1 General Comments

Overall, I am happy with the response to the earlier reviews and the revised manuscript. I originally suggested the paper be extended, and speculated on a few routes the authors might follow: they considered each of those and either incorporated new material or made a reasonable response. I have a few comments.

2 Specific Comments

2.1 Response to ice divide migration

I don't think that inequality (3) distinguishes between the U and S cases - but it could be made to do so (approximately). The conditions for a steady state include $\frac{\partial x_g}{\partial t} = 0$ and $\frac{\partial x_i}{\partial t} = 0$ as well as $\frac{\partial V_\ell}{\partial t} = 0$, so that

$$a(x_i - x_g) = -Q_g. \quad (1)$$

Q_g is typically said to be function of the bedrock elevation, b, through the flotation thickness $H_f = -\rho_{water}/\rho_{ice} b$, so a steady state of the S type exists only when eq 1 is satisfied for some $Q_g(b)$ with $b \leq b_{ridge}$ and $|x_g| > |x_{ridge}|$. There is a well known approximation to $Q_g(b)$ for the SSA, if not other models, so it might be illustrative to add a line denoting that approximation to $-Q_g b_{ridge}$ to the plots of $a(x_i - x_g)$.

2.2 Melt-rate interpolation

Both reviewers noted that the response of basin r to sub-shelf melting was unexpected, given the 1HD nature of the problem. The authors make it clear that the response is essentially down to their use of a melt-rate interpolation scheme that places some melting (in effect) on grounded ice. They refer to this scheme as a caricature (a choice of word that I enjoyed), implicitly acknowledging the fact that such schemes are bound to produce some erroneous retreat, and in some cases (such as in the $r-$basin here) error-dominated retreat (at least to begin with – at some point on the retrograde slope the MISI retreat might be much larger, but all of the retreat on the prograde slope must be due to the sub-grid scheme rather than ice dynamics). They are, I think, correct to note that their use of this scheme does not make their results invalid with regard to the central subject of the paper, the interaction between the r and ℓ basins (the ℓ basin has no melt applied) .

I do think the paper needs some more specific statements.

1. The revised manuscript describes the melt interpolation as a highly localized perturbation. I would say that the interpolation qualitatively resembles the response to loss of buttressing by increasing the flux out of the last grounded cell only.
2. A clear statement noting that this sort of scheme produces an extra flux proportional to $m\Delta x$ compared to not using such a scheme, where m is the melt rate and Δx is the mesh spacing, which is not likely to be correct for any given resolution and may dominate the results by inducing sustained excess grounding line retreat, especially at low spatial resolution. Schemes like this must be used with care – and in most cases, should not be used, unless the resolution is so fine that ice dynamics clearly dominates. I think this is important because so many groups have begun to use PISM, and the sub-grid melt might seem like a plausible technique to someone less familiar with grounding line dynamics.

3 Technical Corrections in the new material

P6,line 4 'The model is set up flow line and no friction is applied at the lateral ice margins' could be 'The model is set up in a flow line configuration with no lateral drag.'

P6,line 7 'Hence there is no variation in cross-ow direction (y direction)' → Hence there is no variation in the cross-ow (y) direction'

P8, '...investigated with a perturbation analysis' etc: should this really be described as a perturbation analysis? You could just say

'The stability of the ice in the basin ℓ is determined by the distance that the ice divide moves towards basin ℓ in response to thinning in basin r.'

P19, line 7 'grouding line' → 'grounding line'

P14, line 11 '... depicts ...' → '... imparts ...'?

P16, line 6 'Figures 11a and b exemplary show that a destabilization in basin l is induced independent of the applied perturbation in basin r.' → 'Figures 11a and b show that similar destabilization take place in basin ℓ in response to either the atmospheric or oceanic perturbation in basin r.'