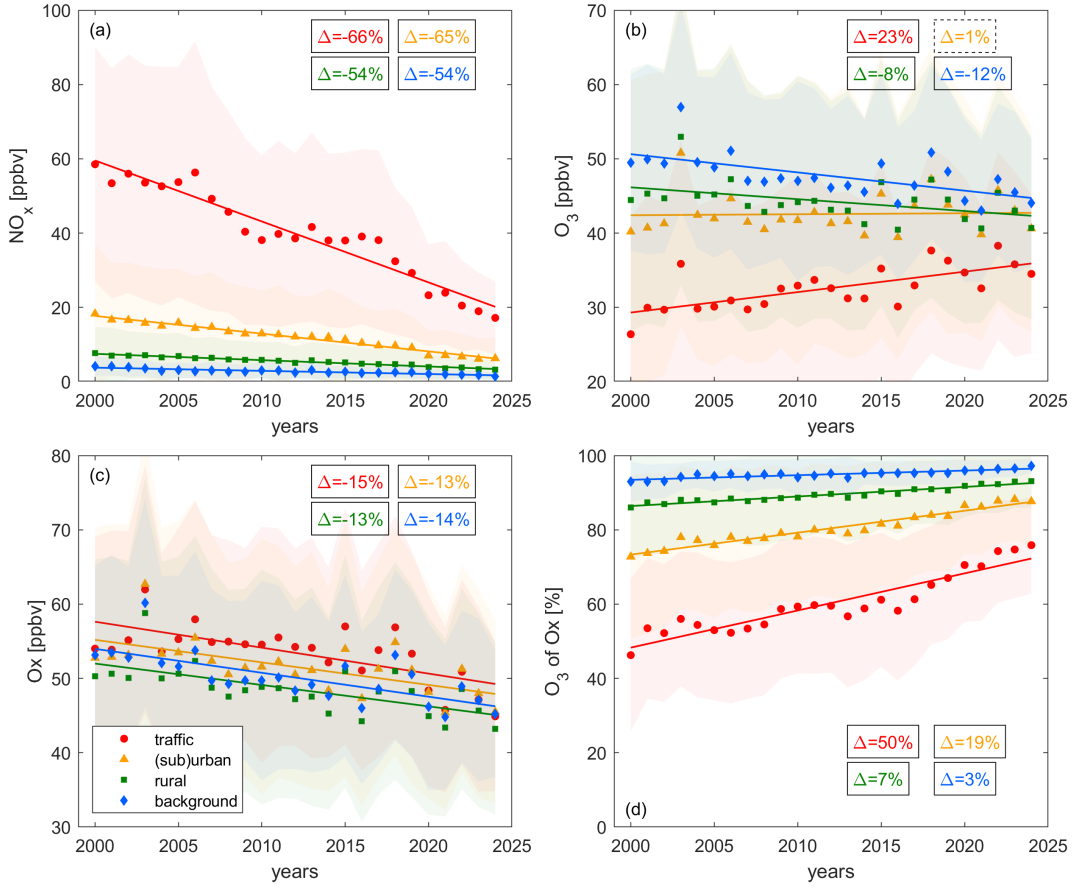

Figure S2. Same as Figure 3 of the manuscript, but including error bars, which represent the 1 σ standard deviation of the averaging.

