

The work “Optimal numerical solvers for transient simulations of ice flow using the Ice Sheet System Model (ISSM)” by Habbal et al. has been improved during the revision process. In particular the authors explained better the scope of the work, improved the description of the methods and results, and added a benchmark (ISMIP HOM test A) to investigate the impact of nonlinear viscosity. However, they did not address other comments of the referees. Most importantly they did not studied the performance of the different solvers/preconditioners in the case of fast sliding regimes (occurring e.g. on ice shelves), which are known to be particularly challenging for standard solver/preconditioners. For this reason I would encourage the authors to try solving test A (with same aspect ratio) replacing the no-slip condition at the bed with a sliding condition with very small friction coefficient.

In the numerical results, total computational times are reported. However, given that the focus of the paper is on linear solvers and preconditioners, it would be useful if the authors reported, at least for a selection of solvers, also the computational time for the liner solvers/preconditioners.

I would like to bring to the attention of the authors a paper published very recently that might be relevant to this work: “A Matrix Dependent/Algebraic Multigrid Approach for Extruded Meshes with Applications to Ice Sheet Modeling” by Tuminaro et. al, *SIAM J. Sci. Comput.*