We thank the editor and reviewer for their time and effort in helping to strengthen this manuscript.

Original reviewer comments are in blue, sans serif, 10 pt. Ariel font.

Responses to reviewer comments are in black, serif, 12 pt. Times New Roman font.

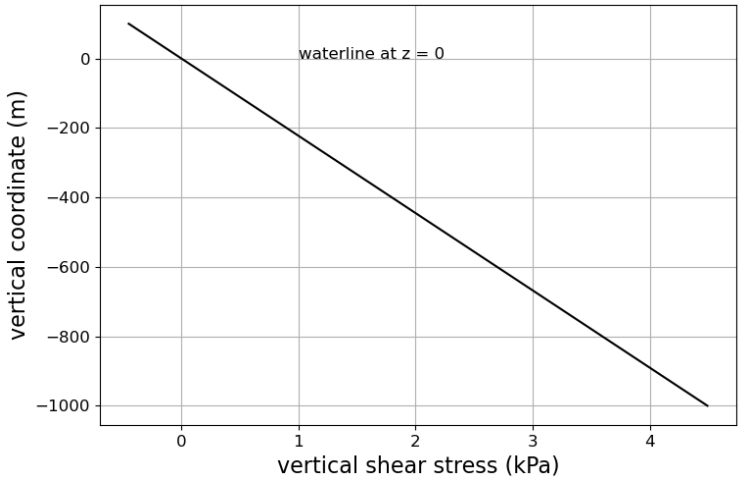
Since the purpose is to clarify some language/history I feel the language in the paper should be even clearer. There is still some confusion language around the words zero vs negligible. That some derivatives of vertical shearing is negligible in some equations does not mean it is considered zero. I think this is what the authors want to clarify but I think it can be made even clearer and explicit. Maybe do some definitions of these words.

We agree that clarity should be a primary goal here, and we appreciate having any potentially confusing language pointed out. We have emphasized, in the revised manuscript, the difference between a value being zero in reality vs. being neglected for the sake of constructing a useful approximation. For example, see our parenthetical clarifications in lines 38 and 65.

We do wish to note that this is a separate issue from the primary purpose of our manuscript. To reiterate our intention, we aim to point out that, *although historical modelers did neglect vertical shear, modern modelers do not* (as pointed out by the reviewer, and in our Equation 4b, modern modelers neglect only certain derivatives of vertical shear). In our readings of the literature, we have not personally noticed any confusion regarding the meanings of "negligible" and "zero," though we agree the distinction is important. We have slightly reworded the abstract to avoid misdirecting the reader toward that topic.

Also I would like to see 1) a plot of a computed solution to equations 6 (perhaps instead of the current figure),

Below, we have attached a plot illustrating the vertical shear stress solution of Equation 6b for a surface elevation gradient of $\frac{d}{dx}h = -0.001$. The vertical coordinate, z, spans from ~1000 meters below sea level to ~100 meters above sea level (representing a ~1 km thick shelf at flotation). This plot demonstrates the simple, linear dependence of vertical shear stress on z. Since Equation 6b, shown below, is such a simple relationship, and since 6a is already well established, we hope you might support our keeping the current figure instead of replacing it:



2) include some key paragraphs from the historical paper where they use the words "zero" and "negligible". I think this is important to do direct cites so that the historical papers are represented correctly.

We have provided some direct quotes, as requested. See line 23 for a quote by Thomas (1973) and line 28 for a quote by Sanderson and Doake (1979). Although we did not find the space to directly quote others, we refer the reviewer to Weertman's (1956) Equation 3, which states that "$\sigma_{xy} = \sigma_{xz} = \sigma_{yz} = 0$" and Robin's (1975) comment that they "assume the shear stresses in the xz and y planes to be zero."

In our interpretation, these quotations are intended only within the context of the authors' own approximate models (i.e., these quotations do not, to us, imply that the authors mistakenly believed vertical shear was exactly zero in real ice shelves). Rather, our takeaway is that these authors all neglected vertical shear, in contrast with modern authors.

Specific comments:

Page 1: state why we are interested in t_xx - intuitively one would be interested in e.g. velocity and surface elevation h

This is a good point. We now state, on line 11: "Using a depth-averaged constitutive relation, expressions of this form permit the calculation of strain rates and velocities."

Line 20-25: Write the mathematical symbol for vertical shear

Written (line 23).

Line 30. Is it really that they previously thought it is exactly zero? If so please cite some sentence from the papers where they say vertical shear is zero. Perhaps they thought that it was non-zero but negligible, only that they didn't formalise this thinking with perturbation expansions? Clarify.

We have provided some direct quotes, as requested (see one of our previous comments). Even so, we agree with the reviewer that it is unlikely these pioneering authors thought vertical shear was exactly zero in real ice shelves. In our interpretation, they describe vertical shear as being zero only in the context of their approximate models (i.e., they are saying that they have neglected the term). This is to be held in contrast with the modern approach, which neglects only certain derivatives of vertical shear, as you have noted above.