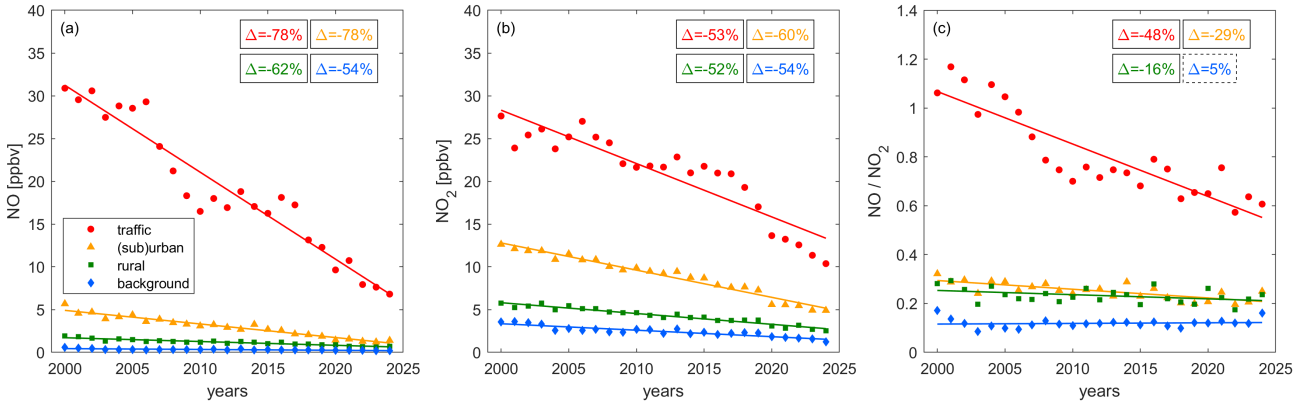

Figure S3. Decadal trends of (a) NO, (b) NO_2 and (c) the NO to NO_2 ratio at traffic (red), (sub)urban (orange), rural (green) and background (blue) sites. The boxes show the relative change of the trace gas levels between 2000 and 2024, whereby solid lines denote significant (p-value ≤ 0.05) and dashed lines insignificant (p-value > 0.05) trends.

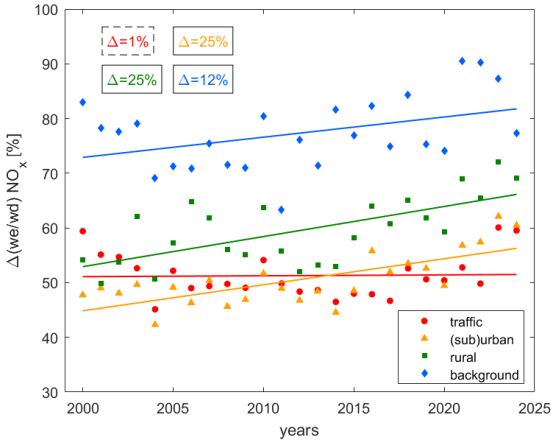

Figure S4. Decadal trends of the relative change between weekday and weekend NO_x at traffic (red), (sub)urban (orange), rural (green) and background (blue) sites. The boxes show the relative change of the trace gas levels between 2000 and 2024, whereby solid lines denote significant (p-value ≤ 0.05) and dashed lines insignificant (p-value > 0.05) trends.

