



Supplement of

**Tropical tropospheric ozone and carbon monoxide distributions:
characteristics, origins, and control factors, as seen by IAGOS and IASI**

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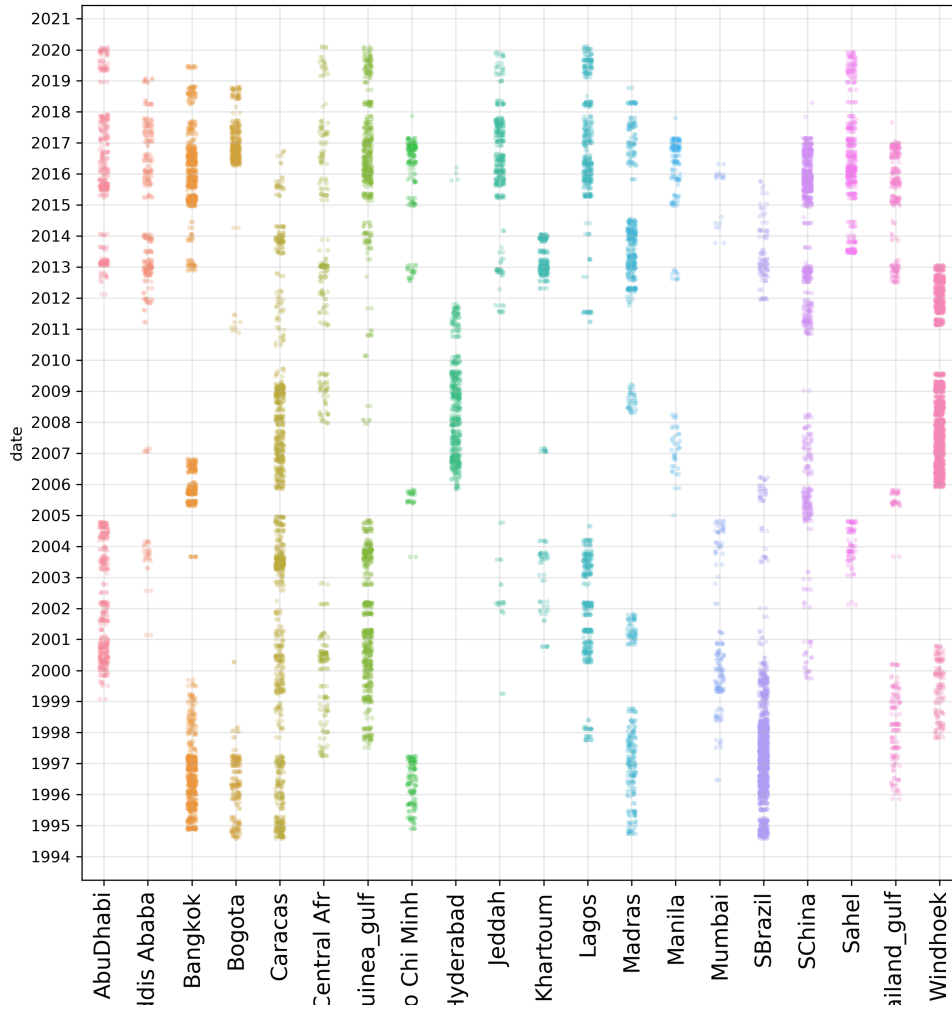


Figure S1. Availability of the IAGOS measurements for O₃ profiles over the different clusters for the period 1994 to 2020.

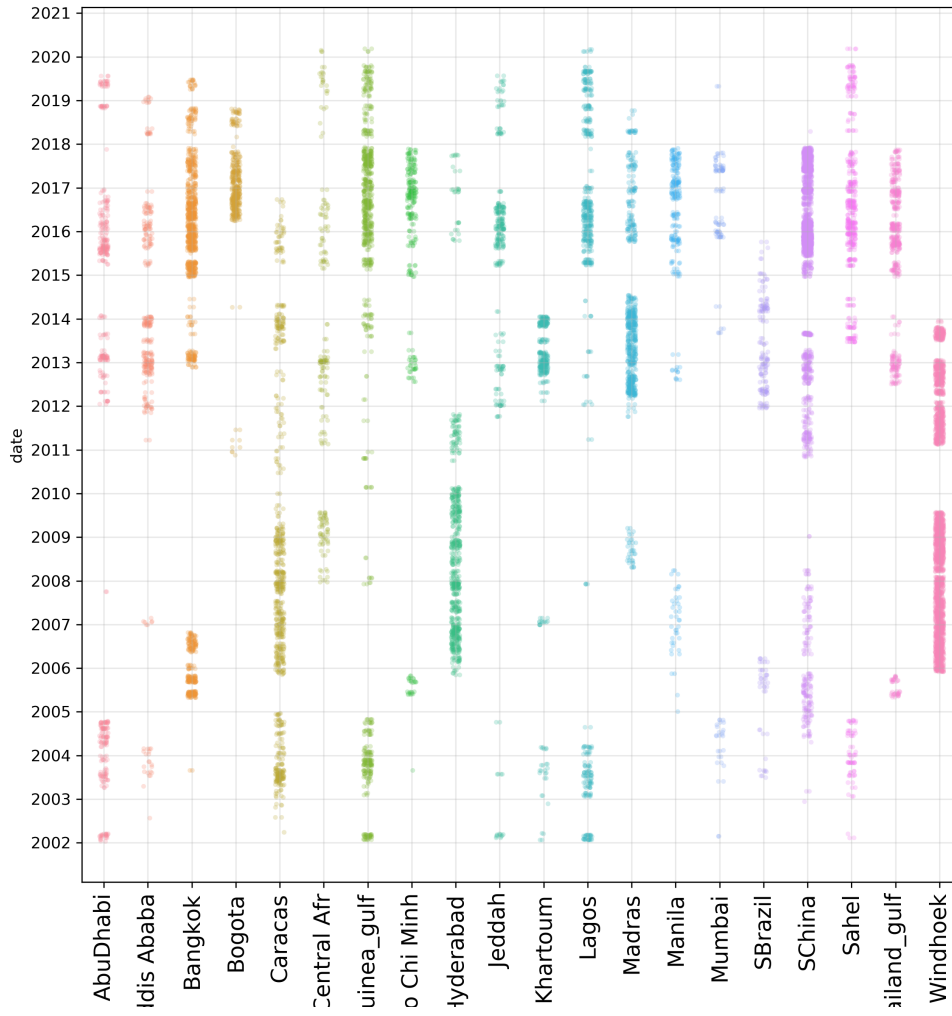


Figure S2. Same as Fig. S1 for CO for the period 2002 to 2020.

