



Coupling a marine ice-sheet model with a lithospheric deflection model

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The unloading associated with the deglaciation of marine ice-sheets ultimately leads to a shallowing of the bed, a reduced flux of ice through the grounding line and the possibility of readvance, even in the absence of any other climatic forcing. The timescales of this combined ice-earth response are anticipated to be millennial, and may form a significant component in the observational palaeo-record.

We couple a marine ice-sheet model incorporating a moving grounding-line membrane stresses with a visco-elastic spherical earth model, and carry out a series of basic numerical experiments to understand the typical timescales associated with deglaciation, shallowing and the coupled response.