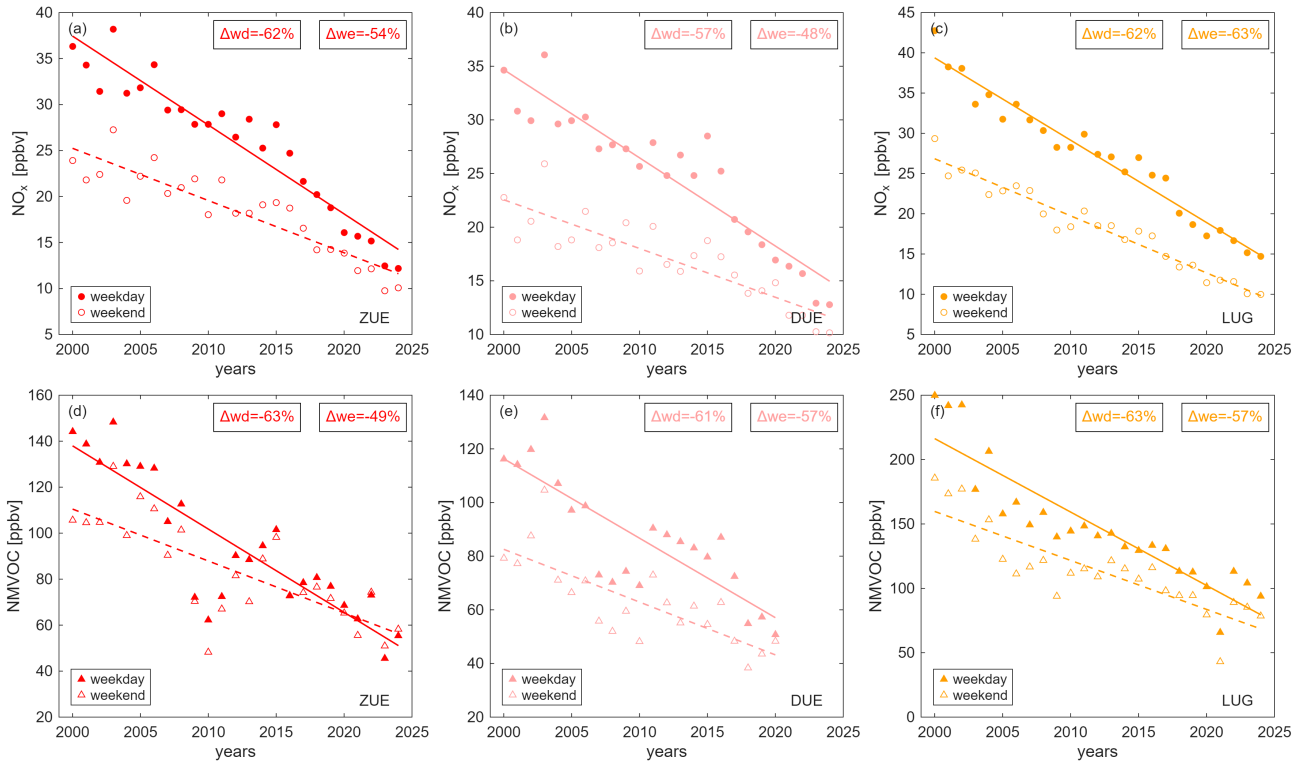

Figure S5. Decadal trends of (a)-(c) NO_x and (d)-(f) NMVOCs at the urban locations ZUE, DUE and LUG, separated into weekends and weekdays. The boxes show the relative change of the trace gas levels between 2000 and 2024, whereby solid lines denote significant (p-value ≤ 0.05) and dashed lines insignificant (p-value > 0.05) trends.