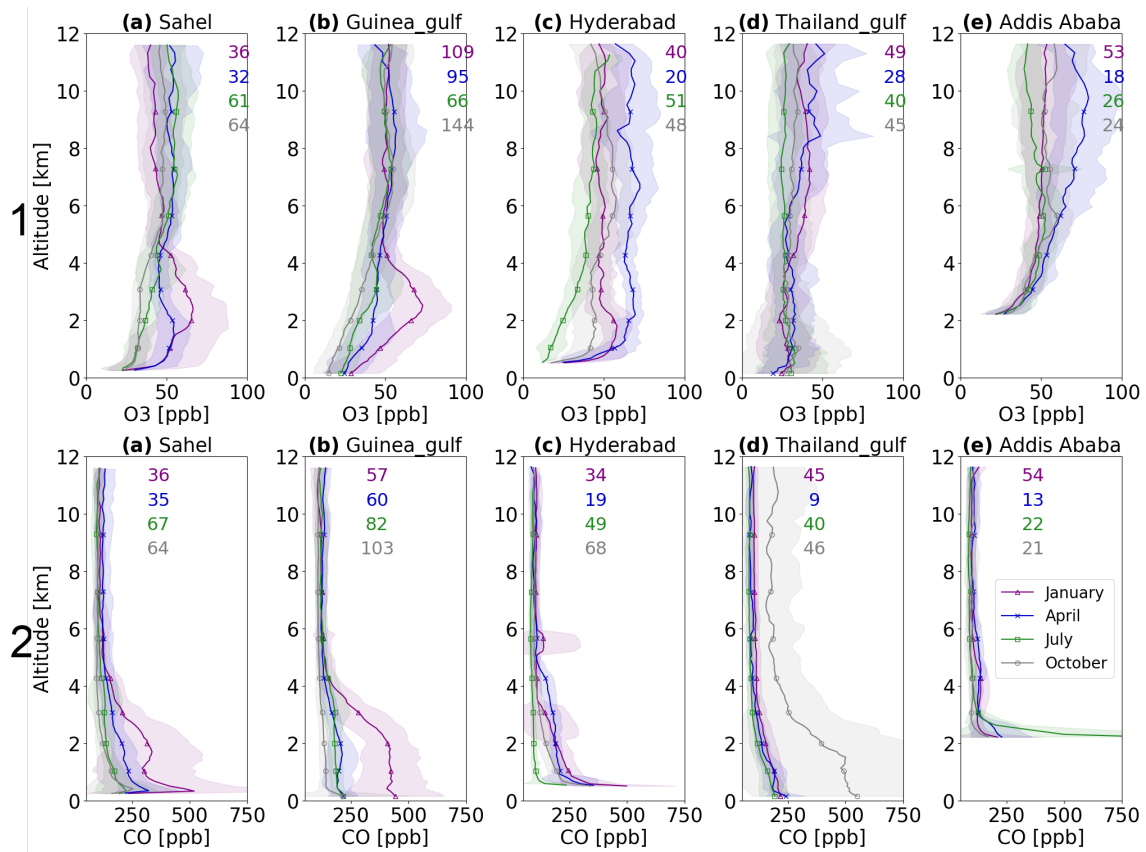


Figure S3. Same as Fig. 3 (panels 1 and 2) for Sahel (a), Gulf of Guinea (b), Hyderabad (c), Gulf of Thailand (d) and Addis Ababa (e).

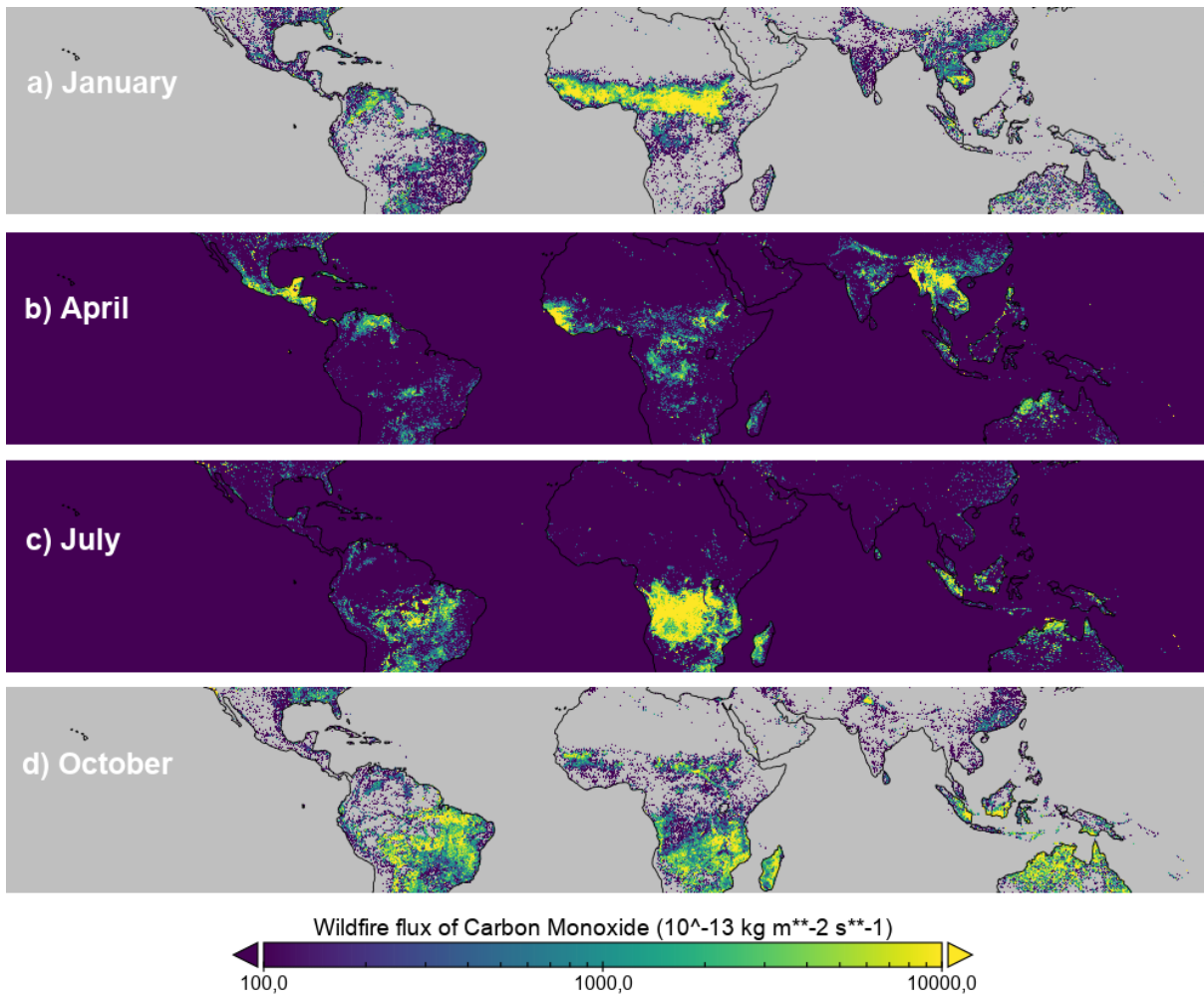


Figure S4. GFAS BB CO emissions (in $\text{kg m}^{-2} \text{ s}^{-1}$) averaged from 2003 to 2017.

