Referee Report – Manuscript essd-2026-42

Manuscript Title: Climatology of the Sea Temperature from Long-Term In Situ Observations: Northern Chilean Patagonia

Authors: Pujol et al. (2026)

Second-round review

1 General assessment

The manuscript has improved substantially and most of my previous comments have been satisfactorily addressed.

I consider the manuscript close to publication. I have one remaining concern regarding the subsurface performance of the data product.

2 Subsurface validation

I understand the authors' concern that applying the same 5% withholding procedure at all depths would reduce an already sparse observational dataset, particularly below 100 m. I am therefore not requesting a comprehensive validation across the 32 vertical levels.

However, the DIVAnd relative error fields and an independent validation provide different information. The former indicates how strongly the reconstruction is constrained by observations, but it does not tell a future user the actual magnitude or sign of the difference between reconstructed and observed temperatures.

For a data product intended for reuse, including model comparison and validation, I think that at least a coarse empirical estimate of subsurface performance is important. A limited validation at one or two representative depths or depth ranges where sufficient observations are available would be enough. For example, a small number of complete profiles could be withheld and the number of independent profiles, bias and RMSE reported. There is no need for a monthly or regional breakdown, nor for validation of every depth level.

The purpose of this request is not to demonstrate that the climatology performs equally well throughout the water column. Rather, it is to give future users a simple quantitative reference for the magnitude of the error they may expect below the surface. The final climatology can subsequently be reconstructed using all available observations.

If the available data do not support even such a limited assessment below a certain depth, the validation could simply be restricted to the upper subsurface levels where it is defensible, with the limitations at greater depths stated accordingly.

3 Minor corrections

A few typographical and language errors remain in the revised manuscript and Supplement. For example, please correct "noise-to-signal ration" to "noise-to-signal ratio" and "climaotlogy" to "climatology." Other examples include "patter" instead of "pattern" and "approximatively" instead of "approximately." These are only examples; please carefully proofread the complete manuscript and Supplementary Material to identify and correct similar remaining errors.

4 Recommendation

I recommend minor revisions. Once a limited quantitative reference for subsurface performance is provided, I would consider my main concerns resolved.