

Author Correction: Enhanced ocean CO₂ uptake due to near surface temperature gradients

Correction to: *Nature Geoscience*

<https://www.nature.com/articles/s41561-024-01570-7>, published online 25 October 2024.

<https://doi.org/10.1038/s41561-025-01779-0>

Published online: 4 August 2025



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In the version of the article originally published there was an error within the FluxEngine v4.0.7 software tools in the calculation of the fugacity of CO₂ in the atmosphere ($f\text{CO}_{2(\text{atm})}$). The error caused the $f\text{CO}_{2(\text{atm})}$ to be $-1 \mu\text{atm}$ higher (-0.2%) across all the indirect bulk air–sea CO₂ flux calculations, which are presented in Fig. 2, Fig. 3, Table 1 and Supplementary Tables 1–3. The error has now been corrected in the latest release of FluxEngine tools (v4.0.9.1), and the figures and table have been corrected in the HTML and PDF versions of the article.

In the revised Fig. 2 the indirect bulk fluxes have subtly changed and these changes are unlikely to be visible to the reader. The mean bias reported in Fig. 2d for the no vertical temperature gradients has been modified from $0.19 \text{ mmol m}^{-2} \text{ d}^{-1}$ to $0.37 \text{ mmol m}^{-2} \text{ d}^{-1}$, and the vertical temperature gradient bias modified from $0.08 \text{ mmol m}^{-2} \text{ d}^{-1}$ to $0.26 \text{ mmol m}^{-2} \text{ d}^{-1}$. In the revised Fig. 3, similar changes in the reported mean bias values were observed. The original Figs. 2 and 3 and Table 1 are provided here for comparison as Figs. 1 and 2 and Table 1, below.

The mean bias changes between the indirect bulk CO₂ fluxes with no vertical temperature gradients and those with vertical temperature gradients remain the same. Therefore, the globally scaled modifications of the ocean CO₂ sink due to vertical temperature gradients presented in Fig. 1 remain unchanged (as the magnitude of the difference between the ‘no gradient case’ and the ‘with gradient case’ has remained unchanged)^{1,2}.

The conclusions of the article remain robust to this correction and these changes.

References

1. Donlon, C. J. et al. Toward improved validation of satellite sea surface skin temperature measurements for climate research. *J. Clim.* **15**, 353–369 (2002).
2. Wanninkhof, R. Relationship between wind speed and gas exchange over the ocean revisited. *Limnol. Oceanogr. Methods* **12**, 351–362 (2014).

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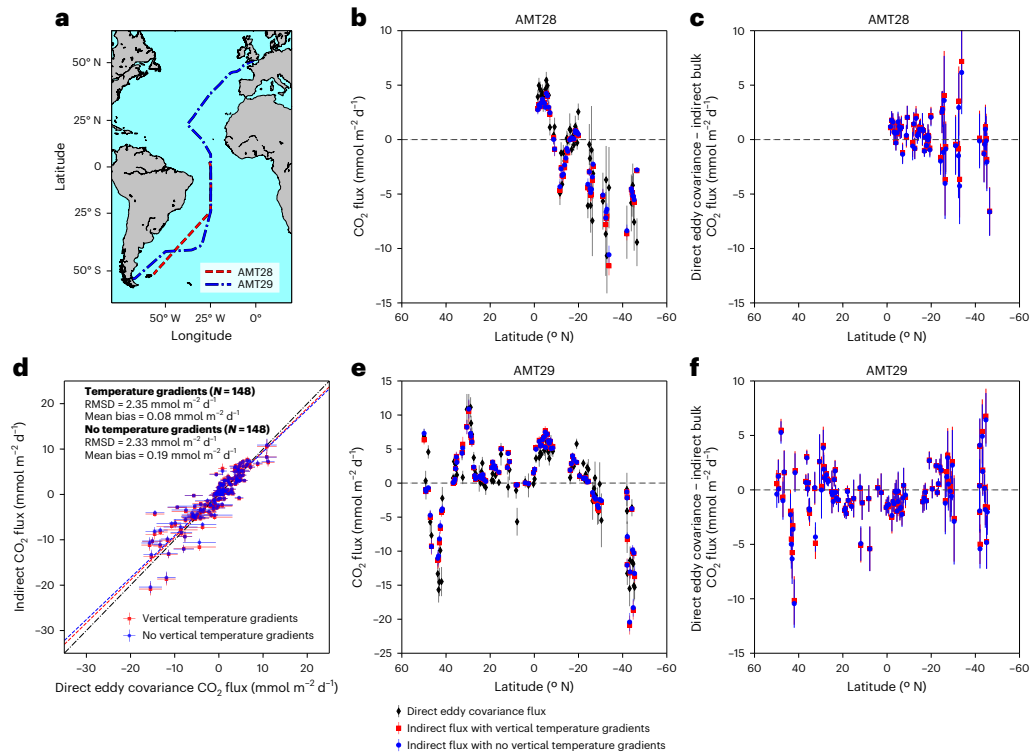