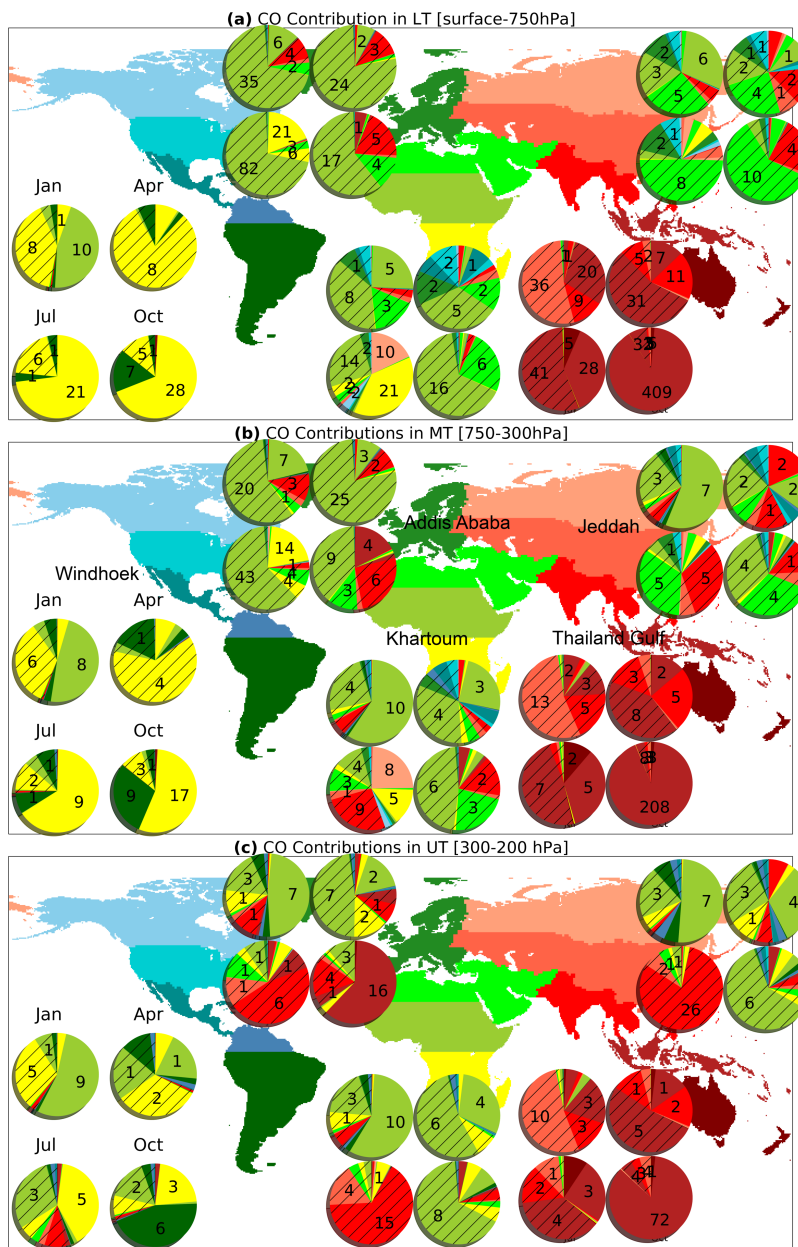


Figure S5. Same as Fig.4 for CO contributions over Windhoek, Addis Ababa, Khartoum, Jeddah and Gulf of Thailand.

