

Public justification (visible to the public if the article is accepted and published):
Please make the following changes:

line 255. When citing FAOSTAT data, please add a citation. The citation should have the following format: FAO, 2024. FAOSTAT "Name of exact dataset", available at : "link to exact dataset (not generic FAOSTAT page)". FAO, Rome, Italy. Downloaded on "date"

Thanks. We've added the citation.

Line 255: “ (Xu et al., 2021; FAO, 2024). ”

Line 1065: “FAO: Trade, FAOSTAT, 2024. available at: <https://www.fao.org/faostat/en/#data>. FAO, Rome, Italy.”

line 315. Please correct, exact citation is "Flammini et al.", not "Flammi et al."

Corrected.

Line 314: "reported by Flammini et al. (2023)."

Furthermore, please consider (not required for publication) adjusting communication of uncertainty and associated numerics throughout the manuscript, in a manner that better aligns to the rules of inferential statistics.

Examples:

line 450. How can 210 ± 180 be referred to a "median sink"? The statistical inference cannot be used to state this flux is either a sink or a source.

line 463. I am not sure how a precision of 45 can be used to infer a mean/median value of 125, as in 125 ± 45 . Perhaps writing this result as 130 ± 50 would be more appropriate

line 522. For a country like DOC, where a lot of uncertainty in underlining land based statistics is likely very high, is it credible that precision in CO2 flux is as high as in the stated results, for instance 135 ± 0.1 or 95 ± 0.5

653 It is not good practice to have errors that are more precise than the inferred mean, as in 20 ± 1.6 . This result should rather be expressed as 20 ± 2 (and 26 ± 1.6 should be rather communicated as 26 ± 2)

Thanks for the suggestion. We added a description in Line 445 to explain how the reported values and uncertainty intervals are presented:

“In this paper, for inversion results covering a time interval, we present the data as mean \pm standard deviation, where the mean is the multi-year average of the median flux values from the inversion models, and the standard deviation represents the interannual variability.”

Specifically, for 210 ± 180 (Line 450), it represents the 2010s average of the median flux values across five in-situ CO₂ models, where 210 is the multi-year average and 180 denotes the interannual variability. We clarified that the median flux values indicate a net carbon sink, despite the large uncertainty range.

We also reviewed and adjusted the numerics throughout the manuscript to better align with the rules of inferential statistics.

Line 463: *“Like in Deng et al. 2022, we found that the carbon sink of Canada’s managed land is significantly larger (-130 ± 50 TgC/yr over 2001-2021 from in-situ inversions) than the NGHGs reports (5 ± 4 TgC/yr over 2001-2021).”*

Line 522: *“Since 2000, the NGHGs reports indicated three stages of different levels of CO₂ flux, which COD managed land was a carbon source during 2000-2010 (~ 95 TgC/yr), a larger carbon source during 2011-2014 (~ 135 TgC/yr), and a very small sink during 2015-2018 (~ -1 TgC/yr).”*

Line 653: *“In CHN, the in-situ (20 ± 2 Tg CH₄/yr) and satellite inversions (17 ± 1 Tg CH₄/yr) emissions in the 2010s are 24% and 35% lower than in the NGHGs ($\sim 26 \pm 2$ Tg CH₄/yr), respectively.”*