

Review of revised version of: “The sensitivity of landfast sea ice to atmospheric forcing in single-column model simulations: a case study at Zhongshan Station, Antarctica”, by Fengguan Gu et al.

General comments

Thank you for incorporating my previous comments into your revised manuscript. I think this updated version is a definite improvement, and I offer some further specific suggestions below.

My main general comment is that I had hoped to see a re-written conclusions section that brought together the main results more clearly, and I would suggest this is revisited before publication.

Specific comments

P8 L207 Be more explicit about what is meant by strong events in this sentence.

P12 L291 Consider changing table description to be a bit more specific, eg: ‘Mean bias in ice thickness and snow depth and bias ratio for each forcing variable’. Mention that these are the bias ratios from table 1.

P13 L296 I am a bit confused by this sentence. R/d has already been mentioned, so I am not sure why it is mentioned again, and if Q_a is to be mentioned it could be included in the previous sentences?

P18 Onwards (Section 4). While this discussion section is improved from the previous version, I feel it need some introduction to make the scope clear – ie that it explores specific model limitations that may affect the comparison. It could perhaps have a more specific heading as well. The first sentence should mention sea ice thickness.

P20 Conclusions: see my general comment above, and also:

(1) Provides a summary of the simulation forced with the in-situ observations, but there is no equivalent summary for the ERA5-forced simulation.

I would say more about the snow-ice formation, and the fact that there may be too much of this in the ERA5-forced simulation.

P20 L456-458 I don’t understand this sentence – can it be re-worded.

P20 L461 New paragraph needed here.

P20 L463 onwards. A potential two-dimensional simulation is mentioned, but I am unclear how the methodology from this paper would be extended to two dimensions as it requires specific in situ observations for the forcing which would not be available over the whole Southern Ocean? Could this be clarified.

Technical corrections

P1 L29 Change ‘inhibits’ to ‘inhibit’

P3 L73 Change ‘at’ to ‘of’

P5 L125 The measurement accuracy of the ice thickness is mentioned twice.

P12 L280 Capital letter needed at start of sentence