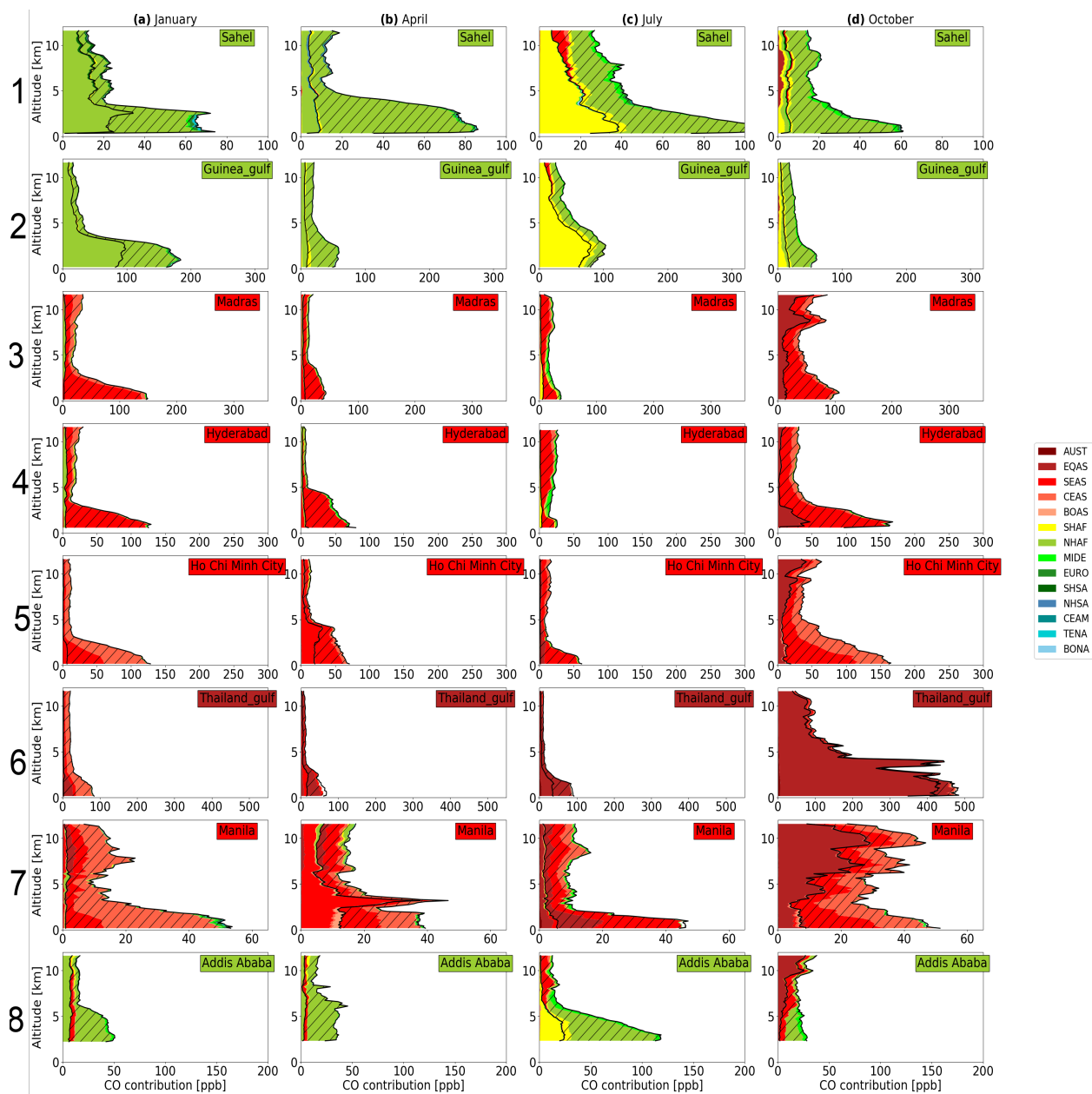


Figure S6. Same as Fig. 3 (panel 3) for CO contributions over Sahel (1), Gulf of Guinea (2), Madras (3), Hyderabad (4), Ho Chi Minh City (5), Gulf of Thailand (6), Manila (7) and Addis Ababa (8).

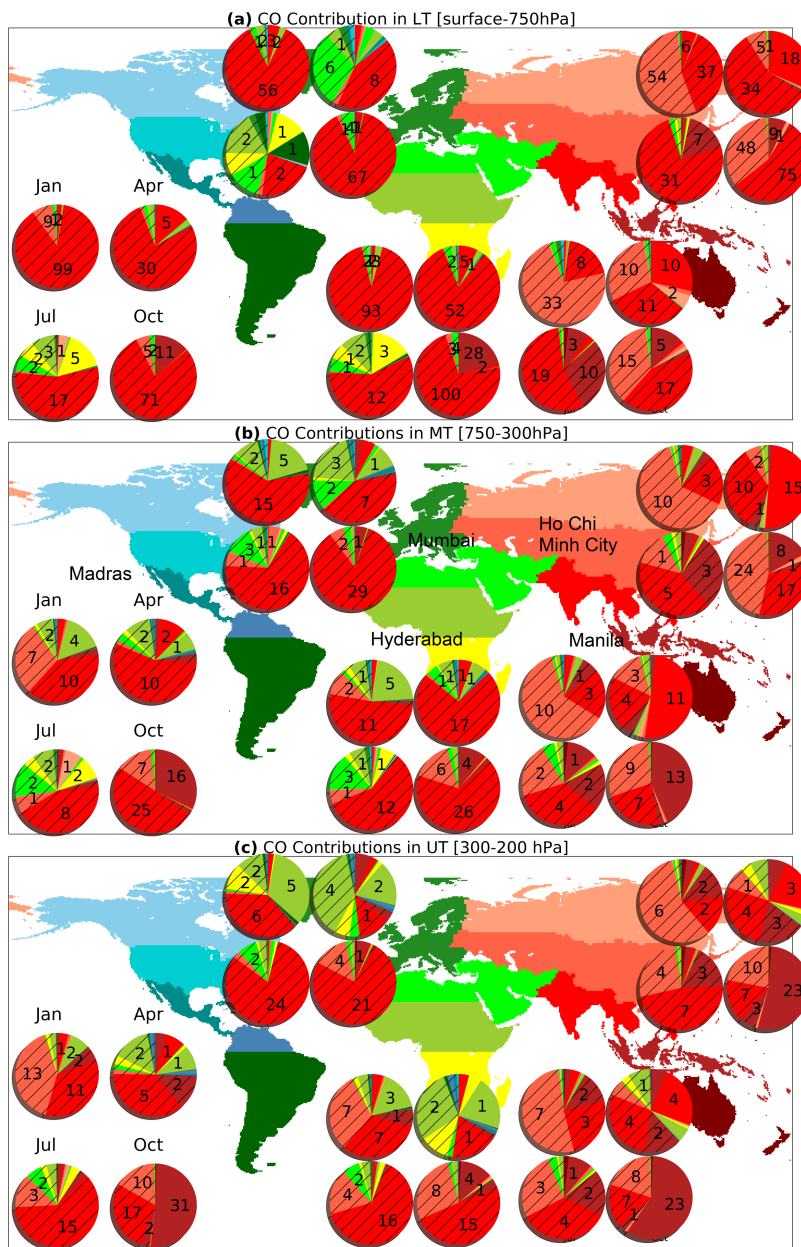


Figure S7. Same as Fig. 4 for CO contributions over Madras, Mumbai, Hyderabad, Ho Chi Minh City and Manila.

