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Marine geological and geophysical records of the last British-Irish Ice Sheet on the continental shelf west of Ireland

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The record of glaciation on the continental shelf west of Ireland has, until recently, been relatively poorly studied. The UK NERC funded project BRITICE-CHRONO collected marine geophysical data in the form of multibeam swath bathymetry and sub-bottom profiles supplemented by over 50 vibro- and piston cores across the continental shelf west of Ireland during cruise JC106 of the RRS James Cook in 2014. Across the western Irish shelf, offshore of counties Galway and Clare, a series of large arcuate moraines record the former presence of a grounded ice sheet on the shelf. However, geophysical data from further to the west across the Porcupine Bank show a series of ridges and wedge-shaped sedimentary features whose form is consistent with an origin as moraines and/or grounding-zone wedges. Sediment cores from several of these landforms recovered stiff, massive diamictons containing reworked shells that are interpreted as subglacial tills. Cores from the eastern Porcupine Bank recovered laminated muds with cold-water glacimarine foraminifera, in some cases overlying till. Collectively the geophysical and sedimentary data imply the presence of grounded ice across the northern Porcupine Bank and thus much further west on the Irish margin than has previously been considered. This ice underwent retreat in a glacimarine setting. The large 'Olex Moraine' on the western Irish shelf is thus interpreted as recessional feature. Work is currently underway to dates these features and to obtain a retreat chronology for this sector of the last British-Irish Ice Sheet.