

Coupling Ice Shelf Cavities into the ACME Model

D. Jacobsen, X. Asay-Davis, M. Petersen, A. Turner, J. Fyke

- Ice shelf cavities have been successfully incorporated in coupled ACME
- Cavities permitted via:
 - Upper ocean pressure displacement
 - Sea ice limitation
 - Flux masking/re-routing
 - Land runoff alteration
 - Ocean/ice sheet interactions via physically-based 3-equation solve for melt, salt and heat fluxes
- Coupling demonstrated via multi-year oe60to30/ne30 B-compset simulation
- Initial simulation indicates:
 - Ongoing equilibration
 - Resolution of seasonal cycle in sub-shelf cavities
 - Periodic influx of warm ocean waters
 - Connection to seasonal sea ice cycle
- Work ongoing to:
 - Arrive at equilibrated coupled state
 - Correct remaining duplication in snow-capping/sub-shelf fluxes to ocean
 - Begin higher-resolution cavity-enabled simulations