Horizontal wind at 850 hPa - 2008 to 2019

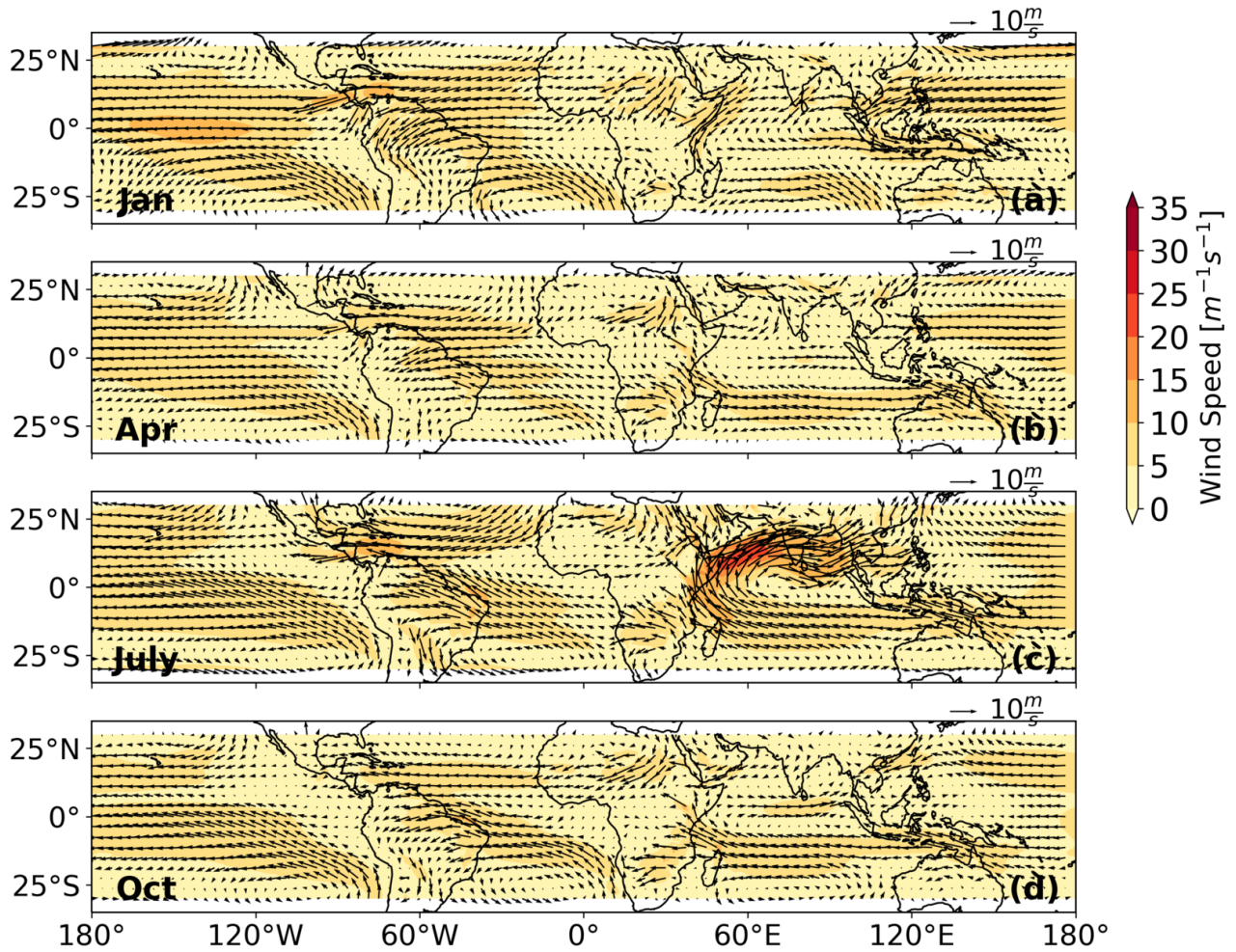


Figure S8. ECMWF Reanalysis 5th Generation (ERA5) wind vectors at 850 (a–d), 550 (e–h) and 250 (i–l) hPa averaged from 2008 to 2020 at $0.25 \times 0.25^\circ$ resolution.

Horizontal wind at 550 hPa - 2008 to 2019

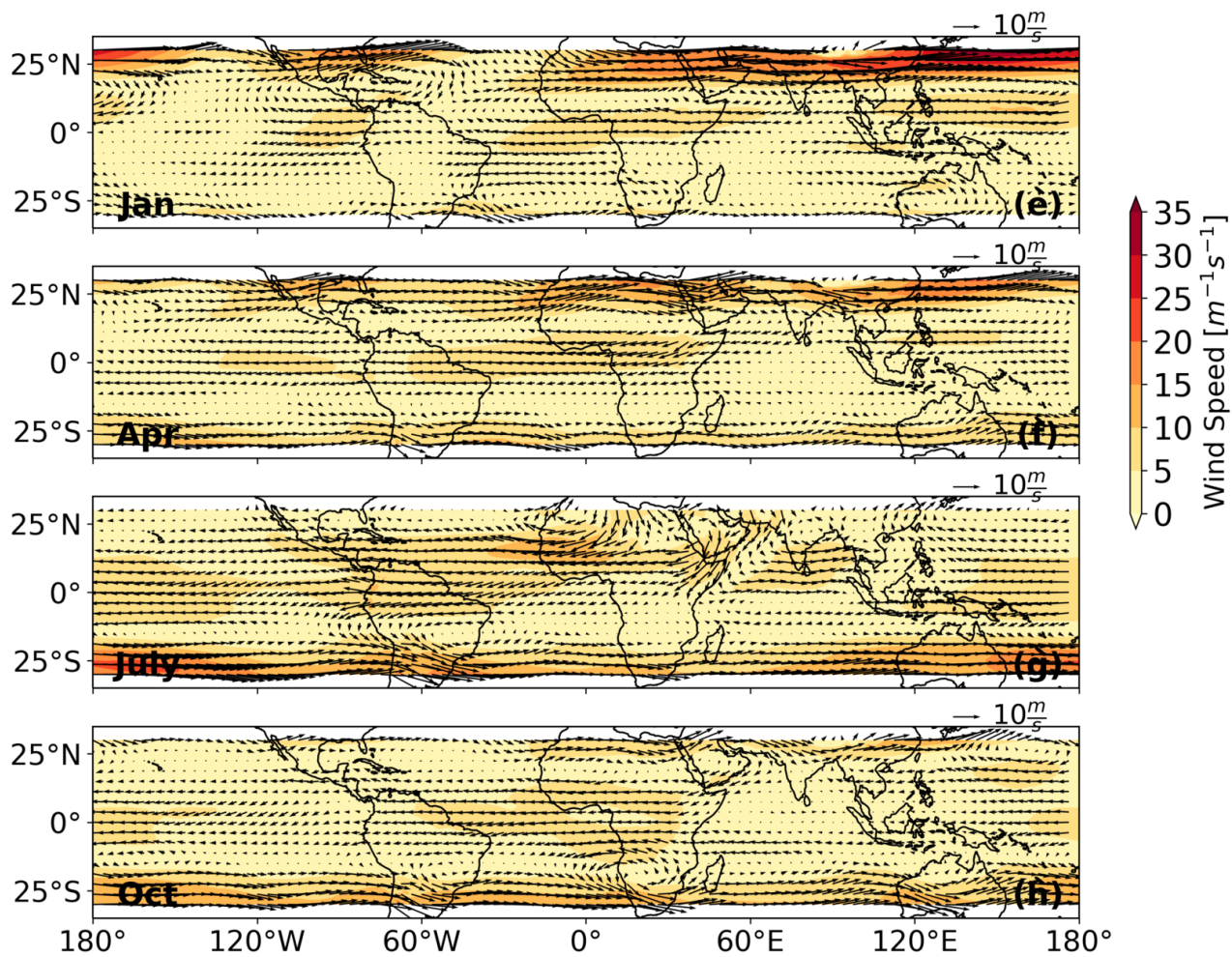


Figure S8. Continued.

