This paper presents an interesting new reanalysis of meteorological data that augments and complements previous studies on the drift of the Endurance prior to the vessel's sinking.

The following are relatively minor comments:

The authors would like to thank the commenter for the interest shown and the effort in conveying this constructive input. We endeavour to incorporate this input in the revised manuscript. As the corresponding author I would also like to apologise for the delayed response. The timing of the review coincided with an Antarctic voyage, as well as other end-of-year academic commitments, thereby delaying the submission of these responses.

Line 34: "low frequency" - for posterity, as I cannot find the detail elsewhere, please include the type and actual frequencies of the sidescan sonar. While its frequency may be considered "low frequency" on the radio frequency spectrum, for underwater acoustics it is likely to be either medium or high frequency, that is, above 20 kHz.

This is a very valid point as regards “low frequency”. The SAAB Sabretooth AUVs were fitted with Edgetech 2105 side scan sonar systems, operating at frequencies of 75, 230 or 410 Khz (Gilbert, 2021). This detail will be added to the revised manuscript.

Line 52: "local time" - it is only near the end of the paper than the reader finds the longitude and so is able to interpret local time. The nuances between Zone Time (integer hour offset from GMT (UTC)) and Ship's Time, and the relationship of Ship's Time to Local Apparent Noon on the Endurance are discussed in Bergman and Stuart (2019). This paper also gives insights into the accuracy of navigational sights during earlier parts of the voyage.

In response to a review comment, a context map with clear longitudinal information has been prepared and will be included in the revised manuscript. This should assist. However, information about the time standards used will also be added to the methodology section (i.e., the use of ERA-20C data for the simulation, which is referenced to UTC).

Line 53: There is no attempt to quantify what is meant by accurate. Perhaps a reading of, and reference to, Bergman and Stuart may help. Also affecting accuracy may be the reanalysis using modern lunar ephemerides and catalogues of star positions in the unpublished paper by Bergman et al. available at http://fer3.com/arc/imgx/OccultationCEPreprint.pdf

Field Code Changed

We thank the commenter for this information. We will review the suggested sources and clarify or modify the notion of accuracy in the revised manuscript.

Line 136: Multiplying the 24-hour error range of 4 km to 10 km by four for the 4 day period is too simplistic. It would be a fair approximation if and only if there was no change in direction for the drift over the 4 days. The error per day should be treated as a vector and not a scalar and the 4-dat vector error estimated.

We thank the commenter for this very valid comment, with which we agree. We have removed the estimation of the accumulated error over the target period, since we have no way of computing it objectively given the lack of position recording during these 3-4 days. Previously it was simplistically computed based on the mean daily error which we calculated for the period 18 January – 21 November, from simulated positions and positions logged by Worsley. The

single vector errors in sinking position along the various simulated and nudged trajectories is reported, as well as the mean error for the period 18 January – 21 January based calculations made whenever possible with respect to position recordings.

Bergman, L. and Stuart, R.G., 2019. Navigation on Shackleton's voyage to Antarctica'. *Records of the Canterbury Museum*, *33*, pp.5-22

References

Gilbert, N. (2021). *Endurance 22 Initial Environmental Evaluation*. 21/12/2022https://endurance22.org/uploads/2022/01/Endurance22_IEE.pdf