

Dear Editor,

Miles and others have done a wonderful job strengthening the paper and addressing reviewer questions after the latest round of reviews. I only have minor comments.

### **Minor comments**

1. Grounding line evolution without yearly labels in Figures 1b, 5, and 7abc. Please add colors and text to describe which line corresponds to which year.
2. Lines 202-207 in the difference PDF (called diff henceforth), 175-178 in the new main PDF (called main henceforth), please split into two sentences.
3. Line 254 in diff, 226 in main: remove the word subtle, as the differences are fairly pronounced.
4. Line 277 in diff: Do you mean to say ice speed anomalies rather than ice speed? Figure 5 does not compare speed magnitude quantitatively (we get a qualitative sense in a) but rather measure speed anomalies in b. Similarly, consider changing appropriate to reasonable for proxies, with my point expanded below.
  - a. More on this point: In Figure 5b, before 2014, the two locations overlap in error, but the sign isn't the same. In 2014, the velocities are beyond uncertainty in percent speed change. Afterward, yes, there is more similarity in phase, with large uncertainties. I think that today this is a reasonable proxy for the regions of interest, but still would not exactly expect this to always hold. I am glad that the

previous lines 138-140 in the previous main document, 148-153 in the main, have been removed.

5. Line 308 in diff: Add a space before the first parenthesis at (location ...).
6. Section 3.3.1: Consider concluding this paragraph by claiming that the dominant balance in the mass conservation equation is between thinning and basal melting.
7. Great additions to Figure 7, I found it quite captivating.
8. Lines 414-415 in diff: Please consider putting something, such as a 1 and a 2 with arrows perhaps, for the main and secondary rumples this sentence references. Additionally, I'd reference the animation S1 in this paragraph, it is quite informative to see.
9. Lines 432-433 in diff: I do not find this to be a strong claim in the current phrasing, although I agree with the larger point of undersampling. I would consider rephrasing to follow the idea that the full range of variability of basal melt rates may not have been captured in the short two-year window, which is further supported by oceanographic studies of CDW variability on longer timescales, etc.
10. Figure S2: Why is the y-axis of this plot in  $\text{m yr}^{-2}$ ? Presumably a typo?
11. Paragraph 1 of section 4.3, lines 463-480 in diff: You should break this up into two paragraphs. First, end the first paragraph before "A key implication ...". Second, write about your considerations of three non-exclusive hypotheses that may permit smaller undulations in phase 3 than in phase 1.
12. Lines 519-21 in diff: Please refer to your Figure 9b advection hypothesis as Eulerian advection.
  - a. Broader point: I think the argument (explaining thickness change in Figure 9b with Eulerian advection) would be more convincing if you explain what one

would expect with high melt rates in phase 2 at the GL, followed by a hiatus (or intermittent high and low melt rates in Phase 3). Then, by drawing your readers on board with expectations, showing both the distance and phase boundary are in line with the observations may enhance the delivery of the claim.

13. Figure 9a legend title: Basal (typo).