



Supplement of

Quantifying transboundary transport flux of CO over the Tibetan Plateau: variabilities and drivers

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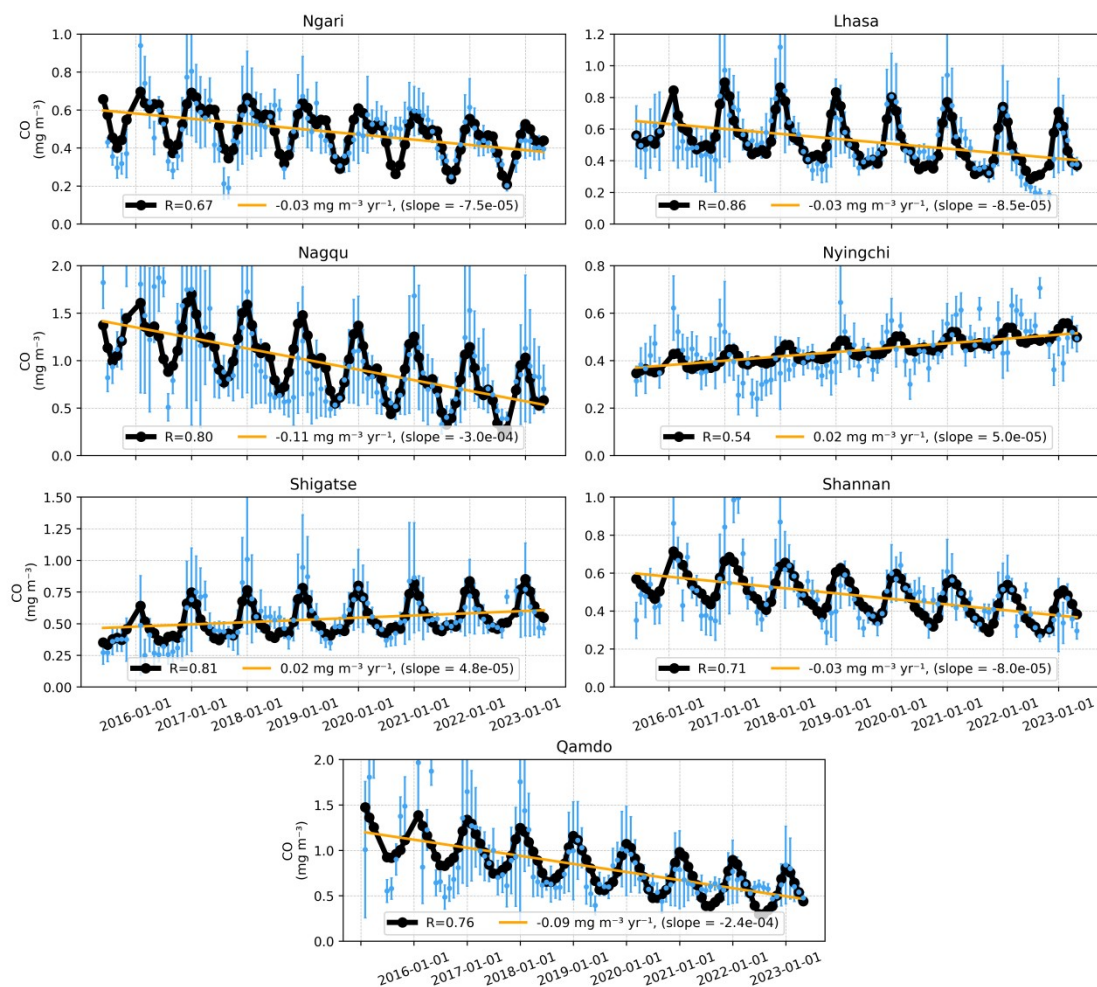
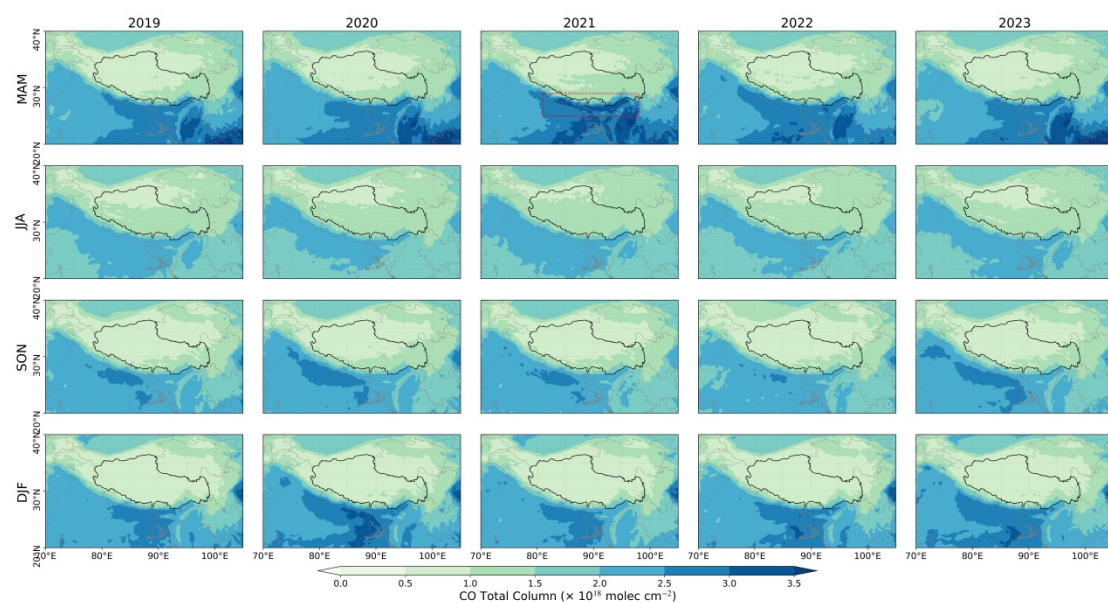
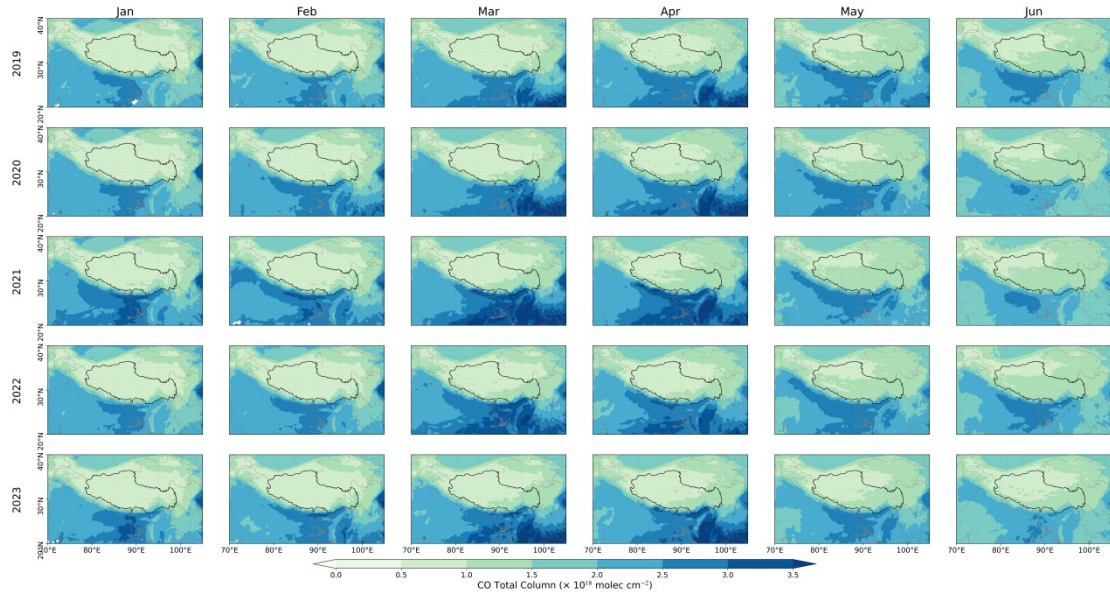


Fig. S1. Inter-annual variations of CO observed by CNEMC from 2015 to 2024. Blue dots represent the monthly mean CO concentration, with vertical error bars indicating the 1σ standard deviation. The seasonal trend (black line) and inter-annual trend (orange line) are fitted using a seasonal cycle model.



