I would like to thank the two reviewers for providing feedback on the resubmitted version of the article by Sutter et al. titled 'Investigating the internal structure of the Antarctic Ice Sheet: the utility of isochrones for spatiotemporal ice sheet model calibration'.

Both reviewers are satisfied that the authors have addressed the major comments from their initial reviews, but both have also submitted some minor comments that should be addressed prior to publication. In addition to the comments from the reviewers, I list below a number of points to consider, which will improve the clarity of the article for the reader. I recommend that the article should be published once these minor issues are addressed.

Kind regards,

Pippa Whitehouse (Editor)

Points to be addressed:

1) As you make your final revisions, I encourage you to look for places where the text can be made more concise, or sentences shortened. Long sentences require careful punctuation to ensure they are correctly interpreted. Short sentences are much clearer!
2) Ensure that acronyms are defined at their first usage, and that they are used consistently throughout the remainder of the text
3) Check the format of in-text citations
4) When using the term 'topography', clarify whether you are referring to the surface or the bed of the ice sheet
5) It is a little unclear whether some of your results are derived from the 2 Ma experiment, or whether this experiment is simply used to initiate the 220 ka experiments and all results shown are derived from the 220 ka experiments. It would be useful to clarify this in section 2.2
6) Your methodology provides an estimate of the normalised elevation of each isochrone above the bed. However, radar systems provide an estimate of the depth of an isochrone below the ice surface. Any uncertainty on total ice thickness/bed elevation will impact on your ability to compare modelled and observed isochrone positions. Please briefly comment on this issue.
7) I do not have a strong opinion on the length or content of your conclusions (comment from reviewer 1) but the logic of your argument could be clearer in a few places (e.g. lines 491-, 495-)
8) Figures: please check the following points in relation to all figures:
    a) Colour scales are included where relevant
    b) The caption describes all features shown in the figures
    c) Somewhere, state the projection used to define the northing/easting values
    d) Ensure that all place names mentioned in the text are indicated on a figure
    e) Check the location of all transect plots is clear (e.g. this is not the case for figure 3)
    f) Define all lines in the legend/caption, including the lines representing the ice sheet surface
    g) Ensure that all sub-plots are labelled
    h) Ensure that all axes are labelled and that labels are legible
    i) Use the first sentence of the caption to identify what is distinct about each figure, e.g. for figure 8, 'The influence of geothermal heat flux on predictions of isochrone elevation'
    j) Quantify information shown in the figures when describing or discussing results in the text