



Towards a dynamic Greenland Ice Sheet component in E3SM

Andrew Nolan, Los Alamos National Laboratory | E3SM

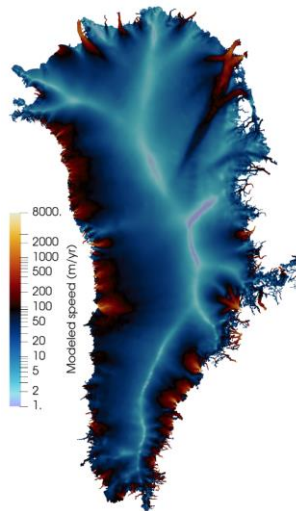


Standalone MALI Greenland Ice Sheet Configuration Run to 2100

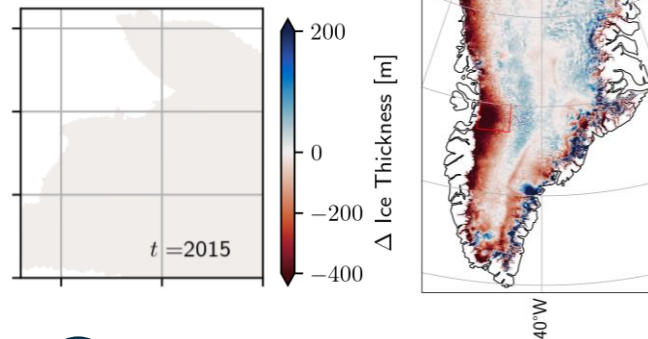
- 1-10 km Greenland initial condition with higher-order dynamics, calving, and melting
- Projections to 2100 using CMIP5 atmosphere and ocean forcing
- Parameter tuning underway

Tuned Greenland configuration will be used in coupled E3SM runs

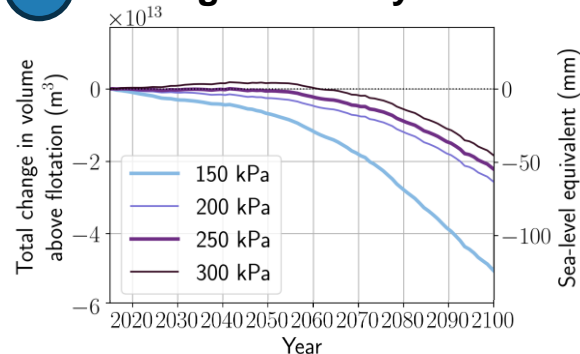
1 Optimized basal friction



2 Ice thickness change through 2100



3 Calving sensitivity tests



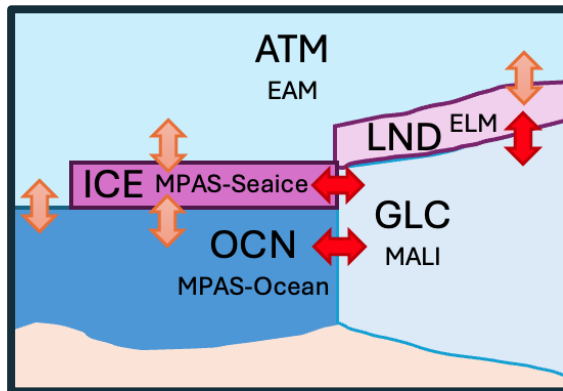


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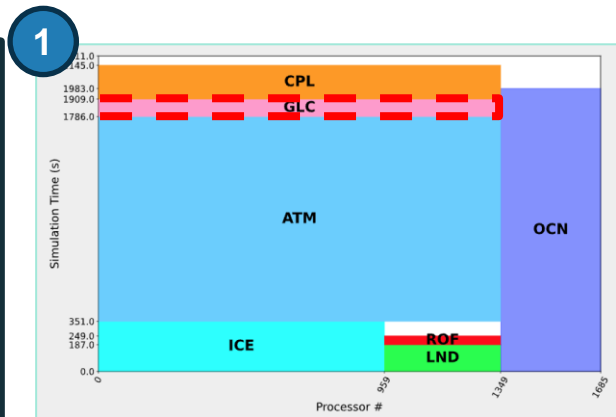
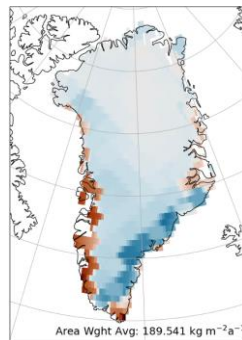
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Greenland Ice Sheet component running in E3SM

- 1 ELM-MALI (IG) and fully coupled with MALI (BG) cases being run
- 2 LND-GLC coupling (surface mass balance) operational
- 3 OCN-GLC coupling for Greenland in development
 - o marine melting parameterized through unresolved fjords



2 ELM Surface Mass Balance



3 Ocean temperature extrapolated through fjords

