

Interactive comment on “Turbulent Length Scales in a Fast-flowing, Weakly Stratified, Strait: Cook Strait, New Zealand” by Craig L. Stevens

Anonymous Referee #2

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The manuscript discuss direct measurements of turbulent quantities in Cook Strait. Considering that such data are relatively scarce in oceanography and can be interpreted in a broader context, the reported data are valuable.

The central issue of this manuscripts and its main message is about the comparison between the Thorpe and Ozmidov scales. Unfortunately, the discussion itself is rather short and poorly documented (three references). More efforts should be put in the analysis around figures 12, 13 and 14. The manuscript will be greatly improved by a better focus on this scientific issue. In particular, can the data shed new light on the claim (Mater, 2013) that $L_T \approx L_O$ with $Nk \approx \epsilon$?

The measurements themselves are presented with (too) many figures, but basic information is missing. Little is said, for instance, on the timing of the collected 34 profiles

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covering a very large period of time of 5 years. Processing of the microstructure data must be described or documented in a much more precise way than with sentences like "in the usual way" or "An approach".

Considering the fast flows in this region and the irregular topography, three-dimensional effects (e.g. horizontal advection) are anticipated and should be discussed.

Some of the (many) typos and formal problems to be fixed.

- Page 3, line 4 : "velocity *Sh*" → velocity shear ?
- Page 3, line 8 : "Do we actually observe high dissipation rates?"
- Bottom of page 5 and first paragraph of page 6 : please fill the gaps "xxx" and "X" "Y".
- Please carefully check references : some of them are missing or unused (Gregg and Oszoy, 2002; Matter et al, 2003 or 2005;...)
- Figure 6 seems not to be cited / discussed in the text.
- Many figures are provided but with very little discussion. The ratio *number of figures* to *Length of discussion* seems to be rather low.
- ...

In conclusion, the data are interesting but the manuscript should be better focused to avoid wild discussions of many details (e.g. on individual profiles taken at different (unknown) location and times) and come to solid conclusions.

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