

1. Model detail

1. Model: PISM [1, 2]
2. Repository: <https://github.com/pism/pism/commits/stable0.7>, revision: v0.7.1-22-g4d8d9d9
3. Englacial stresses: SSA, Glen's law, $n = 3$, $A = 8.0 \cdot 10^{-25} \text{ Pa}^{-3} \text{ s}^{-1}$
4. Basal traction: Power law: $|\tau_b| = \beta^2 u_b^{1/3}$, $\beta^2 = 3.16 \cdot 10^6 \text{ Pa m}^{-1/3} \text{ s}^{1/3}$, interpolated at the grounding line [3]
5. Space discretization: finite differences, fixed regular grid, square cells, $\Delta x = 1 \text{ km}$
6. Time discretization: CFL criterion [1]
7. Grounding line: position is interpolated onto sub-grid to interpolate basal friction, one-sided differences are used to calculate driving stress [3]
8. MISMIP3d name: TAL2 (but here with one-sided instead of centered differences to calculate driving stress at the grounding line)
9. Other: for calculation of the surface gradient, ice thickness H is transformed by $\eta = H^{(2n+2)/n}$, for the purpose of a better approximation of ice-sheet margins [4]

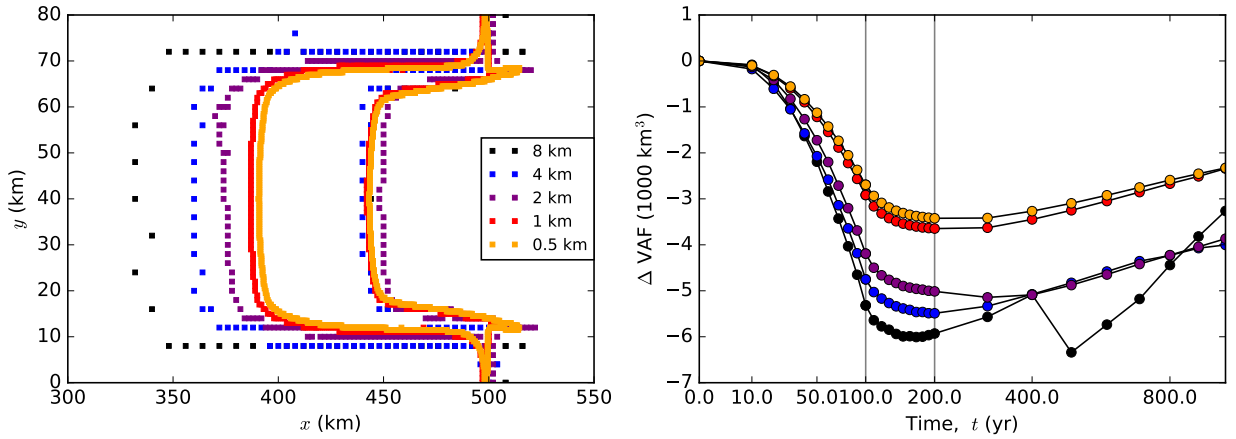


Abbildung 1 Convergence plots, showing grounding-line positions before and after perturbation of initial equilibrium (left-hand-side panel) and change in volume above flotation (right-hand-side panel).

References

- [1] Ed Bueler and Jed Brown. Shallow shelf approximation as a "sliding law" in a thermomechanically coupled ice sheet model. *Journal of Geophysical Research: Solid Earth*, 114(3):1–21, 2009. ISSN 21699356. doi: 10.1029/2008JF001179.
- [2] PISM authors. PISM, a Parallel Ice Sheet Model, 2017. URL <http://www.pism-docs.org>.
- [3] J. Feldmann, T. Albrecht, C. Khroulev, F. Pattyn, and A. Levermann. Resolution-dependent performance of grounding line motion in a shallow model compared with a full-Stokes model according to the MISIP3d intercomparison. *Journal of Glaciology*, 60(220):353–360, 2014. ISSN 00221430. doi: 10.3189/2014JoG13J093.
- [4] Ed Bueler, Craig S Lingle, Jed A. Kallen-Brown, David N. Covey, and Latrice N Bowman. Exact solutions and verification of numerical models for isothermal ice sheets. *Journal of Glaciology*, 51(173):291–306, 2005. ISSN 00221430. doi: 10.3189/172756505781829449.