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# The effects of thermodynamic ice-shelf/ocean interactions in a global circulation model

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Melting/refreezing of ice shelves have strong impacts both on ice shelves (through modification of their shape) and on the ocean circulation (through modification of their water masses). Representation of ice-shelf/ocean interaction in global ocean circulation models continues to be challenging. Using a high-resolution (1/8°), global isopycnal ocean model, MOM6, and a sea-ice model, SIS, we investigate the effects of thermodynamic coupling of Antarctic ice shelves on the various aspects of ocean circulation. The computed melting/freezing rates compare favorable with those derived from the ice-shelf surface observations. Our simulations show that the strong ocean re-circulation near the ice-shelves fronts results in intensive melting there. Analysis of sea ice thickness indicates that thermodynamically coupled simulations produce consistently thicker sea ice compared to the uncoupled simulations.