

Author's corrections to the proofs – second round

Manuscript egusphere-2025-6008 – “Global variability in the detectability of power plant NO₂ plumes from space”, R. Huang and S. Wang (Atmos. Meas. Tech.).

1. Responses to the typesetter's remarks (TS1–TS5)

Remark	Location	Author's response
TS1	p. 4, l. 39–48 (Sect. 2.2)	We confirm that we request the replacement of this passage by the text given in Part 2 and ask the handling editor to approve it. Reason: The script producing these fuel-type counts selected the 500 facilities by cumulative CO ₂ , whereas our dataset is defined (l. 34–36) as the top 500 by total NO _x . The two sets share only 342/500 plants, and CO ₂ -ranking over-represents gas and under-represents coal, so these counts are not those of the dataset analysed. The error is confined to this passage: the summary table is read by no other code, and the modelling pipeline selects the NO _x -ranked top 500 independently. No figure, table, or result elsewhere is affected.
TS2	Fig. 8, p. 16	We apologize for the omission. The corrected figure file is uploaded with these corrections.
TS3	p. 20, l. 11–14 (Sect. 4.4)	We confirm the requested change (Part 2) and ask the editor to approve it. Reason: the quoted pixel areas and Fig. S7 apply to the 3.5 km × 5.5 km pixels used from August 2019 onwards (US period), not to the 3.5 km × 7 km pixels of the 2018 global data. The added qualifier restricts the sentence to where it holds; no new result is introduced.
TS4	p. 20, l. 44–50 (Sect. 4.4)	We confirm the requested change (Part 2) and ask the editor to approve it. This is the same correction as TS1, propagated to Sect. 4.4 for consistency.
TS5	p. 23, l. 91–93 (Code and data availability)	Please insert “last access: 10 Sep 2026”. Please also note that the GitHub URL is truncated in the current proof; the full URL is given in Part 2.

2. Corrections to the text

Page / Line	Original (version 2)	Corrected
p. 4, l. 39–48 (TS1)	By 2024, of this 500-plant dataset, pipeline natural gas facilities (305 plants, 61 %) and coal plants (158 plants, 32 %) dominated, with smaller categories including natural gas (14), coal refuse (4), diesel oil (2), and other gas (2); plants that burn multiple fuels are counted in each applicable category. Over this 6-year period, this group of top emitters transitioned measurably from coal to natural gas: coal-fired plants fell from 180 to 158 (a 12.2 % decrease), while pipeline natural gas facilities grew from 286 to 305 (a 6.6 % increase).	By 2024, 461 of the 500 plants still reported to CAMPD, the remaining 39 having ceased reporting. Among the 461, pipeline natural gas facilities (238 plants, 52 %) and coal plants (176 plants, 38 %) dominated, followed by natural gas (13), wood (12), coal refuse (5), diesel oil (3), other gas (3), process gas (3), residual oil (2), petroleum coke (1), and one plant reporting a combined coal/natural gas primary fuel; fuel type was unreported for a further 4 plants. Over this 6-year period, this group of top emitters transitioned measurably from coal to natural gas: coal-fired plants fell from 229 to 176 (a 23.1 % decrease), while pipeline natural gas facilities grew from 225 to 238 (a 5.8 % increase).
p. 10, l. 67–69	Examples of city and power plant masking are shown in Sect. S5 in the Supplement.	Examples of city and power plant masking are shown in Sect. S7 in the Supplement.
p. 20, l. 11–14 (TS3)	Second, our 25 km ² flagged-area threshold introduces a pixel-quantization step: TROPOMI pixel area grows from ~20 km ² at nadir to ~25 km ² near VZA = 26° (Fig. S7 in the Supplement), so detection requires ≥ 2 contiguous flagged pixels below 26° but only one above,	Second, for the US analysis period our 25 km ² flagged-area threshold introduces a pixel-quantization step: TROPOMI pixel area grows from ~20 km ² at nadir to ~25 km ² near VZA = 26° for the 3.5 km × 5.5 km pixels available from August 2019 onwards (Fig. S7 in the Supplement), so detection requires ≥ 2 contiguous flagged pixels below 26° but only one above,

Page / Line	Original (version 2)	Corrected
p. 20, l. 44–50 (TS4)	First, the Top 500 US emitters are dominated by pipeline natural gas ($\approx 61\%$) and coal ($\approx 32\%$), which together account for $\approx 93\%$ of the facilities. This low fuel variability is in stark contrast to the global dataset.	First, the Top 500 US emitters are dominated by gas- and coal-fired plants: of the 461 plants still reporting in 2024, $\approx 56\%$ burn gas (pipeline natural gas, natural gas, other gas, or process gas) and $\approx 39\%$ burn coal or coal refuse, leaving $\approx 4\%$ on other fuels and $\approx 1\%$ with no reported fuel type. This low fuel variability is in stark contrast to the global dataset.
Fig. 8 caption, p. 16, l. 1	TROPOMI NO ₂ plume detection frequency versus annual NO _x emissions.	TROPOMI NO ₂ plume detection frequency versus annual NO _x emissions.
p. 23, l. 91–93 (TS5)	and on GitHub (https://github.com/Earth-Intelligence-Lab/global-variability-in-the-detectability-of-power-plant-NO2 , last access: TS5).	and on GitHub (https://github.com/Earth-Intelligence-Lab/global-variability-in-the-detectability-of-power-plant-NO2-plumes-from-space , last access: 10 Sep 2026).

3. Corrected figures

One figure file is uploaded with these corrections.

Fig. 8 (NO_x_Detection_vs_Emissions_LogGrid_Filtered.pdf): panel title changed from “TROPOMI NO_x Plume Detection Frequency vs Annual Emissions - Grid Analysis” to “TROPOMI NO₂ Plume Detection Frequency vs Annual Emissions - Grid Analysis”.

4. Supplement

A revised supplement PDF is uploaded.