REVIEWER 1

This submission provides guidance and recommendations for the observation and estimate of turbulent dissipation from single-point velocity time series that were developed by the SCOR Working Group #160 to quantify ocean mixing. It is exclusively a methods-type manuscript and does not report new science or observations, and is founded upon previous publications by the lead author such as Bluteau et al. (2011) with which there is some overlap. This contribution provides useful guidance, but there are a number of mostly minor clarifications that should be addressed before publication.

We thank Reviewer 1 for their feedback and respond to their comments below.

Main comments

Figure 2: the caption should be revised to explain the multiple frequency axes above the figure that correspond to different mean advection speed. Also, there are inconsistencies between terminology used for units in this figure: m s $^{-1}$ in the upper axes, m/s in the y-axis.

We now explain the different frequency axes in the caption, and updated the y-axis label.

Figure 3: I'd suggest updating the caption for this figure to improve clarity. Describe the pathway around the figure more explicitly perhaps with the aid of a few more labels. Also, cross-reference it more thoroughly with the main text when the stages are being discussed.

The figure was simplified to highlight the four panels represent different processing levels, each stored in their own group within the NetCDF file. The caption was also modified to describe the data processing associated with each level.

Figure 4: in the caption, please can you explain why a power of 0.2 was applied to the number of samples n in each histogram bin.

This was done simply to reduce the range so that location of n=0 is more clearly visible in the histogram; it has no bearing on the results. This follows Brock, which uses $n^{0.5}$. A comment to this effect has been added to the caption.

Figure 5: could I suggest increasing the line thickness of the length scales and durations to aid cross-correlating them with the colorbars.

We increased the line thickness in the two contour plots.

Line 355: logLAD undefined

We have amended the text on L394 to state the method involves minimizing the absolute residuals and referred the reader to the numbered equation in *Bluteau* (2025) since there's an entire section dedicated to this method and all other methods assessed for spectral fitting in that paper.

> *Line 561: typo "...velocities samples..."*

This was changed to "velocity samples" on L622.

> *Figure 11: please clarify the colouring and shading of the markers in panel (a). The legend for flagged data in panel (b) overlaps the plotted data and is confusing.*

The caption now states that "If no error bars are presented, then the estimate was flagged for not meeting one or several quality-control criteria." The legend in panel b was moved and is now boxed to avoid confusing it with a data point.

> *It is very helpful that the authors provide sample datasets via the supplementary repository, but have they considered providing some sample Matlab or Python code to perform some of the more standardised aspects of the data preparation and analysis process?*

Prior to writing this manuscript, the development of the Working Group's Terms of Reference examined the possibility of including code. Ultimately it was decided against distributing software (see Terms of Reference). The logic for this decision was the overarching objective being to document the best practices so that researchers can then validate different processing workflows against the benchmarks at any checkpoint (e.g., fitting algorithms at Level 3). Our chosen strategy avoids the pitfall of having the working group's activities become obsolete because the code cannot be maintained and updated to keep up with new flavour of programming languages. It also intrinsically recognises that there may be other ways to arrive at the same answer.

REFERENCES

Bluteau, C. (2025), Assessing statistical fitting methods used for estimating turbulence parameters, *Limnol. Oceanogr.: Methods*, doi:10.1002/lom3.10729.