Summary

The authors have gone to great lengths to respond to the comments made previously, and the manuscript is much improved as a result. The authors have now justified most of their claims, and the presentation of their work is much clearer.

There remain many grammatical errors across the manuscript that need to be corrected.

General comments on the results and discussion

The authors contradict themselves in lines 215-217 ('Ephemeral grounding region, characterised by double-differential vertical displacements close to zero, shows significant correlation with oceanic tidal variations') and lines 235-237 ('Figure 7b reveals no clear correlation between tidal height and grounding region area').

- From 7b it looks like there is little correlation. Perhaps worth doing a simple correlation between the two to test this.
- Can you colour the points in 7b to match the spring and neap tides in Figure 7d, which might make the difference in the 2 categories clearer
- Can you explain the groundings during negative tide heights?

It is hard to interpret the elevation change at L in Figure 8. Perhaps simply showing a time series of elevation in the vicinity of L would be easier to interpret, especially as the authors don't make use of the high-frequency elevation variations visible in this figure. I suggest this time series could even be overlaid on Figure 9b.

The authors fail to reference Joughin et al. 2021 at multiple points throughout the manuscript. This paper also showed rifts propagating from the ephemeral grounding point in the centre of PIG.

The authors discussion regarding ice shelf basal melt rates remains unsatisfactory. Firstly, the lack of melt observations after 2020 doesn't limit the ability to observe grounding events (lines 342-345). The melt data presented shows a decrease in melt rates on the order of 10m/yr in 2015. If the ice is in hydrostatic equilibrium, this would be seen as a ~1m change in the surface elevation. Whereas the IceSat-2 observations presented suggest up to a 70m change in thickness and the elevation data shows a ~20m change. It is clear from these approximate numbers that there must be another process involved in the ephemeral grounding here.

Further, the authors don't discuss the potential role of the thick column of ice that was advected downstream in the ephemeral grounding. They do mention this in their introduction (lines 135-137).

The authors discuss melt rates and ocean mooring data within the context of ice shelf thinning in Appendix A. In its current form, it is unclear what this section contributes to the main narrative. While a rigorous analysis could potentially reveal a meaningful link between ocean conditions, basal melt rates and ephemeral grounding, the present version lacks sufficient clarity and detail. I recommend either substantially refining this section with a more thorough and transparent analysis or removing it altogether. In particular:

- What depths in the ocean mooring profile have the authors used to construct the time series?
- The authors claim that the decrease in melt in 2015 corresponds with decreased temperatures in the mooring (lines 394-396). To me, it looks like the cooling occurs after the peak in reduced melting.
- Joughin et al., 2021 showed that there was a 12% acceleration of the ice shelf between 2017 and 2020. It is likely this has contributed to some of the observed thinning through divergence.

Specific Comments

Line 1 abstract: 'The evolution of ephemeral grounding in ice shelf can…' should read 'The evolution of ephemeral grounding of an ice shelf can…'

Lines 8-9: Please provide a citation.

Lines 23-24: 'Despite the grounding line retreat, the Pine Island Ice Shelf (PIIS) was observed to maintain intermittent contact with the bathymetric high when thick ice column being advected from…' should read 'Despite the grounding line retreat, the Pine Island Ice Shelf (PIIS) was observed to maintain intermittent contact with the bathymetric high when a thick ice column was advected from….'

Line 136: 'The grounding of ice shelf' should read 'The grounding of an ice shelf…'

Line 137: remove 'as an obstacle against ice flow' and replace with 'by'

Line 205: 'Our results reveal recurring of ephemeral grounding…' should read 'our results reveal recurring ephemeral grounding…'

Line 323: 'These signals disappeared during the 2020-2021 thinning period but reappeared in December 2020'. This doesn't make sense. Please check the dates.

Lines 330-331: 'Notably, we find the rift that…' Joughin et al., (2021) suggested this. Should be cited.

Line 337: De Rydt et al., (2014) results don't seem particularly relevant to anything discussed in the following paragraph.

Line 338: Warm waters at the bottom of the ocean here should be referred to as Circumpolar Deep Water.

Lines 358-360: ‘Observed large-scale surface and basal structures… basal melt modulated by ocean temperature variability’. This sentence is confused and certainly doesn’t belong in the conclusion.

Figure 7 :

- Colour the points in b depending on the spring or neap tide

Figure 8:

- Here, the reader is interested in elevation change over time. Showing the elevation anomaly from some reference might make the author’s point clearer.
- Furthermore, a simple time series might be easier to interpret.

Figure 9:

- I don’t think we learn anything extra from having the across transect profiles from both the right and left ICESat-2 beams
- A single colour ramp that spans c-f would help the reader compare observations on different tracks
- Could the areas along the transect that Sentinel-1 detects grounding be shown?