1 **Fig. S2.**The seasonal averages of TROPOMI CO total columns over the Tibetan Plateau during
2 spring (MAM), summer (JJA), post-monsoon (SON), and winter (DJF), based on data collected
3 from May 2019 to April 2023.



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5 **Fig. S3.**The monthly averages of TROPOMI CO total columns over the Tibetan Plateau from
6 January to June, based on data collected from 2019 to 2023.

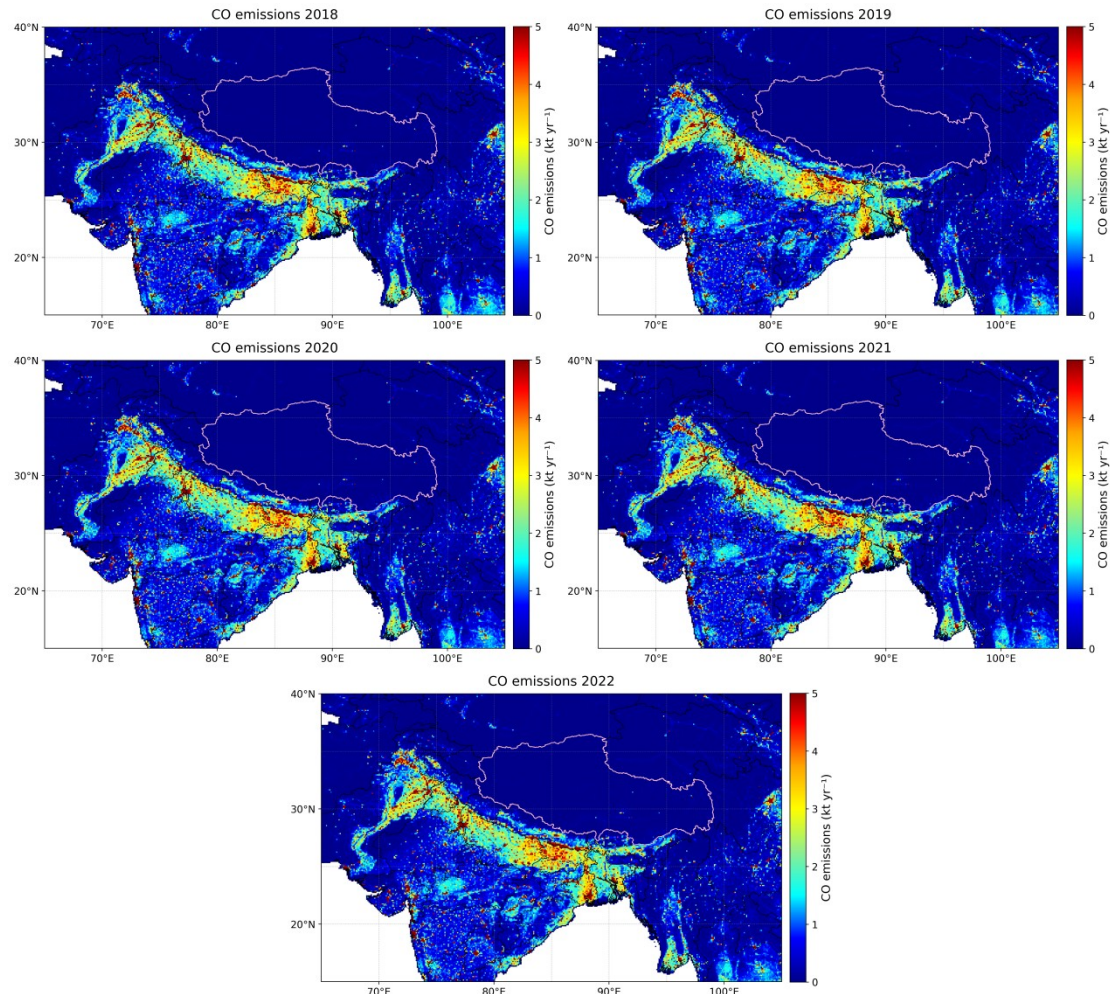


Fig. S4. Total CO emission distribution from 2018 to 2022 ($0.1^\circ \times 0.1^\circ$) from the EDGAR Emission