Fig. 1 | Original, uncorrected Fig. 2.

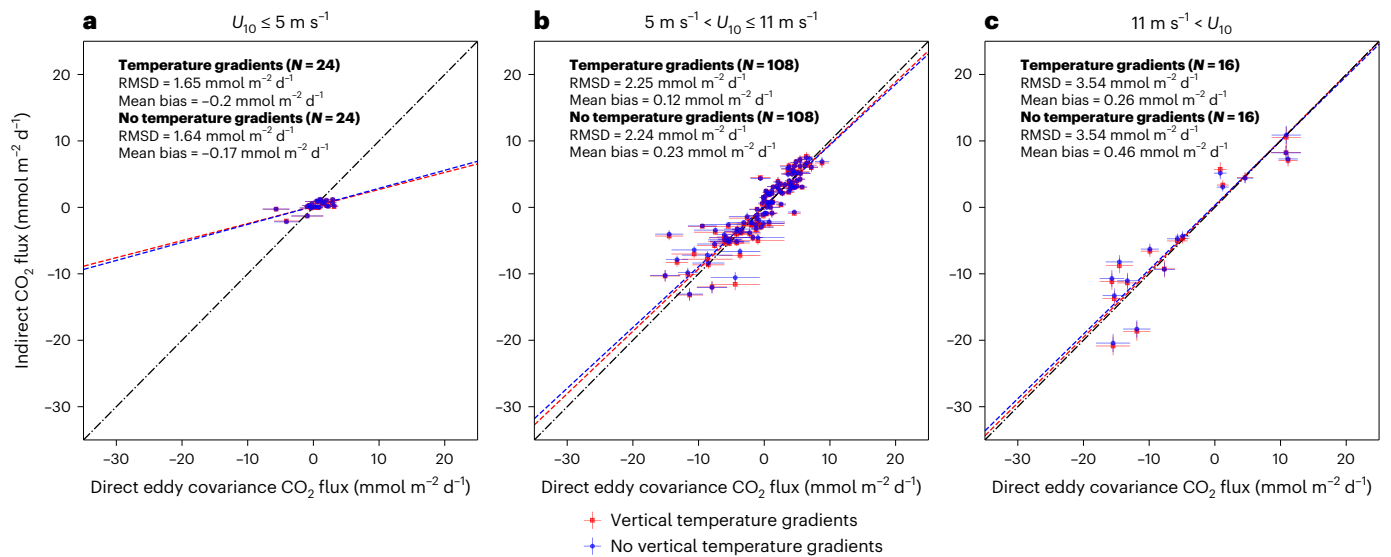


Fig. 2 | Original, uncorrected Fig. 3.

Table 1 | Original, uncorrected Table 1

Method		Mean bias (mmol m ⁻² d ⁻¹)	RMSD (mmol m ⁻² d ⁻¹)	Slope	Intercept	N
No VTG (equation (2))		0.19	2.33	0.92	0.15	148
Cool skin correction (equation (3))	Fixed skin (0.17K)	−0.07	2.33	0.93	−0.11	148
	Donlon et al. ¹² skin	−0.07	2.32	0.93	−0.10	148
	COARE skin	−0.13	2.34	0.93	−0.17	148
Cool skin and warm layer correction (equation (4))	Fixed skin (0.17K)	0.09	2.35	0.95	0.06	148
	Donlon et al. ¹² skin	0.08	2.35	0.95	0.06	148
	COARE skin	0.12	2.34	0.95	0.09	148

Statistical acronyms are mean bias, root mean square difference (RMSD) and number of 3-h mean samples (N). VTG, vertical temperature gradients.