

Embedded Models: Application to the Ross Sea and Amundsen Sea Sectors, Retreat from LGM

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Embedded modeling has been described before at these meetings. Embedded modeling allows the use of higher resolution without the computational penalty of simulating the whole ice sheet. With embedded modeling, the whole ice sheet can be run with lower resolution, and the area of interest run as an embedded grid within the coarser solution. This allows us to focus on small-scale features such as ice streams that would not be well resolved in the coarser grid.

We apply the embedded technique to the Ross and Amundsen Sea sectors, focusing on the period from LGM to the present. A sequence of nested grids allows us to go from a continental view at low resolution, to a regional view at intermediate resolution, and finally to an ice-stream-specific view at the full resolution of the BEDMAP data set. Fast flow regions of wet bed, as predicted by the UMISM basal water component, are compared with known ice streams.