

The new manuscript addresses all the points I was concerned with, and it is in very good shape. I look forward to trying-out Icepack with students.

Two small things.

lines 54-55: Probable typo: "The evolution equations for ice thickness and velocity are necessary for any simulation, BUT other fields with their own dynamics can be a part of the problem as well."

lines 88-94: Some thoughts, as follows. It is not "erroneous" for an explicit prognostic solver to compute negative thickness values, but rather inevitable, and even correct (as the  $L^2$  solution of the VI). Also, the "principled" (i.e. implicit) approaches do not "track" the free boundary, e.g. as an interface would be tracked in an immersed boundary method, though the free boundary arises in the solution. Thus the 6 sentences "A naively-implemented ... through Firedrake." could be substantially simplified, e.g.:

When our prognostic solver computes negative thickness values at a time step, where there is ablation in ice-free regions, we truncate the thickness to zero, thus approximating the free boundary. An implicit approach could instead treat the free boundary problem directly as a variational inequality (Jouvet and Bueler, 2012). While Icepack currently lacks such a scheme, it will be the subject of future development.