

## General Comments

The majority of changes greatly improved the readability of the paper and made the conclusions much clearer. Super interesting paper that adds good insights to the current literature. Well done!

## Specific Comments

I appreciate the authors' clarifications in the revised manuscript that the linear viscous simulations do not represent physical glacier flow and are intended to illustrate the mechanism by which non-linearity concentrates stresses which can lead to crevasse formation. If I am understanding correctly, is this the sole purpose of the linear viscous simulations? If so, this point may be better served without muddying the waters with the linear viscous simulations in the main text. In their response, the authors clearly (and excellently) explain in one sentence the mechanism they are trying to highlight: "This rheological property leads to stress being transferred from highly deformed, and thus more fluid, ice to adjacent regions of stiffer ice, a process that is essential to understanding crevasse formation." This is well supported in the literature and could be further supported in the manuscript through highlighting how the value of  $n$  impacts the equation for dynamic viscosity (Equation A7). When  $n$  is 1, the equation reduces to  $\eta = 1/(2E_D A)$ , which explains the authors' findings that  $A$  becomes a simple scaling factor in the modeled stress response. When  $n > 1$ , a larger effective strain rate results in a lower viscosity, which then results in the mechanism the authors describe. Including the linear viscous simulations in the main text may create additional confusion rather than clarification when there is a simpler way of supporting this point. Figure 3 may be better served having the results of the viscoelastic simulations in it rather than the linear viscous simulation.

I love figure S11 and the increased explanation of CDM vs LFM! It really helped clarify for me why MPS and Hayhurst provided better fits than vM and Coulomb. I also really appreciated the extra explanations of what maximum principal stress being 0 meant.

## Technical Corrections

Line 398- "the maximum principal stress shift to zero" - shifts to zero