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Reconstructing past ice sheet form and flow on high-latitude continental margins from marine geology and geophysics

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Over the last two decades technological developments in marine geophysics and marine geology have driven major advances in our understanding of the glacial geomorphological and sedimentary record of high-latitude continental margins. In particular, the advent of multibeam swath bathymetry has allowed the acquisition of high resolution imagery of submarine glacial landforms and the reconstruction of the form and flow of past ice sheets. In Antarctica, for example, these data have been used to determine both the extent of past ice sheet advance across the continental shelf during the last glacial maximum, fundamental to any palaeo-glaciological reconstruction of the ice sheet, and also the nature of ice-sheet retreat during deglaciation. Such data have also been used to pinpoint the location of former ice streams which drained interior ice sheet drainage basins in the Arctic and Antarctic. Marine geophysical data may also be combined with geotechnical and sedimentological information obtained from sediment cores from which inferences of former subglacial processes and how these pertain to ice-sheet dynamics can be made. This talk will focus on the submarine glacial landform and sediment record from the continental shelf of Antarctica, obtained using a range of marine geophysical and geological techniques at different scales, and how these data have been used to elucidate past ice sheet form, flow dynamics and subglacial processes.