Horizontal wind at 250 hPa - 2008 to 2019

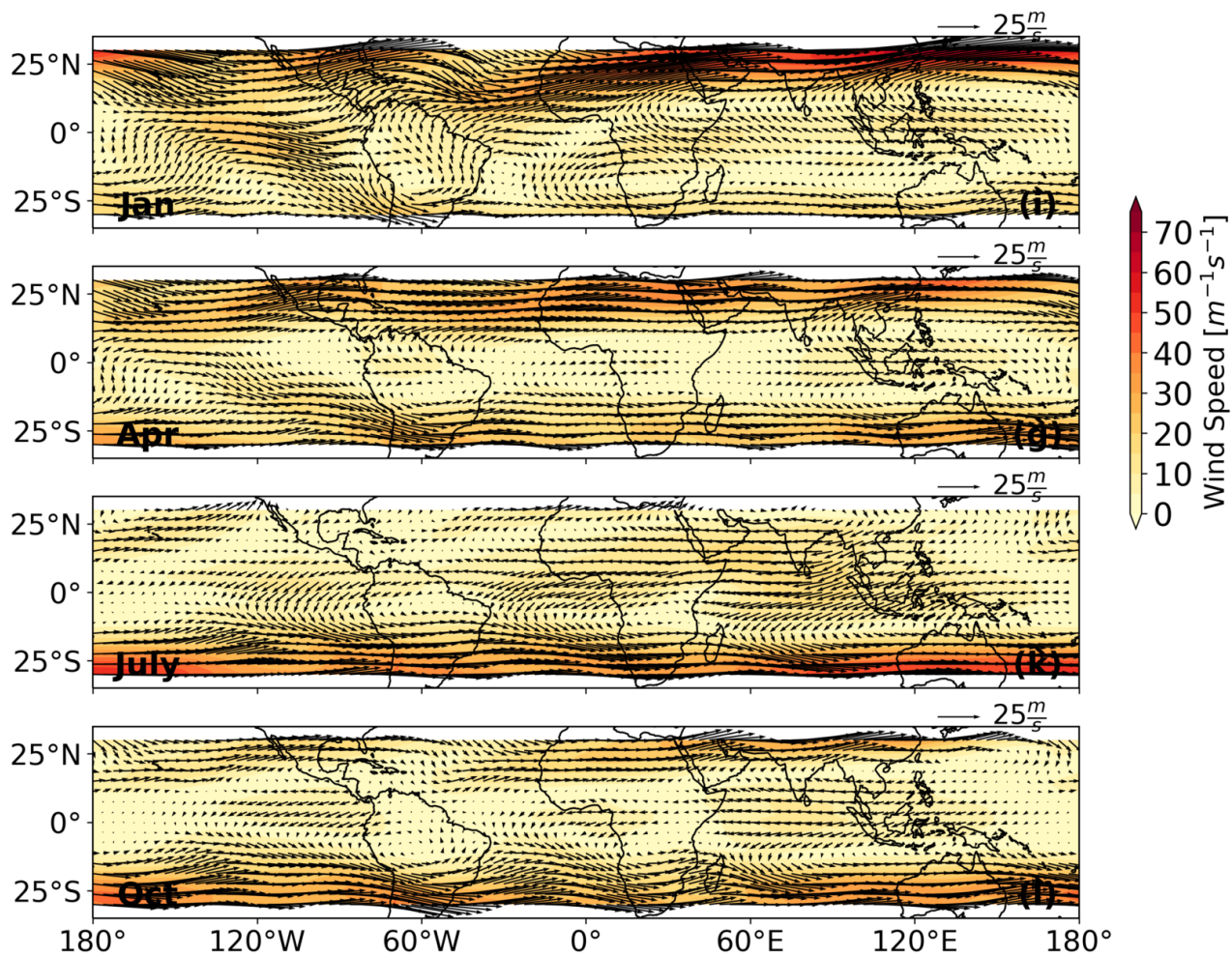


Figure S8. Continued.

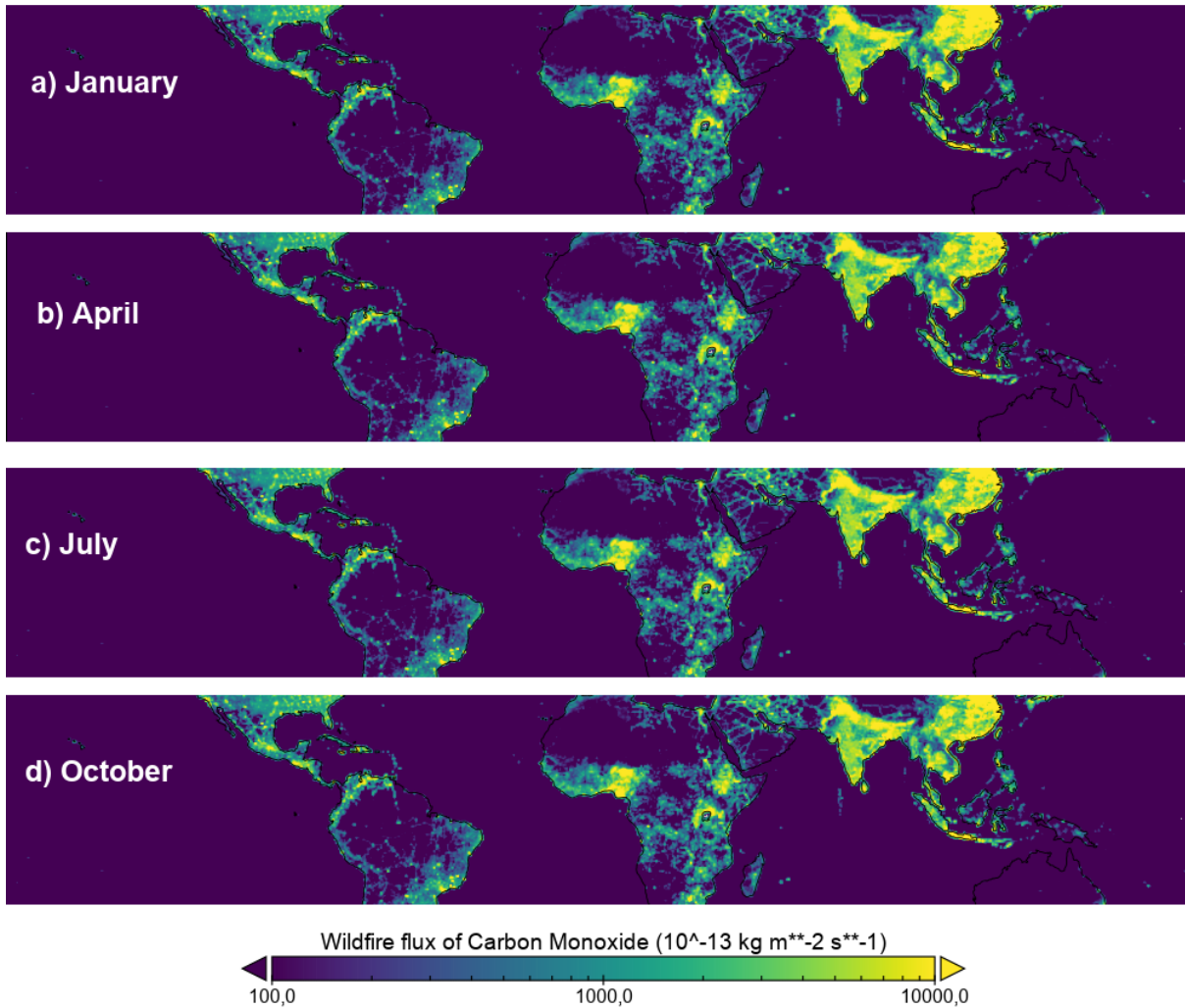


Figure S9. CEDS AN CO emissions (in $\text{kg m}^{-2} \text{ s}^{-1}$) averaged from 2000 to 2019.

