

Editor comments

I note the following (and will review your response):

li 755: There is a reference to Rojas et al 2025. This is not listed in the reference list. Is it a cruise report? A publication? If not published result, you will have to revise your text to indicate an assumed high dissipation level of XX. Dissipation rate of almost 10^{-4} W/kg is a very large number and it is not convincing that this is representative of the average dissipation over h_1 (20 m). Is it an average over the windy period? This must be clarified. You must also clarify that epsilon used (in Az) is the dissipation averaged over h_1 (since the power is calculated over h_1). The formula for Az is the Osborn model (reference: Osborn, T.R. (1980) Estimates of the Local Rate of Vertical Diffusion from Dissipation Measurements. Journal of Physical Oceanography, 10, 83-89). The equation is for eddy diffusivity (not viscosity). Use wording such as: "...viscosity is estimated assuming equal to eddy diffusivity, using the Osborn model (cite), $A_z = \dots$ "

Re:

We sincerely thank the reviewer for these insightful comments and corrections, which have significantly helped clarify our methodological assumptions. First, regarding the reference, Rojas-Celis et al. (2025) is currently a preprint undergoing its second round of peer review ([link](#)). We have updated the reference list (line 1144-1146) to properly reflect its status. Regarding the dissipation rate (ϵ), the reviewer is completely right to point out that 10^{-4} W/kg is a large value. Rather than using standard theoretical values, we chose to use actual in-situ observational ϵ data. These measurements were collected using a VMP-250 microstructure profiler during a separate 2024 oceanographic cruise in the region. Because that specific survey was conducted on a larger vessel, it successfully captured measurements during intense wind events—harsh conditions that our smaller ship was unable to safely sample. Consequently, this value represents the maximum dissipation recorded in the upper layer (inside h_1) during a windy period, rather than an average, serving to illustrate the upper-bound limits of mixing under strong wind forcing. We have explicitly clarified this rationale in the revised manuscript.

Finally, we fully agree with the reviewer's observation regarding the formula for A_z . We have corrected the text to clarify that the equation corresponds to eddy diffusivity rather than viscosity, and we have added the reference to Osborn (1980). As suggested, the revised text now indicated that 'viscosity is estimated assuming equal to eddy diffusivity, using the Osborn model (Osborn, 1980). Lines 766-768.

line 747: 10 m heigh[t]

Re:

We changed. Line 746.

TPXO tidal model data: These can be downloaded from OSU TPX website. Properly include this in the data availability statement (and remove "by request"). (The NC file in Chad Greene's page is a specific consolidated format.)

Re:

We delete "by request" and now we included on the data availability the OSU TPX website lines 825-826.

In Li 206: you should clarify what tidal model data you are using. There is the global TPXO (v9 ? v10?) or regional data sets.

Re:

Thanks for your observation we used TPXO9 global model, now is indicated on text Line 207.

GEBCO and ERA5 data have actual citations you should reference and include in the references (and the data availability) instead of giving the URLs. Also check if the data providers require a certain acknowledgement.

Re:

We include the references for GEBCO, the ERA5 was already included instead of URLs a reference was included, and acknowledgements of both sources were included in the respective section. Lines 818-821.

Review files validation

Notification to the authors:

1. With the next revision, please rename the figures in the appendix in accordance with the recommendations outlined <https://www.ocean-science.net/submission.html#manuscriptcomposition> > 7. As for an example, the Figure "A3" must be named as "Figure A3", etc. 2. Please add the following attribution texts to the following figure captions: Figures 1, 2 - Bathymetric data © GEBCO Compilation Group. Figure 3 - ERA5 reanalysis data © ECMWF/Copernicus. Figure 4 - Tidal model data © Oregon State University (TPXO; Egbert and Erofeeva, 2002). Figure A2 - GLORYS ocean reanalysis data © Copernicus Marine Service.

Re:

We included all suggestions indicated by the review files validation.