Inventory over the Qinghai-Tibet Plateau and surrounding regions, excluding emissions from large-scale biomass burning, savannah burning, forest fires, and sources and sinks from land-use, land-use change, and forestry (LULUCF). Units are in $\text{kg} / \text{m}^2 / \text{s}$. The Tibetan Plateau is marked with a pink outline.

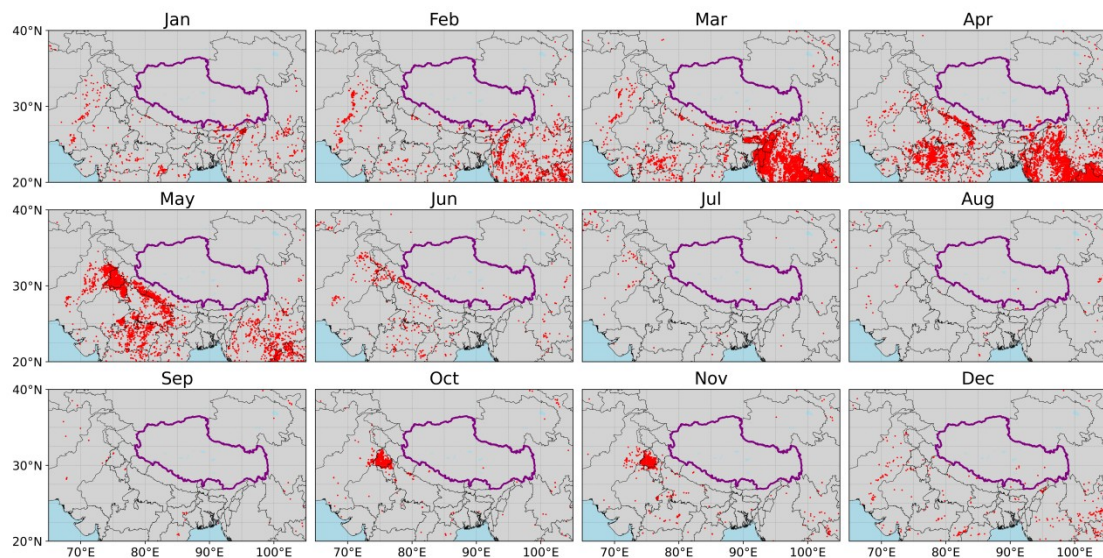


Fig. S5. Monthly aggregated distribution of MODIS fire points over the Qinghai-Tibet Plateau and surrounding regions from January to December 2019. The purple line delineates the boundary of the Tibetan Plateau.

