

We are pleased that our previous revisions were positively received and are thankful to Prof. Jamieson for his additional review. Please find below our response to the minor technical corrections suggested.

Comments from the reviewer are in black and our response is in blue.

At line 620: "Do make it clear that this is a test that is being applied to ensure particles end up in a sensible place prior to conducting a full assessment of Antarctic provenance in the next section. Otherwise people may think that this is the only test being done and it would seem quite cursory until you read further."

We change this sentence to: *"To ensure that TASP transports particles to sensible areas offshore, we use an idealised provenance tracer map for the IMBIE Antarctic drainage basins (Zwally et al., 2012)."* (revised line 458).

At line 690: "I wonder if you could add some indication of what the Nd provenance has been used to interpret in Antarctica? e.g., remind the reader the range of things Nd provenance could be used to understand."

We add the sentence: *"For instance, the proxy has provided evidence for East Antarctic Ice Sheet retreat in the Pliocene and Pleistocene (Cook et al., 2013; Wilson et al., 2018) and marine-based WAIS growth in the Early Miocene (Marschalek et al., 2021)."* (revised lines 515-517).

Lines 755-764: "Is that code snippet needed? It's the only one in the paper and feels a bit out of place as a consequence. I think you explained things fine in the text in terms of dealing with the gap in ocean velocities."

We are glad our description in the text was sufficiently clear and remove the code snippet as suggested (previously after revised line 581).

Lines 765-768: "Can you add citations in terms of expected iceberg pathways. I know you refer to the figure which has citations, but having the citations in the text proper is also useful."

As suggested, we add the citations on revised line 584.

Lines 806-807: "You are saying that finer scale erodibility information would produce a disproportionate result. But is it possible that the finer scale information is correct and therefore the result might not be disproportionate, but simply it would be different (and perhaps better?). In other words, this sentence feels like its saying better knowledge of the geology would not be useful and that it would be unhelpful because it would worsen the fit between the model and the measurements. Perhaps I am interpreting it wrong so feel free to clarify."

We agree this sentence was not well phrased as it was intended to communicate that better knowledge of geology would be useful and would improve the match between the model and measurements. We now state: *"A finer resolution, lithology-based estimate of 'erodibility' might lead to different rock types being represented to greater and lesser extents offshore, improving the accuracy of modelled provenance signatures."* (revised lines 616-618).