

*Review of Estimating surface melt in Antarctica from 1979 to 2022, using a statistically parameterized positive degree-day model by Zheng et al., 2022*

Zengh et al., 2022 estimate the melt over the Antarctic Ice Sheet using a PDD model. They also carefully parametrize their model to produce similar results than satellite and RACMO estimations. In general, the authors responded carefully to the reviewers' questions. I found that they improved the manuscript by specifying the missing/unclear elements. I would like to thanks the authors for all the work they did.

My only main remaining comment is that the manuscript remains long with unnecessary too detailed information. For instance, section 2.3 L107-L11 is relatively useless. L176-182: the important is to know the test you use, the hypothesis and the p-level. Only maximum 2 sentences are needed, for instance I could summarize by: We use two-sample Kolmogorov–Smirnov test (hereafter two-sample KS test) to evaluate the dissimilarity between the PDD results and RACMO2.3p2 melt outputs at a confidence level of 5%. This would even summarize a significant part of L183-L188. L190-192 : Could be removed. L231: Does the number of cells matter (ie, is it a relevant information especially if you mention it again a few sentences later)? ... I would suggest the authors to make the same exercise into the whole manuscript, it won't change/reduce the quality of the work but should increase the readability of the manuscript.

Caption figure 1 : Consider to remove 'Map of', we know it's a map. (Also for Figure 3, Figure 4)

L224: Not sure why? Because in a warmer climate, the forcing would also be warmer while here you kept ERA5 constant.

L242: Do you know why there is this feature around the Amery Ice Shelves (presence of local rocks?)

L270 vs L291 and L298: Could you comment here the apparent opposition between these two sentences?

L312-L314: Could you prove that ERA5 is not suited for this summer? Since RACMO is forced by a reanalysis (ERA5 or ERA-Interim), it is likely that the reanalysis actually represents the events leading to higher melt.

L315-316: If this does not represent too much work, you could test this second justification by training the PDD over only high melt years, or maybe just refer to section 4.2.2?

L459: Following Wille et al., 2019, the authors detected the atmospheric river using ERA-Interim. I guess that we can assume that the new version (ERA5) certainly reflects atmospheric river if its predecessor did.