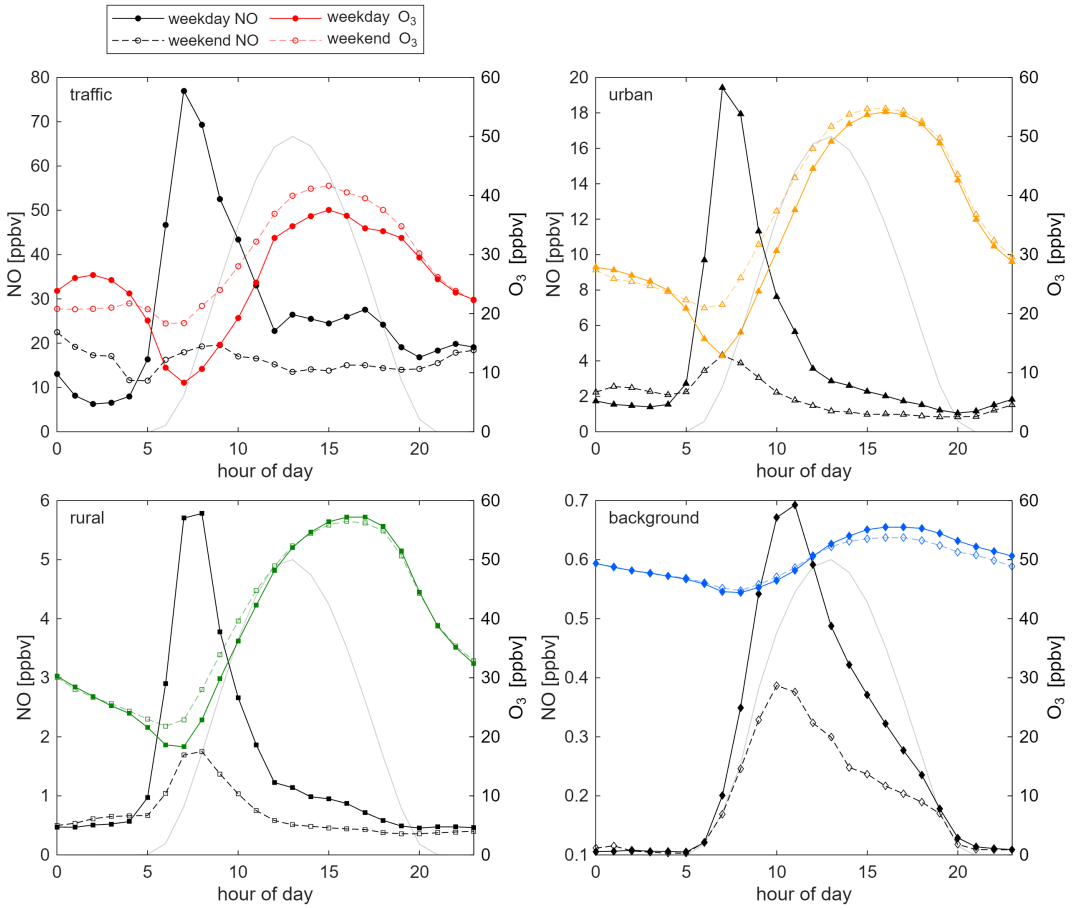

Figure S6. Diurnal cylces of NO and O_3 at traffic (red), (sub)urban (orange), rural (green) and background (blue) sites, separated into weekday (solid lines) and weekend data (dashed lines) for summer days between 2000 and 2005. The gray line represents the diurnal variation of radiation, normalized to the right y-axis.

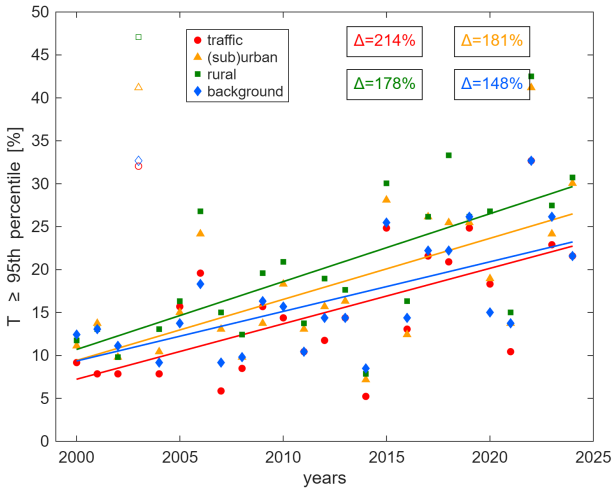

Figure S7. Decadal trends of the share of daily peak temperatures exceeding the 95th percentile of all temperature measurements at traffic (red), (sub)urban (orange), rural (green) and background (blue) sites. The boxes show the relative change of the trace gas levels between 2000 and 2024, whereby solid lines denote significant (p-value ≤ 0.05) and dashed lines insignificant (p-value > 0.05) trends. Data points during the heatwave in 2003 are not included in the fit.

