

Peer-Review of revised manuscript

“Detection of Turbulence from Temperature, Pressure and Position Measurements Under Superpressure Balloons.”

November 2022

1 Overall Feedback

As this is a review of a revised manuscript, I will skip the summary of the content.

First of all, I would like to thank the authors for the impressive amount of work they put into revising their manuscript. All points from my previous review have been extensively addressed. I think that the additions to the text are very valuable in putting their results into perspective. Furthermore, their discussion of possible technical issues enables the reader to get more confidence in the results that are presented in the manuscript. Concerning the occurrence of negative Richardson numbers: thank you for your clarifications and for pointing out that the histogram in Figure 11 has been corrected. My only concern was the high abundance of $Ri < 0$, which seems to have been a simple error.

Personally, I really like to thank the authors for taking on board the comments in such a meticulous way. This just makes the review process much more rewarding for the reviewer and fruitful for the scientific community.

My overall recommendation for the manuscript is to be published subject to some minor technical and typographical corrections and suggestions, which I will list below.

2 Technical and Language Related Suggestions

- ll. 119-120: This is a rather long sentence. Maybe split in two by replacing “ ~ 1 m, which we degraded” by “ ~ 1 m. We degraded this resolution”.
- ll. 222-224: I find the last part of this sentence somewhat difficult to understand. Maybe replace “will not allow to identify as turbulent such temperature gradients.” by “will not allow to identify turbulence from these sharp temperature gradients at the layer edges.”
- ll. 455-456: Could you maybe add a reference here? I do not doubt your statement, it could just be interesting for those readers who are not that familiar with UTLS turbulence research.
- ll. 458-459: This statement could possibly also be strengthened by a reference, though I do not think it is a must. [Fritts and Alexander \(2003\)](#) would be a very generic choice from my point of view. Possibly you know one that is more specific?
- l. 468: Unfortunately, your last sentence of the of the paragraph is not immediately clear to me in terms of phrasing. What do you think of the following alternative: “A study examining processes that cause turbulence in the UTLS is in progress.”?

3 Typos

- l. 413: probably "wake" instead of "wakes"
- l. 413: I assume "flight chain" instead of "chain flight"
- ll. 425-426: rather "significantly affect" instead of "affect significantly"
- l. 442: "threshold" instead of "thresholds"
- l. 458: "is not zero" instead of "it not zero"
- l. 442: "stratosphere" instead of "stratosphère"
- l. 466: "Western Pacific" instead of "western Pacific"
 - Throughout the text you use "indexes" as well as "indices". Maybe choose one of those options.

References

Fritts, D. and Alexander, J.: Gravity wave dynamics and effects in the middle atmosphere, *Reviews of Geophysics*, 41, 2003.