

Ocean Sci. Discuss., referee comment RC3  
<https://doi.org/10.5194/os-2021-40-RC3>, 2021  
© Author(s) 2021. This work is distributed under  
the Creative Commons Attribution 4.0 License.

## Comment on os-2021-40

Anonymous Referee #3

---

Referee comment on "Defining Southern Ocean fronts using unsupervised classification"  
by Simon D. A. Thomas et al., Ocean Sci. Discuss.,  
<https://doi.org/10.5194/os-2021-40-RC3>, 2021

---

This paper proposes a concise and effective metric for identifying ocean fronts. The authors provide thorough background and reasonable discussion of certain considerations when using the metric.

Comments:

- While the metric does appear to effectively highlight when water masses are not clearly assigned to a single cluster – the authors remain ambiguous on what is a 'low' metric and what is a 'high' metric. Toward the goal of removing ad hoc decision making, a more quantitative description of how the I-metric is classified would be helpful.
- Similarly, in figure 2b, low I-metric points are not shown – what was the threshold used and how was it chosen?
- Figure 3 caption should be rephrased to read as complete sentences.
- Figure 5 legend should be fixed to be easily readable.
- Figure 5 caption should be rephrased somehow, e.g. "Envelope indicates one standard deviation to either side."
- First sentence after equation 5 (line 277) should be rephrased more clearly.