January

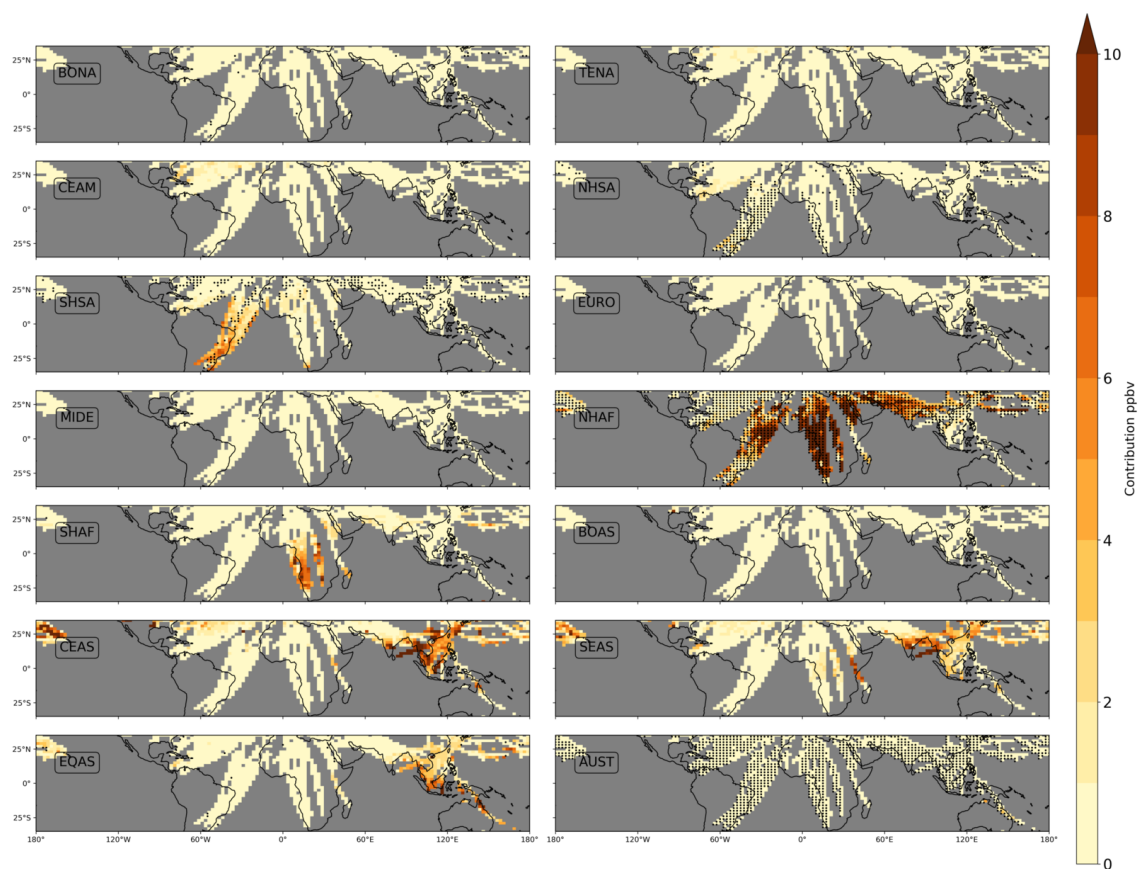


Figure S10. Mean CO contribution (in ppb) per source region in the tropical UT_{cruise} (300–185 hPa) averaged from 2002–2020 for January. The hatched part indicates BB as the dominant source of CO.

April

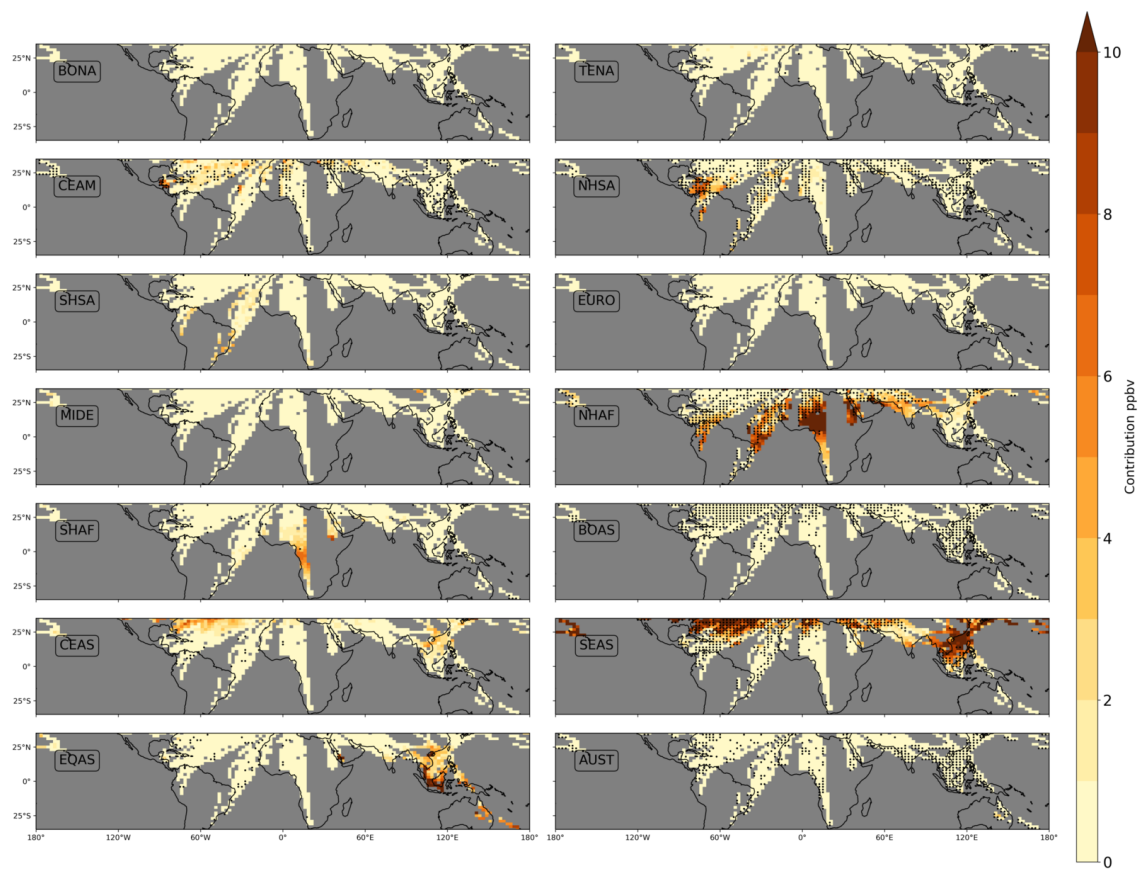


Figure S11. Same as Fig. S10 for April.

