RC1: Solid work that needs minor corrections. First off, I really enjoyed reading this manuscript. The work on Embedded Seamless Data (ESD) is quite impressive, and I think it addresses a real bottleneck in planetary-scale analysis. The ultra-lightweight design and the way it handles decadal-scale global land monitoring are definitely high-quality contributions. The overall framework is solid, but there are a few things that need to be cleaned up before it's ready for publication.

Response: We sincerely thank the reviewer for the careful reading of the manuscript and for the encouraging assessment of the overall framework. We are particularly grateful for the two specific concerns that the reviewer raises, both of which directly improve the credibility and reproducibility of the released ESD product. We have addressed them in detail in the point-by-point responses below.

1.1 The most critical thing I noticed is in Table 11, which provides the technical comparison between ESD and other existing Earth embedding databases. To be honest, there are some pretty clear errors in the technical specs listed for the competing products. I'd strongly recommend the authors take another look at that table and cross-check it with the comparison table in the " Earth Embeddings as Products: Taxonomy, Ecosystem, and Standardized Access" paper. Getting these details right is important for the credibility of the comparison, so please revise those rows to ensure the metrics and features for the other databases/models are accurately represented.

Response: We thank the reviewer for this careful observation. We have re-checked Table 12 against the original publications and official documentation of each cited product, using the taxonomy of Fang et al. (2026, arXiv:2601.13134) as a cross-reference, and corrected the inaccurate entries. The spatial resolution, temporal span, and dimensionality of the LGND Clay column have been corrected to match the official LGND Clay v1.5 documentation. The data type of TESSERA and Google Satellite Embedding has been corrected to int8, consistent with the quantization reported by Feng et al. (2025) and Brown et al. (2025). The Major TOM temporal span has been updated to the acquisition window of the underlying Sentinel-2 Core dataset (Francis and Czerkawski, 2024). The Copernicus-Embed entries were verified against Wang et al. (2025) and are unchanged. The fully corrected table is shown below.

Revised Table 12:

Feature	Major TOM Embeddings	LGND Clay Embeddings	Copernicus -Embed	TESSERA Embeddings	Google Satellite Embedding	Embedded Seamless Data (Ours)
Granularity	Patch-level	Patch-level	Patch-level	Pixel-level	Pixel-level	Pixel-level
Spatial Res.	2.14-3.56 km	2.56 km	0.25°	10 m	10 m	30 m
Temporal Span	2017-2024	2024-2025	2021	2024	2017-2024	2000-2024

Temporal Res.	Snapshot	Snapshot	Annual	Annual	Annual	Monthly
Dimensions	2048	1024	768	128	64	12
Dtype/Format	float32	float32	float32	int8	int8	uint16

1.2 On a related note, when you talk about the multitask training strategy in Section 3.3, it would be great if you could briefly clarify how the loss weights (alpha, beta, and gamma) were tuned. You don't need a full sensitivity analysis, but just a sentence or two on whether they were empirically balanced or if there's a specific rationale behind their values would help reproducibility.

Response: We thank the reviewer for this helpful suggestion. We agree that the weighting of the multi-task objective should be stated more explicitly for reproducibility. In the revised manuscript, we now clarify that the released ESD model uses a fixed weighting scheme with $\alpha = 1.0$ and $\beta = \gamma = 0.1$. This choice reflects the intended role of the released dataset. Reconstruction fidelity is the primary objective of ESD, because the dataset is designed to preserve the spectral-temporal information of the SDC30 input; therefore, the reconstruction term is assigned the reference weight of 1.0. The auxiliary supervision terms are intended to regularize the latent space and improve thematic separability without dominating the compression objective, and are therefore assigned smaller weights of 0.1.

To further clarify this choice, we conducted a lightweight sensitivity analysis (Table R1) in which α was fixed at 1.0 and the auxiliary supervision strength was jointly varied, reported in the compact notation of Eq. (1) as $\beta = \gamma \in \{0, 0.03, 0.1, 0.3\}$. This experiment was conducted on a fixed, globally distributed stratified subset using seven EqualEarth 4W sample blocks for 2020–2022 for training and the FROMGLC_train sample set for 2020–2022 for evaluation, rather than on the full global production workflow. The results show a clear trade-off. The reconstruction-only setting ($\beta = \gamma = 0$) achieved the best reconstruction (Recon. MAE = 0.0161, CC = 0.9908) but weak thematic performance (ESA WorldCover OA = 0.206, GLAD-CE F1 = 0.220, GLAD-SW F1 = 0.522). Increasing the auxiliary weight improved thematic separability, but stronger supervision ($\beta = \gamma = 0.30$) also degraded reconstruction fidelity (Recon. MAE = 0.0383, CC = 0.9529). The released setting ($\beta = \gamma = 0.10$) retained strong reconstruction (Recon. MAE = 0.0284, CC = 0.9761) while substantially improving thematic performance (ESA WorldCover OA = 0.671, GLAD-CE F1 = 0.432, GLAD-SW F1 = 0.953). We therefore retained $\beta = \gamma = 0.1$ as an empirically balanced setting for the released ESD product.

Table R1. Lightweight sensitivity analysis of the multi-task loss weights in Eq. (1).

$\beta = \gamma$ ($\alpha = 1.0$)	**Recon. MAE**	**CC**	**ESA WorldCover OA**	**GLAD-CE F1**	**GLAD-SW F1**
0.00	0.0161	0.9908	0.206	0.220	0.522

0.03	0.0236	0.9826	0.662	0.205	0.960
0.10	0.0284	0.9761	0.671	0.432	0.953
0.30	0.0383	0.9529	0.683	0.696	0.942

Revision in manuscript (Section 3.3, after Eq. (1)): "*For the released configuration, α was fixed at 1.0 and β = γ were jointly set to 0.1 as an empirically balanced weighting, so that reconstruction remained the dominant objective while the auxiliary supervision provided a weaker constraint to improve thematic separability.*"