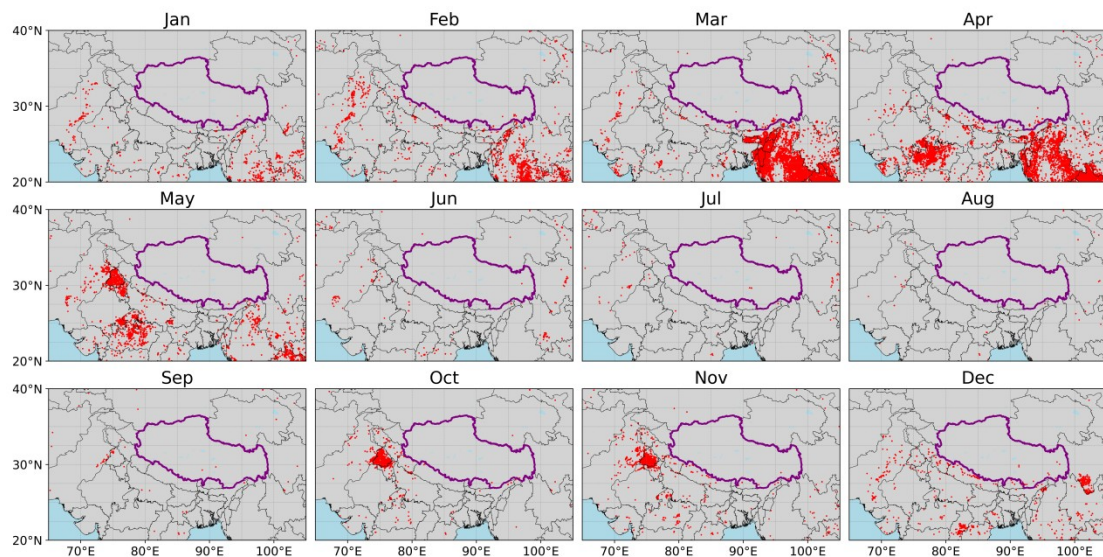


Fig. S6. Monthly aggregated distribution of MODIS fire points over the Qinghai-Tibet Plateau and surrounding regions from January to December 2020. The purple line delineates the boundary of the Tibetan Plateau.

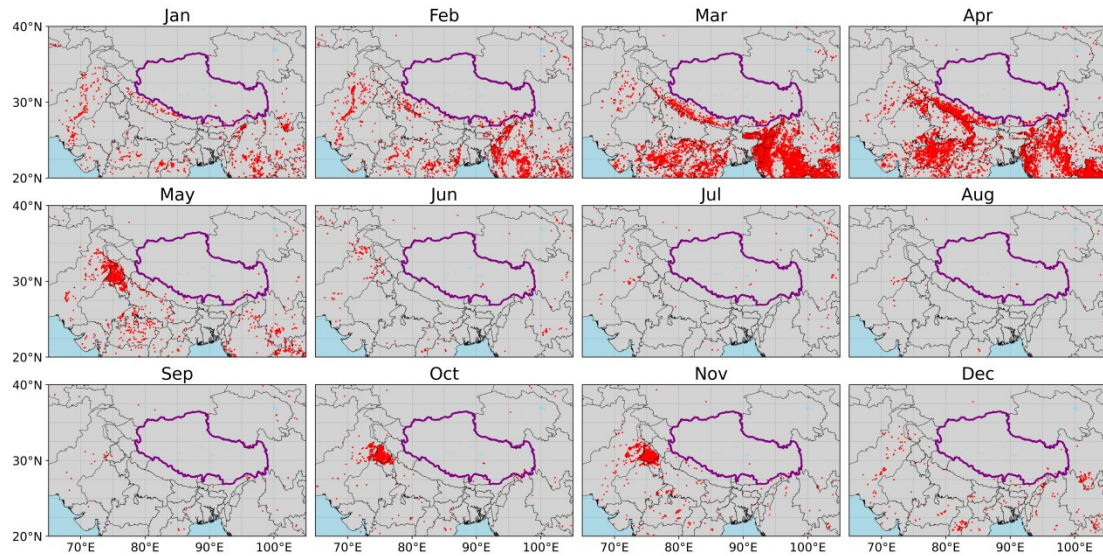


Fig. S7. Monthly aggregated distribution of MODIS fire points over the Qinghai-Tibet Plateau and surrounding regions from January to December 2021. The purple line delineates the boundary of the Tibetan Plateau.

