General comments

Overall, the authors of "Simulated dynamic regrounding during marine ice sheet retreat" have taken the comments made by Dr Todd and myself into account and the quality of the manuscript has improved. However, there are still some points that I don't really share with the authors and which are listed below. Then, in a second section, I adress a few specific issues that are left in the new version of the manuscript.

First of all, there is still a problem with your corrected version of Eq. (3). If you want your notations to follow the ones used in Brondex and others (2017) as stated in your response to reviewers comments then it should be:

$$\chi = \frac{u_b C_S^n}{C_{max}^n N^n} \tag{1}$$

The reason for that is that the relationship between the factor A_S you used in the first version of your manuscript and the factor C_S that has been used by Brondex and others (2017) is $A_S = C_S^{-n}$. Indeed, by construction, the cavitation friction law is such that it is perfectly equivalent to a Weertman-type friction law (i.e. $\tau_b \rightarrow C_S u_b^m$) far upstream the GL where N is very high and perfectly equivalent to a Coulomb-type friction law (i.e. $\tau_b \rightarrow C_{max} N$) at the GL where $N \rightarrow 0$; if you were to keep Eq. (3) as it is in the current version of the manuscrit then there would be an inconsistency between the C_W of Eq. (5) and the C_S of Eq. (3) and, in addition, the units given for C_S in Table 1 would be wrong.

This lead me to the heart of my criticism: the way you chose the values of the friction parameters C_W and C_S (which you still describe as a "sliding parameter" in P3 L16 while it should be called a "friction parameter" since an increase of C_S leads to an increase of τ_b) to get your two initial states is still unclear. In the new version of the text, it is said that "For this study we chose a Weertman friction coefficient such that the Weertman and Cavitation relations give similar values of τ_b far from the grounding line (with high height above flotation) and that would also result in the initial position of the grounding line being within a few km for both sets of experiments". But in that case, given the aforementioned asymptotic behavior of the cavitation friction law at high effective pressure, C_W and C_S should have the same value which is not the case looking at Table 1. Is that a consequence of the mistake you made in Eq. (3) ? I don't ask you to follow the same initialisation procedure as in Brondex and others (2017) but there is definitely something which needs to be clarified here.

The second point I wanted to raise regards the sensitivity of your results to the value attributed to the parameter C_{max}. It is stated in your response that "[you] don't see an argument why C_{max} should be especially important". By constrcution, the value of the parameter C_{max} controls the length of the region located upstream the GL over which the cavitation friction law reduces to a Coulomb law: the higher this value, the narrower this region. In other word, if the value attributed to C_{max} would have been higher than the value you have chosen (i.e. $C_{max} = 0.1$), the values of τ_b given by the two friction laws would have been closer and, as a consequence, the bottom ice shelf profile obtained with the cavitation friction law right downstream the GL would probably have been more similar to the strongly concave shape you get with the Weertman law (Brondex and others, 2017, see). Yet, you do admit in your manuscript that "The strongly concave lower surface of the ice shelf just downstream from the grounding line in the case of Weertman sliding increases the water column depth under the ice shelf and reduces the likelihood of regrounding." That is precisely the reason why I do think that higher values of C_{max} could have prevented the "dynamic regrounding" to occur with the cavitation friction law. Although it would have been the best thing to do, I agree that a sensitivity study is a large undertaken and I don't expect you to perform one. However, to my mind it would be good to state in your paper that the ice shelf bottom profile obtained with the cavitation law might be sensitive to the value attributed to the parameter C_{max} with higher values giving a more concave shape and, as such, reducing the likelihood of dynamic regrounding.

Specific comments

First of all, note that the pages and lines listed below refer to the version of the manuscript with the blue and red colors which follows the authors response to the reviewers comments in the same document.

P2 L3: "such as Pine Island Glacier, have been also been a particular focus " → typo

P2 L7: "Brondex et al. (2017)" → (Brondex et al., 2017)

P2 L10: I think you mean "shear" and not "sheer", don't you ?

P2 L14: which are implemented ?

P2 L17: You need to reformulate this sentence as the Budd law does not satisfy the Iken bound (the Schoof law does).

P3 L13: Eq (3) needs to be corrected for consistency with Eq. (5). See general comments.

P3 L16: C_S is a friction parameter. In addition, it is still not stated in the text that in your case $q = 1$ and why this value has been chosen.

P4 L1: I think there is a problem with this sentence.

P5 L7: See general comments.

P5 L22: Continues to retreat ?

P8 L9-10: There are several problems in this sentence.

P8 L14 to P9 L1: The first and second sentences of the discussion section give redundant information. I think that they should be reformulated.

P11 L3: Remove the quote mark at the end of the line.

P11 L9: Some parenthesis need to be removed here.

P11 L10-17: There are many things that should be changed in this paragraph. First of all, there are several english mistakes. Second, the sentence starting at L11 is not clear at all to me. Also, I don't understand why there is, from time to time, a capital C at the beginning of the word Cavitation (it is also the case elsewhere in the manuscript). I advice you to read it again carefully and correct it.

P12 L17: I have the feeling that this sentence and the one L14P12 contradict each other. At least, the fact that a 250m mesh resolution at the GL is sufficient to prevent numerical arctefact when using a Weertman fricition law is not really convincing from what is written in this paragraph.

Table 1: C_W and C_S ought to be called friction parameters instead of sliding parameters as an increase of their values leads to an increase of τ_b

References

Brondex J, Gagliardini O, Gillet-Chaulet F and Durand G (2017) Sensitivity of grounding line dynamics to the choice of the friction law. Journal of Glaciology, **63**(241), 854–866