

## Summary

The study examines the influence of seasonal terminus change on glacier velocity changes at four marine-terminating glaciers in Central West Greenland using a novel 1D model. The results show that the glacier velocities are driven by a multitude of drivers with some being dominated by terminus change, and others being dominated by wintertime acceleration. The terminus-driven model introduced in the study provides a new and relatively simple way to investigate the influence of terminus change on near-terminus glacier velocities, which can be applied to most marine-terminating glaciers in Greenland.

I commend the authors on a well-conceived and executed study. The manuscript is well written and presented, so I have few minor comments which are outlined below.

### Detailed comments:

Line 78: Reference is in all caps – needs reformatting

Figure 1 caption: You say the terminus positions are coloured by data, but they are coloured by day of year. Consider rephrasing

Line 92 – 94: I was wondering why you chose to use ITS\_LIVE velocities given that earlier you say you selected the specific study period as Sentinel-1 data became available with a higher resolution. Would it then not make more sense to use PROMICE v5 data which solely relies on Sentinel-1 data and has a consistent 11-day temporal resolution from 2016 to 2025?

Line 111 – 113: There are some standard methods to quantify terminus change (e.g. curvilinear box method) and I was wondering why you chose to not use them. Consider adding a sentence or two on how your method differs from those.

Line 117 – 118: While it is a nice addition to use the novel DG-IS2\_DEM, I am wondering why you don't include any elevation change prior to 2018. I am aware that this would mean using ArcticDEM prior to 2018, but it seems odd to only have elevation data for half of the study period.

Line 189: Why do you not include uncertainties from elevation data? Consider adding a sentence here to explain why.

Line 236: behavior -> behaviour.

Figure 2 caption: with light yellow shading shows uncertainty – change “shows” to “showing”. Also, you state that the grey bars show when runoff is great 2m/yr - should runoff not be in cubic meters?

Line 249: indicate -> indicates

Figure 4 panel b: Total elevation change should be a black line to conform with previous figures.

Line 274: increase -> increases

Line 304 – 305: [...] the ratio of velocity range between upstream and frontal region is 13% in summer [...] - Insert “the” before “upstream”.