Supplement of

Rapid Increases of Ozone Concentrations over Tibetan Plateau Caused by Local and Non-Local Factors

Chenghao Xu et al.

Correspondence to: Jintai Lin (linjt@pku.edu.cn)
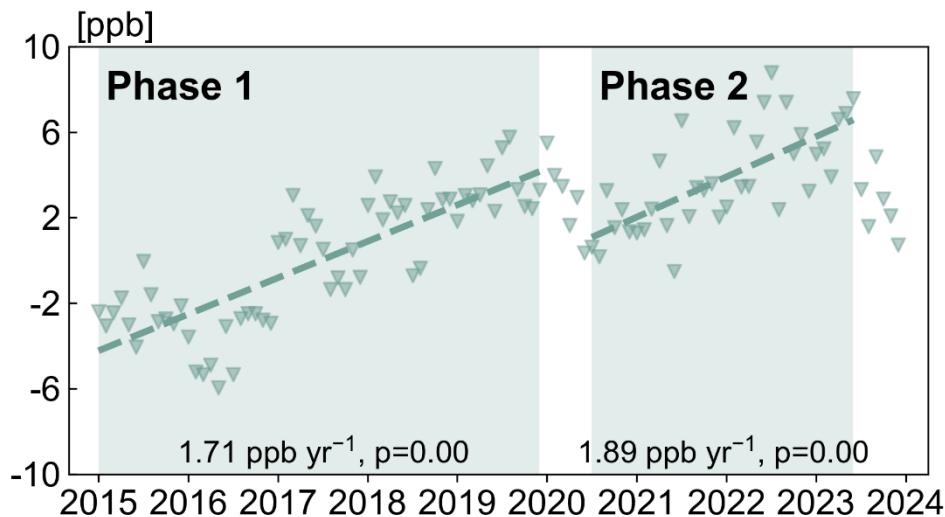
Figure S1 Monthly variation of deseasonalized MEE ozone mixing ratios averaged over 17 cities on the TP from January 2015 to December 2023. The data points represent the deseasonalized ozone in individual months, and the dashed lines represent the linear regression fit in Phase 1 (from January 2015 to December 2019) and Phase 2 (from July 2020 to June 2023). The slope of linear regression and the p-value are also shown.
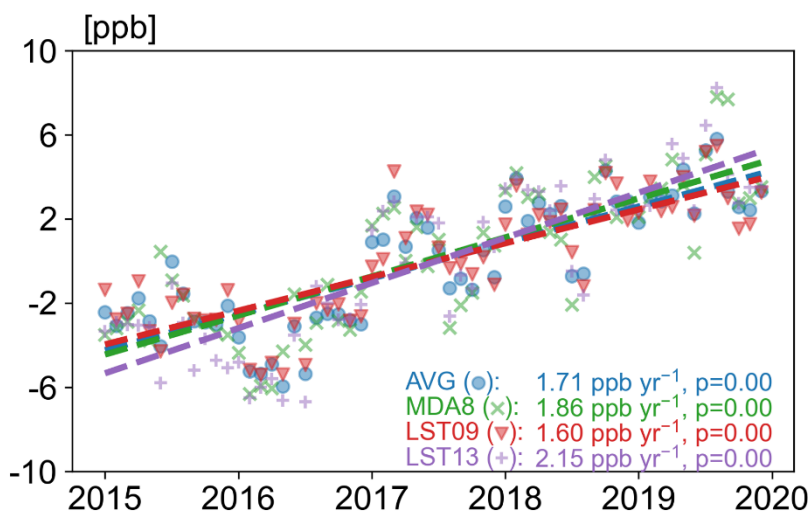
Figure S2 Monthly variation of deseasonalized MEE ozone mixing ratios averaged over 17 cities on the TP during January 2015 to December 2019. Each color represents an ozone metric, including daily average ozone concentration (AVG), maximum daily 8-h average ozone concentration (MDA8), ozone at 09:00 local solar time (LST09), and ozone at13:00 local solar time (LST13). The data points represent the deseasonalized ozone in individual months, and the dashed line represents the linear regression fit. The slope of linear regression and the p-value are also shown.
