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Ice-sheet retreat from the continental shelf offshore of Northwest Ireland following the last glacial maximum: sedimentary facies and initial chronology

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The glacial history of North-West Ireland and the adjoining continental shelf have been debated for over a century. The traditional reconstruction of a British-Irish Ice Sheet (BIIS) in this region was based predominantly on terrestrial evidence and showed an ice sheet that did not extend beyond the present coastline of Britain and Ireland. This traditional reconstruction of a relatively restricted ice sheet has been replaced in the last decade by the reconstruction of a more dynamic ice sheet that, during the Last Glacial Maximum (LGM), flowed onto the continental shelf and extended to the NW-Irish shelf edge. High resolution swath bathymetry and sub bottom profiler data along with sedimentological, micropalaeontological and geochronological investigations of sediment cores from the shelf offshore of NW Ireland are being used to reconstruct the timing, extent and the nature of retreat of the BIIS from the shelf following the LGM. A total of twenty seven vibro-cores were collected during two research cruises on the NW-Irish shelf in 2008 and 2014 on board the Irish and UK research vessels the Celtic Explorer and RRS James Cook The cores were collected in two east-west orientated transects across a series of arcuate recessional moraines from the shelf edge to Donegal Bay. These moraines record progressive stillstands of a lobate ice sheet margin during its retreat from the shelf edge, although to date, there has been a lack of direct dating control to constrain the timing and rate of ice retreat across the shelf. Sedimentary descriptions of core facies and physical properties, combined with taxonomic analysis of foraminifera will be presented along with radiocarbon dates. This forms the first detailed reconstruction of glacigenic sedimentation, depositional environments and the timing of ice sheet retreat across the shelf offshore of NW Ireland. The project is part of a larger EU funded research programme GLANAM ('Glaciated North Atlantic Margins') which is investigating the nature of glacially influenced sedimentation and ice sheet history around the continental margins of the North Atlantic during the Quaternary.