Corrigendum to
“Comparison of uncertainties in land-use change fluxes from bookkeeping model parameterisation”
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Problem: After publication of the paper, one error in the preprocessing script converting HN2017 parameters to BLUE maps was found. While the slash fractions for harvest were being calculated as described in Sect. 2.1, they were not being saved correctly to the files used as input parameters to the BLUE simulations. Therefore, carbon (C) mass was not being conserved under harvest in the two simulations using allocation parameters from HN2017 (i.e., S_HNFull and S_HNAlloc). Below, we summarize the main implications for the conclusions and describe the key changes in results after error correction.

Conclusions affected

– The impact of C allocation parameters from HN2017 on \( F_{LUC} \) estimated by BLUE is substantially lower than in the published paper for both global and regional fluxes.

– C density parameters are now by far (globally and in most regions) the most dominant factor explaining differences between HN2017 and BLUE from model parameterization.

– Simulations of BLUE using all selected parameters from HN2017 lead to higher cumulative \( F_{LUC} \) from 1850–2015 and are more consistent with values reported in the literature.

Global fluxes and C stocks

The error was the reason why the runs \( S_{HNFull} \) and \( S_{HNAloc} \) resulted in rather low cumulative \( F_{LUC} \) in 1850–2015 (which we discussed in Sect. 3.1 of the published paper). Below, we show a revised version of Fig. 2. Here and in the subsequent figures, the affected simulations are \( S_{HNAloc} \) (yellow) and \( S_{HNFull} \) (cyan); all other simulations remain unaltered. We refer to the original paper for the previous versions of the figures.

The text on p. 570 should be changed to

The cumulative \( F_{LUC} \) in 1850–2015 is 164 and 207 PgC for \( S_{HNdens} \) and \( S_{HNAloc} \), respectively, i.e. 24 % and 4 % lower than \( S_{BL-Net} \), and closer to the HN2017 estimate on global scale.

And

The resulting cumulative \( F_{LUC} \) for \( S_{HNFull} \) is 160 PgC, 26 % lower than \( S_{BL-Net} \). This value is within the range of previous estimates (Hansis et al., 2015; Houghton et al., 2012) and of the
Figure 2. Global FLUC between 1850 and 2015 (a) from the two bookkeeping model estimates in GCB2019 (HN2017 in black and SBL for BLUE in dark blue), the BLUE simulations with net LUC transitions and standard BLUE parameterisation (light blue, SBL-Net, used as reference for all subsequent BLUE runs) and using all tested HN2017 parameterisations together (cyan, SHNFull). The factorial simulations with only one set of parameters changed are shown in thin lines (SINCdens in dark red, SHNt in red, SHNAlloc in yellow). The corresponding cumulative totals between 1850 and 2015 are shown in panel (b), and values relative to SBL-Net are shown by the numbers above bars.

Figure 3. Regional FLUC between 1850 and 2015 from the two BK model estimates in GCB2019 (HN2017 in black and SBL for BLUE in dark blue), the BLUE simulations with net LUC transitions and standard parameterisation (light blue, SBL-Net) and using HN2017 parameterisations (cyan, SHNFull). The factorial simulations with only one set of parameters changed are shown in thin lines (SINCdens in dark red, SHNt in red, SHNAlloc in yellow).
cumulative budget range of the GCB2019 (205 ± 60 PgC 1850–2018) and its reported uncertainty (0.7 PgC yr⁻¹) after 1959.

The resulting changes in C stocks in soil and vegetation are very small and hardly discernible in Fig. 6.

Regional fluxes

The C densities are now the dominant factors for all, not just most, regions. Using HN2017 allocation fractions to pools for harvest and clearing still results in lower cumulative $F_{\text{LUC}}$ everywhere ($S_{\text{HNAlloc}}$) and decreases the RMSD$_{\text{HN-BLUE}}$ at global scale and in most regions, as originally published (see updated Fig. 4 below). However, the differences are now smaller than in the version originally published. Two exceptions are worth noting: NAF and SAS, where allocation rules still lead to substantially lower cumulative $F_{\text{LUC}}$ and RMSD$_{\text{HN-BLUE}}$.

The text in p. 751 should be revised to

As seen for global $F_{\text{LUC}}$, the simulation using HN2017 parameter values ($S_{\text{HNFull}}$) leads to a reduction of $F_{\text{LUC}}$ compared to $S_{\text{BL}}$ in most regions and by more than 50% in CAM, BRA and SEA (dark blue colours; see values in the centre of grid cells in Fig. 4a), except for CAS, where an increase of 95% is estimated, mainly due to differences in C density parameters. Decreases in the RMSD$_{\text{HN-BLUE}}$ between $S_{\text{HNFull}}$ and $S_{\text{BL-Net}}$ globally and for 12 of the 18 regions (Fig. 4b), with small increases elsewhere.

And to

The differences between $S_{\text{BL-Net}}$ and each of the factorial simulations (bottom panel of Fig. 4a) show that C densities are the dominant factor not just for global $F_{\text{LUC}}$ but also in most regions,
Figure 5. Spatial distribution of relative differences in average $F_{LUC}$ between 1850 and 2018 for each of the four simulations with HN2017 parameters ($S_{HNFull}$, $S_{HNCdens}$, $S_{HNAlloc}$, $S_{HN}$), compared to $S_{BL-Net}$ for different $F_{LUC}$ components: wood harvest, abandonment, clearing and crop–pasture transitions. Regions with average low values of $F_{LUC}$ (e.g. deserts) are masked.

Figure 6. Carbon stocks in vegetation (y axis) and soils (x axis) simulated by BLUE for the pre-industrial period (1850, big circles) and present time (2018, small circles, end of arrows). These values are compared to two observation-based reference datasets: that of Anav et al. (2013) for both vegetation and soil carbon stocks (black square) and the upper and lower values of potential (solid lines) and present-day (dashed lines) carbon stocks in vegetation from Erb et al. (2018).

and lead to lower $\text{RMSD}_{HN-\text{BLUE}}$, compared to $S_{BL-Net}$ (Fig. 4b). Using HN2017 allocation fractions to pools for harvest and clearing also results in lower cumulative $F_{LUC}$ in all regions except EU and MIDE ($S_{HNAlloc}$) and decreases the 

**Gross fluxes**

With regard to the gross fluxes, the correction in $S_{HNAlloc}$ leads to much smaller differences in cumulative $F_{LUC}$ for the abandonment transitions and a switch in the sign of the cumulative $F_{LUC}$ for wood harvest (since mass is now being conserved), though with virtually no impact on the results of $S_{HNFull}$.

The differences in the interannual variability follow those summarized in Fig. 4. The updated time series for each region are shown in Fig. 3.

Corrigendum [https://doi.org/10.5194/esd-12-745-2021](https://doi.org/10.5194/esd-12-745-2021)