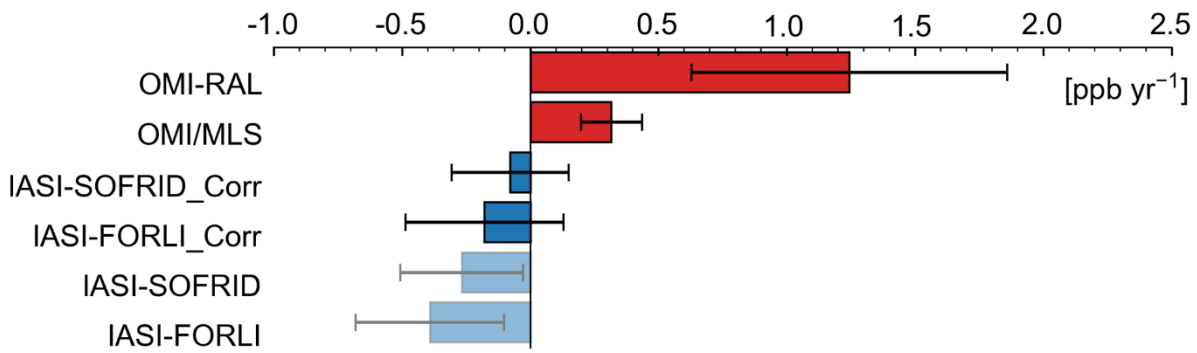
Figure S3 Trends of deseasonalized tropospheric ozone mixing ratios from 2008 to 2019 based on different satellite datasets. The error bar represents the standard deviation of all gridded data over the TP. The '_Corr' suffix means that the data have been corrected, as described in Section 2.3.
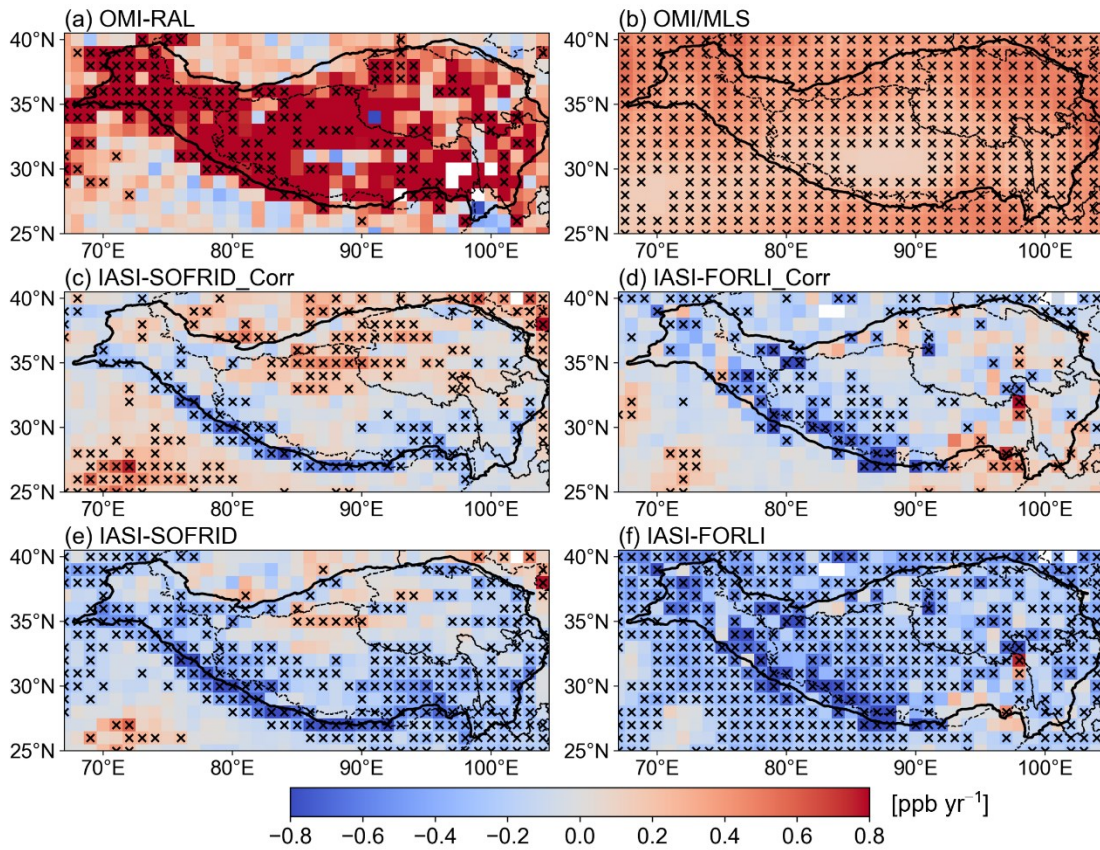
Figure S4 Spatial distribution of deseasonalized tropospheric ozone mixing ratio trends from 2008 to 2019 for (a) OMI-RAL, (b) OMI/MLS, (c) IASI-SOFRID_Corr, (d) IASI-FORLI_Corr, (e) IASI-SOFRID, and (f) IASI-FORLI. Each cross means the trend in that grid cell is statistically significant (p-value < 0.05).
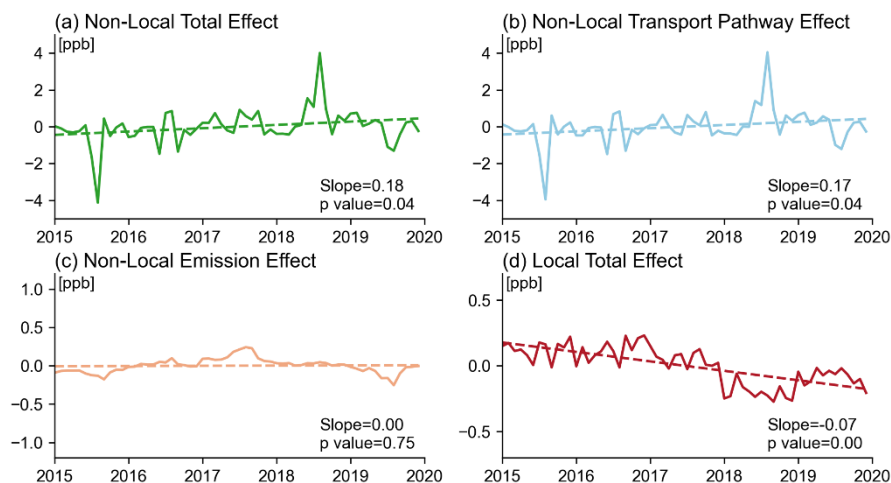
Figure S5 Deseasonalized monthly variation of QNR at Waliguan. (a) Non-local QNR changes due to the combined effect of changes in anthropogenic emissions and in transport pathway. (b) Non-local QNR changes due to changes in transport pathway alone. (c) Non-local QNR changes due to changes in anthropogenic emissions alone. (d) Local QNR changes due to the combined effect of changes in anthropogenic emissions and in transport pathway.