

Replies to Reviewers

Issue1

Managed-area boundaries. A key concern relates to the statement in the Conclusions that fluxes estimated over the entire forest area can be considered anthropogenic under the IPCC managed-land proxy. This interpretation appears to rely largely on agreement in aggregate totals. However, the good agreement at the global level may result from substantial country-level differences—particularly for Brazil, Canada, China, Russia, and Namibia—that occur in opposite directions and therefore partly cancel each other out. The Conclusions should explicitly acknowledge that, for these countries, differences in the areas considered limit the direct comparability of FAO- and UNFCCC-based emission estimates.

ANSWER. We are thankful for this additional comment and are happy to modify the conclusions accordingly, by listing the countries indicated by this reviewer. Please see revised conclusion text, lines 561-568:

“Specifically, apart from a small set of countries for which either smaller or larger managed forest areas made a difference in the UNFCCC FAO comparisons, most countries reported managed forest areas to UNFCCC that were equal to the total forest land area they reported to FAO. Hence flux estimates made on the FAO forest land area could be considered anthropogenic in the sense of the IPCC managed land use proxy, considering the overall consistency of FAO and UNFCCC reported area values. At the same time, we found that country-level differences hindered the comparability of FAO and UNFCCC emission estimates in a limited but important set of countries—particularly Brazil, Canada, China, Russia, and Namibia—for which future reconciliation is needed.”

We note at the same time that this list of countries is an exception (albeit notable in terms of size) and not the rule. The global agreement we reported, as already explained in the manuscript (see below), is not the result of a general canceling out of opposite values across many countries, but rather it reflects an overall structural consistency of reporting: we find that most countries do submit to both FAO and UNFCCC very similar values of forest area. The existing manuscript already to this end (line 349):

‘At country level, the FRA 2025 and UNFCCC forest area data were strongly correlated ($R^2 = 0.9827$, log-normalized) (Fig. 1), with six countries largely driving the observed regional differences (Tab. 3). Specifically, Brazil (-150 Mha), Canada (-140 Mha) and the USA (-25 Mha) alone explained the UNFCCC world total forest area being smaller than FAO, in agreement with previous findings (Grassi et al. 2022; Melo et al., 2026). Conversely, China (+85 Mha), Russian Federation (+70 Mha) and Namibia (+60 Mha) largely drove the discussed regional trends, showing UNFCCC-reported world total forest areas larger than the corresponding FAO values.’

Issue2

Manual correction and data versioning. Another important concern is the manual correction to Italy's input data reported in the authors' response. The correction is substantial (approximately 100–110 Mt CO₂ yr⁻¹) and propagates into the Annex I aggregate, yet it is neither documented in the manuscript nor reflected in a versioned Zenodo dataset. For a data-description paper, transparency and reproducibility of such corrections are essential. Please clearly document the correction, its rationale and consequences in the manuscript, and ensure that the archived dataset is updated and appropriately versioned before publication.

ANSWER. We thank the reviewer for this point. We note that the revised Zenodo dataset, to which the manuscript pointed to ([10.5281/zenodo.20085666](https://doi.org/10.5281/zenodo.20085666)), already contained the most recent version with revised data for Italy and all relevant aggregates. That zenodo link also contains all previous dataset versions for transparency—which may have generated some confusion.

The manuscript text likewise contained a discussion of this issue in its limitation section, albeit admittedly in a limited fashion.

Following suggestions by this reviewer, we have added a detailed description of changes within Zenodo that explains differences of these revisions to the dataset users. The abstract of the dataset in Zenodo now reads: “

‘Note: This dataset version contains corrected forestland removals (and associated carbon stock change data) for Italy, obtained by carrying forward 2020 values to the period 2025. The correction addresses data quality issues that characterized the Country submission to FAO of carbon stock data for 2025, which are currently unresolved. The corrected annual forestland removals for Italy in 2025 are about -22 Mt CO₂, consistent with the previous decade, compared to annual emissions of 50 MtCO₂ that had been estimated in the previous Zenodo version, based on the country data submitted to the FRA 2025. This country revision of over -70 MtCO₂ propagates to all regional aggregates to which Italy belongs, i.e., Southern Europe, EU27, Europe, OECD and Annex I, generating stronger forestland removals by this amount compared to the previous version. New 2025 forestland removal estimates for Italy may be released in FAOSTAT in the future, and hence in Zenodo, pending an update by the country of its underlying carbon stock data for the year 2025.’

We have also revised the original manuscript text as follows (lines 278-283):

“We found only one country for which corrections to the original data submitted to the FRA 2025 were necessary, specifically Italy, whose submitted values for forest carbon stock in 2025 were found to be

inconsistent with the previous time series. Pending future country submissions, we carried forward the forestland removals data for the year 2020 to 2025. This revision resulted in net forest removals of about -22 Mt CO₂ yr⁻¹ for 2025, compared to emissions of 50 Mt CO₂ yr⁻¹ that would have been estimated using the original country submission for 2025. These changes were likewise documented in Zenodo ([10.5281/zenodo.20085666](https://doi.org/10.5281/zenodo.20085666)) the relevant FAOSTAT country notes.”

Finally, we do not see the need to discuss impacts of this correction at larger regional scales within the paper, because the counterfactual in fact does not exist in the input data to be published.