

A Nested High-Resolution Simulation of Circulation in Sermilik Fjord, Greenland

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The Coupled-Ocean-Atmosphere-Wave-Sediment Transport (COAWST)¹ modeling system has been extended to include sea ice dynamics and thermodynamics, ice shelf processes and ice shelf-sea ice interaction. The new system, denoted Polar COAWST, has been tested on the Southern Ocean, nested to the Ross Sea. Polar COAWST has been adapted to the Sermilik Fjord system with three-level one-way nesting from 2250 m->750 m->250 m horizontal resolution grids. In the first instance, marine terminating glaciers at the head of Sermilik Fjord are approximated as freely floating ice shelves. Preliminary estimates of glacier melt rates from a coupled ice-ice shelf-ocean simulation of the summer of 2009 will be presented.

1 Warner, J.C., Armstrong, B., He, R., and Zambon, J.B., 2010, Development of a Coupled Ocean-Atmosphere-Wave-Sediment Transport (COAWST) modeling system: *Ocean Modeling*, v. 35, no. 3, p. 230-244.