

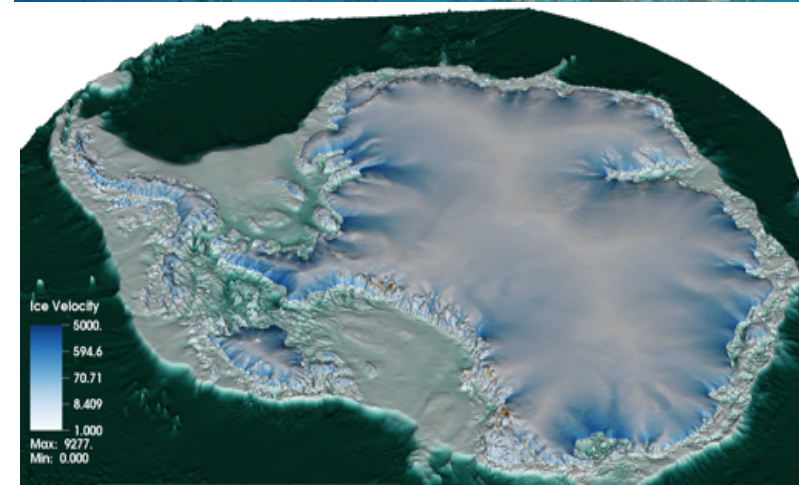
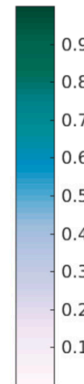
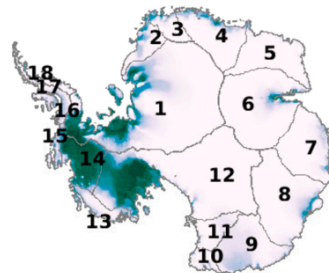
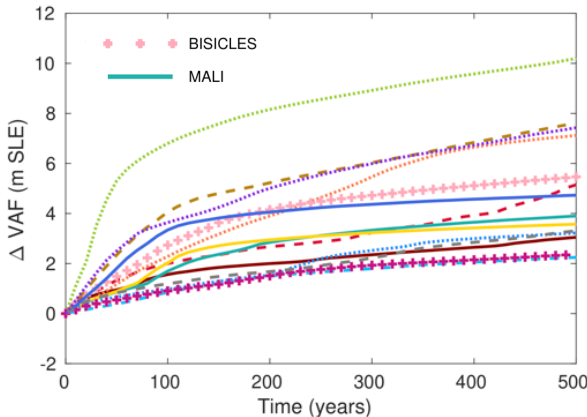
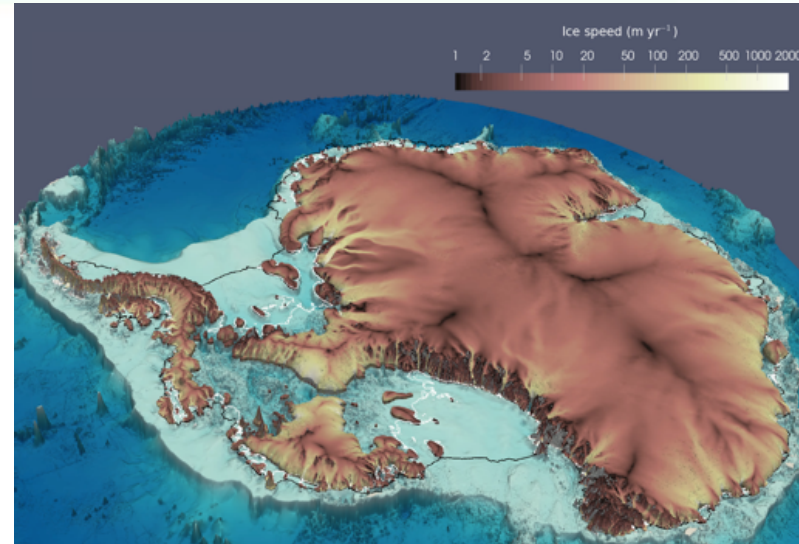
Using SciDAC Ice Sheet Models to Bound Antarctica's Potential Contribution to Future Sea-Level Rise

Scientific Achievement

- Ice sheet models from DOE SciDAC's *ProSPect* project have contributed to a multi-model intercomparison on the importance of ice shelf buttressing to Antarctica ice sheet evolution
- DOE's contributions represent the highest-resolution, highest fidelity, and largest-scale computational simulations contributed

Significance and Impact

- Results provide an upper bound estimate for potential sea-level rise from Antarctica ice sheet dynamics
- Multiple models applied to identical experiments provide an estimate for the impacts of model structural uncertainty on sea level projections from ice sheet models



Meters of sea-level equivalent (m SLE) increase over time from all models following removal of floating ice shelves (above left). The ensemble-mean fraction of ice thickness reduction after 500 years (above right), highlighting the vulnerability of West Antarctica to loss of its ice shelves.

Antarctic ice sheet 200 years after all floating ice shelves are removed. Shown are simulation results from *ProSPect* MALI (top) and BISICLES (bottom) ice sheet models.