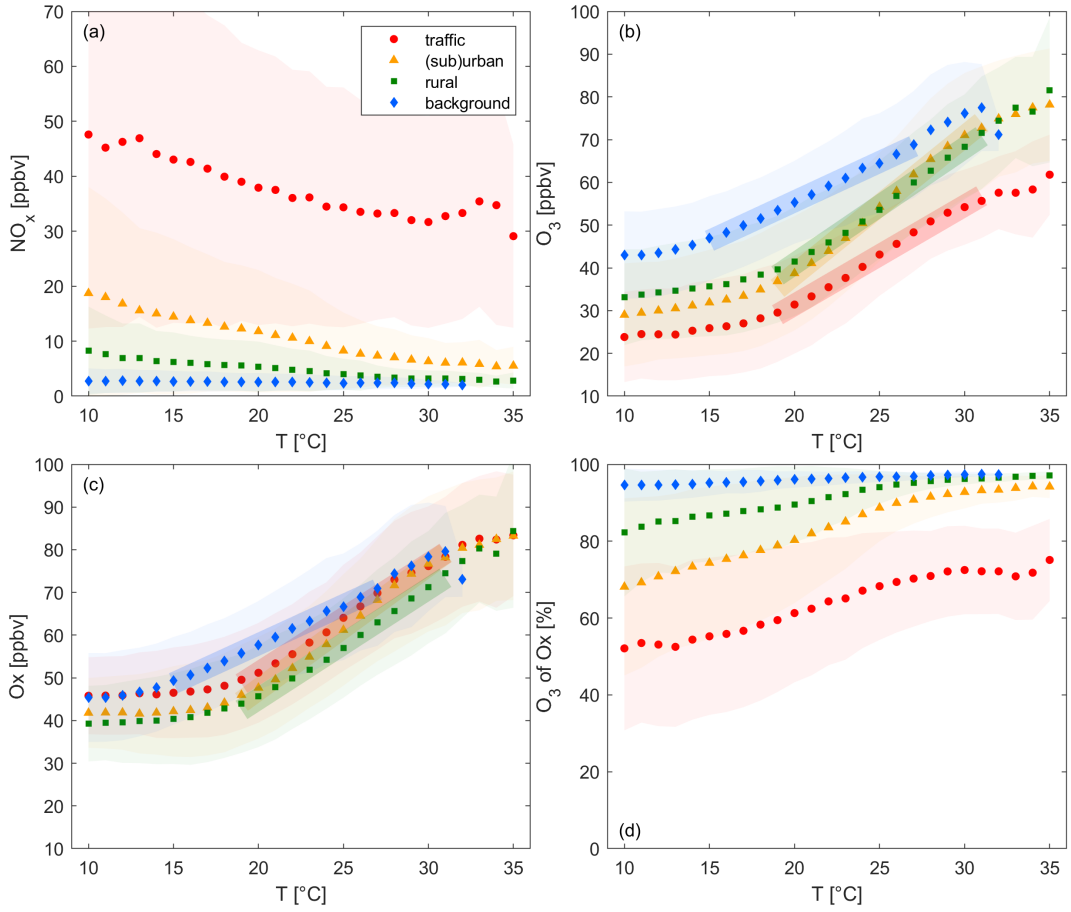

Figure S8. Same as Figure 6 of the manuscript, but including error bars, which represent the 1 σ standard deviation of the averaging.