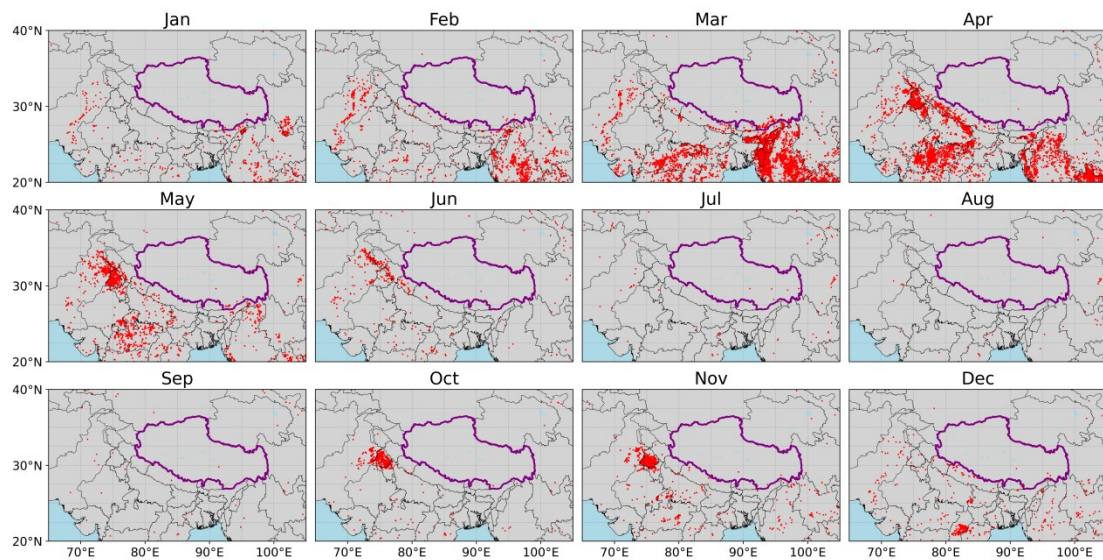


Fig. S8. Monthly aggregated distribution of MODIS fire points over the Qinghai-Tibet Plateau and surrounding regions from January to December 2022. The purple line delineates the boundary of the Tibetan Plateau.

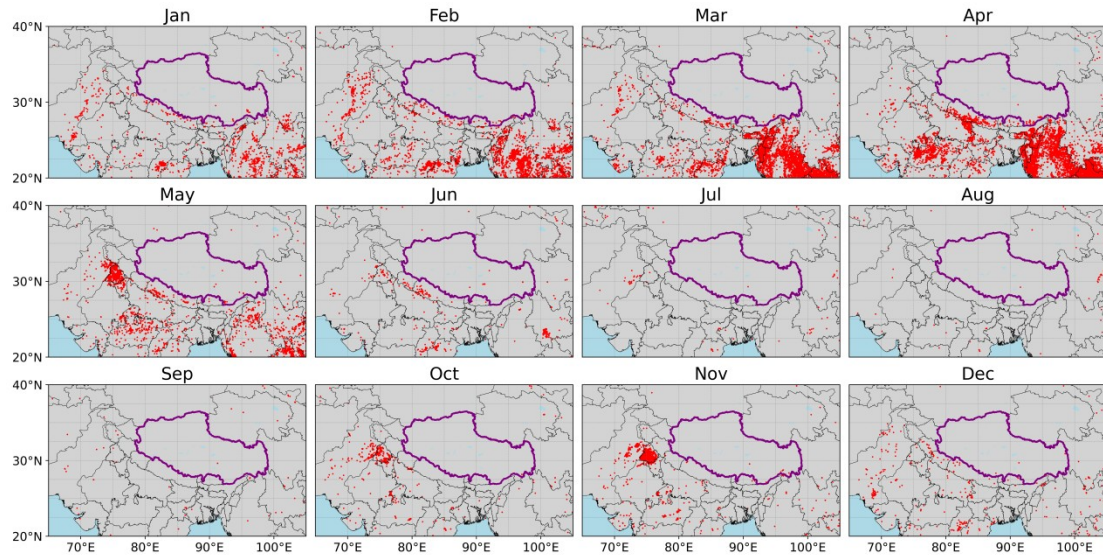


Fig. S9. Monthly aggregated distribution of MODIS fire points over the Qinghai-Tibet Plateau and surrounding regions from January to December 2023. The purple line delineates the boundary of the Tibetan Plateau.