July

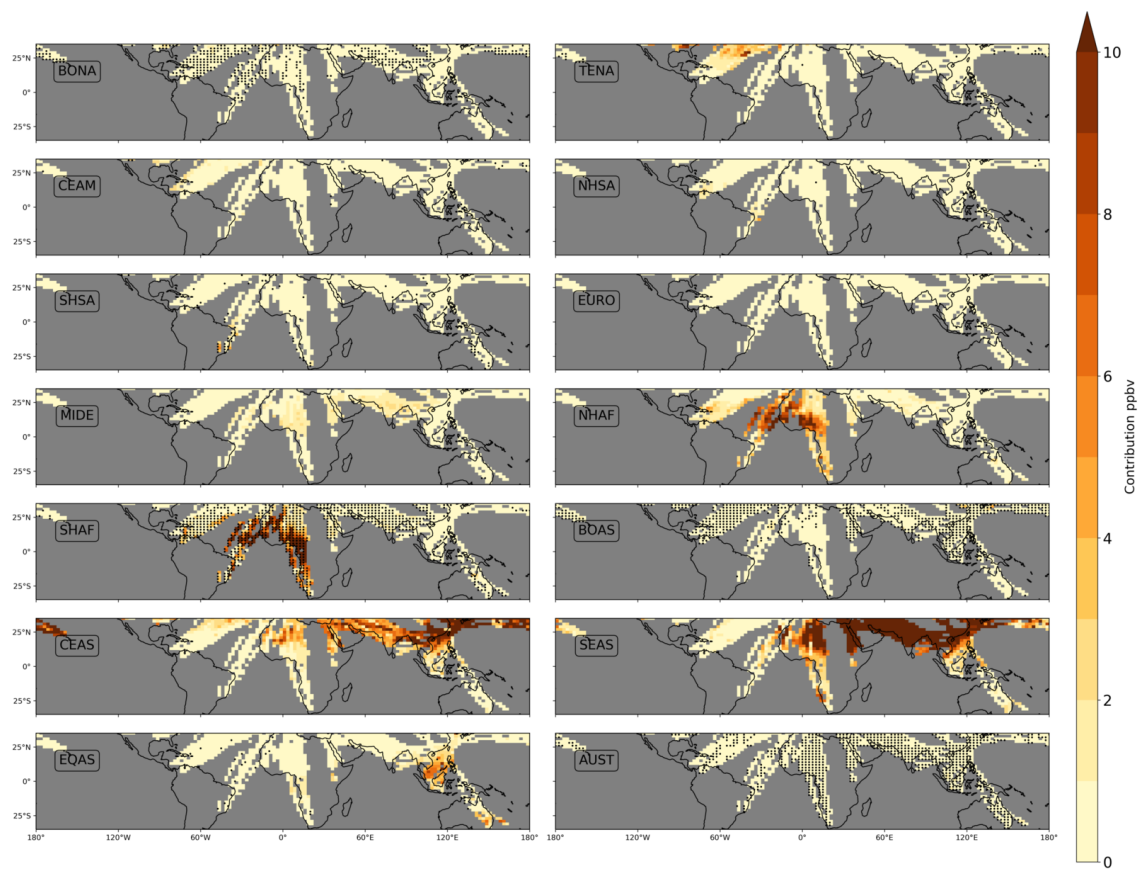


Figure S12. Same as Fig. S10 for July.

October

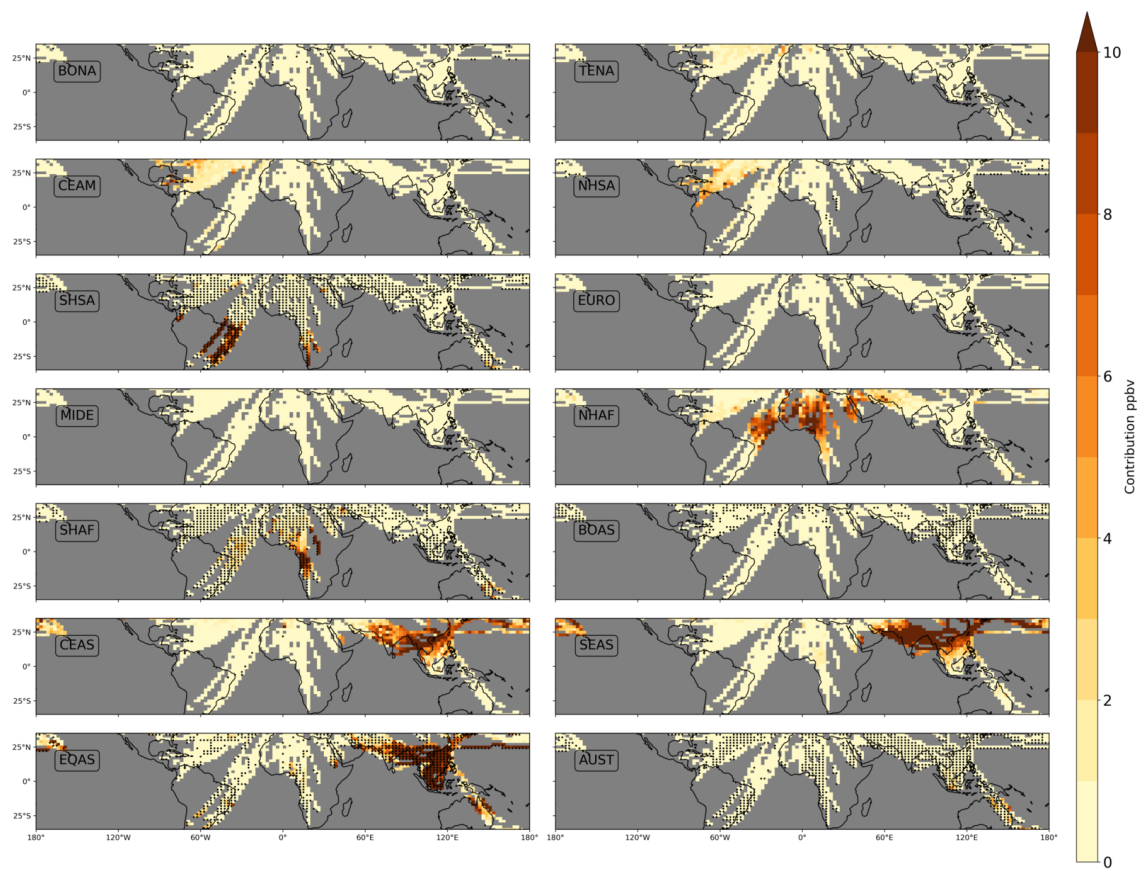


Figure S13. Same as Fig. S10 for October.