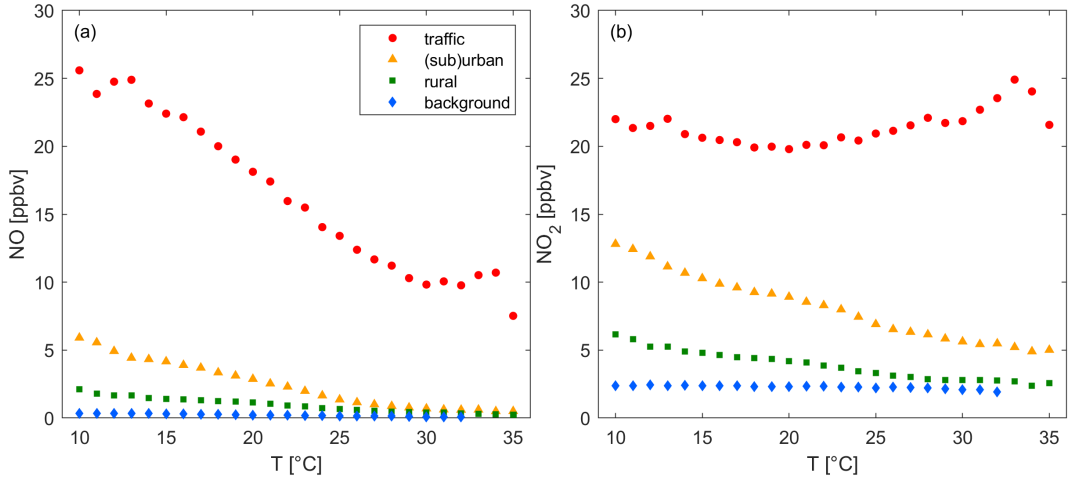

Figure S9. Changes of (a) NO and (b) NO_2 with temperature at traffic (red), (sub)urban (orange), rural (green) and background (blue) sites.

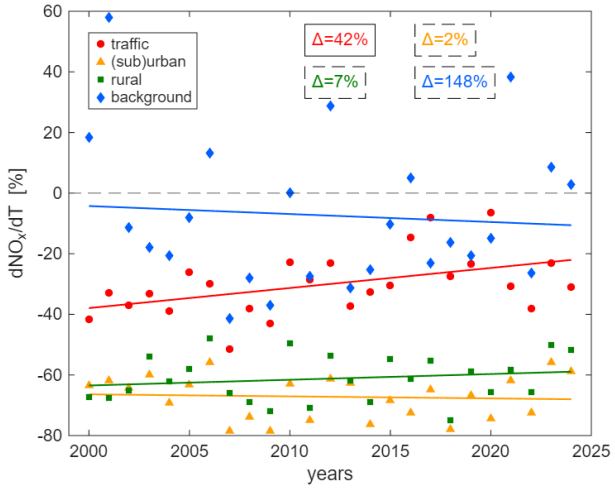

Figure S10. Decadal trends of the NO_x-temperature correlation as relative change of NO_x between 10 and 30 °C at traffic (red), (sub)urban (orange), rural (green) and background (blue) sites. The boxes show the relative change between 2000 and 2024, whereby solid lines denote significant (p-value ≤ 0.05) and dashed lines insignificant (p-value > 0.05) trends.

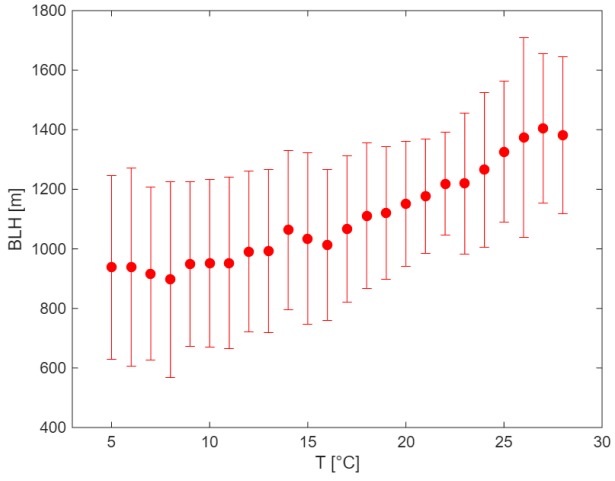

Figure S11. Changes of the boundary layer height with temperature across Switzerland based on daily ERA5 reanalysis data at 13:00 local time.

