

To the Solid Earth Editor of Geoscientific Model Development, Dr Thomas Poulet.

Response to the review of our manuscript 'egosphere-2025-6145', entitled "AstroComb (v.1.0): Non-linear, Multi-channel, Probabilistic Cyclostratigraphic Analysis".

Thank you for the interesting and constructive reviews of our manuscript. In our revision of the paper, we have addressed the issues raised by the reviewers and yourself. Review comments in blue fonts and our responses are using black fonts with *new text in italics*. Below you will find our general comments and our response to each of the points raised by the reviewers. Part of the text below is now included in the manuscript.

Response to the Editor

1.

Revisions are needed both the text and some figures. The structure, framing, and level of analysis need to be strengthened to meet GMD standards.

Yes, the manuscript has now been revised to accommodate these points.

2.

All references cited must be accessible public sources, in line with GMD/Copernicus policy ("references to public sources of information"). Citations to material that is not yet accessible should be avoided; for example, Fernandes et al. (2026) may be used once publicly available.

Citations to unpublished material have now been removed.

3.

The reviewers' suggestion to introduce and test the code on synthetic (controlled) examples should be carefully considered. This is especially important given that the manuscript currently does not present a direct comparison with previously published cyclostratigraphic interpretations of the same sections, which is essential and should be included in the revised version.

Yes, indeed. The code is tested on synthetic data (see figures 8, 9 and 10). The result from synthetic data is now introduced before applying it to the geological XRF dataset. Also, we have now added the published sedimentation rate-depth relation and the time-depth relation using traditional methods.