

Review of the manuscript by Grant R. Bigg (2024) for the Climate of the Past

The Southern Ocean marine ice record of the early historical, circum-Antarctic voyages of Cook and Bellingshausen

In general, I find that the manuscript is well written but at times lacks detail and consistency. I believe that if the author addresses concerns of reviewer 1 (most of which I am echoing but not repeating here since I will include this analysis in the editor decision) and those listed below, the manuscript would be ready for publication. Below is the list of my major and minor concerns that I would like to be addressed in a revised version of the manuscript prior to publication.

Major concerns:

The introduction section 1 is very long but there is no overview of the state-of-the art for the second major aspect of the study – analysis of modern techniques for sea ice and iceberg identification and mapping that are central to this research. It would also be helpful to create a table with journey chronologies, including locations and ship names, among others. This will save a lot of space on the detailed description of these journeys and their parameters. Currently the description is quite tedious to read.

Sections 2.2 and 2.3: Details are painfully missing. Readers need more explanations for how the data has been derived and from what observations. We need to ensure that readers do not need to read several articles to be able to understand what has been done in this one. Please, expand and clarify.

The beginning of Section 3: I feel that the first paragraph rather belongs to the introduction. It can be condensed to a single phrase in the opening of Section 3 and refer the reader to the introduction where the overlap and apparent differences with Martin et al. (2022) are discussed.

Figure 4: Why are the uncertainties so large for the modern analogues of Cook's data and so small for those corresponding to Bellingshausen's data? Some discussion of this phenomenon would be helpful.

Minor concerns:

I am not a native speaker but would not „temperate climate“ be better in this case than „temperature climates“ in line 53 and in similar instances?

Line 79: but again WERE prevented

Figures 1-3 and 5-7: Please, correct the longitude placement for the interval of 90W to 90E. Currently they have half-sunk into the frame.

Figure 2: Increase the size of the figure (task for the typesetting). It is impossible to see the details of the figure in the current format.

Figure 6: From this article I do not completely understand how these probabilities are calculated. During a certain period? I could go to the source of the data but the point is that this information should be provided as independent in the current study. Again, a reader should not be forced to consume other articles to understand this one. Please, also explain the scale better and discuss these results in a greater detail.

Line 269: Move comma after the reference.