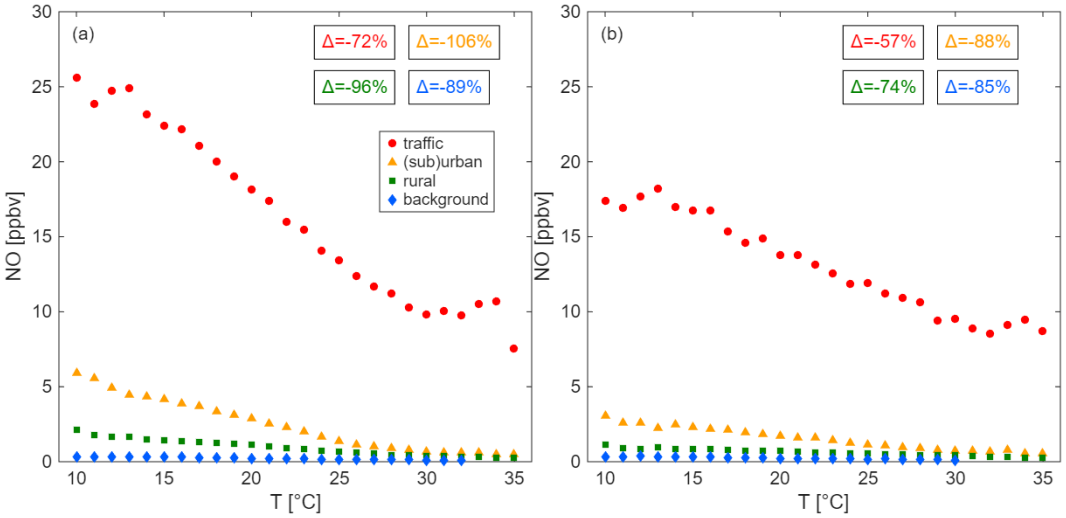

Figure S12. NO-temperature correlation for data between (a) 09:00-18:00 and (b) 13:00-15:00.

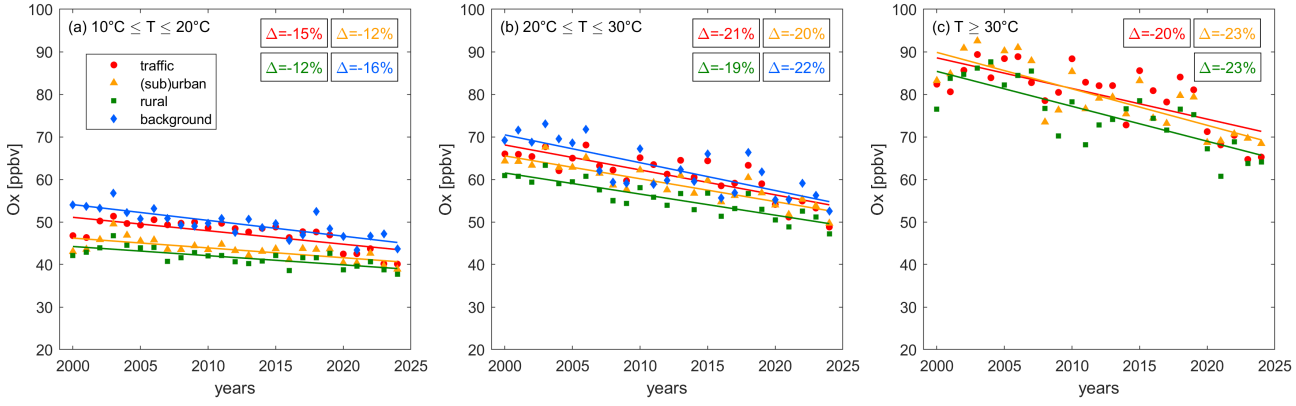

Figure S13. Same as Figure 8 of the manuscript, but for Ox.

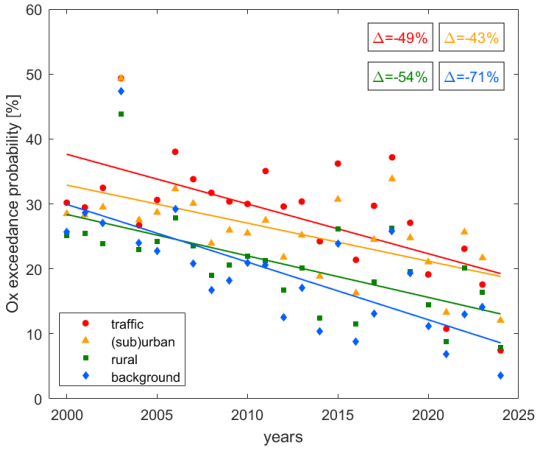

Figure S14. Same as Figure 9(a) of the manuscript, but for Ox.