

A regional seismostratigraphy for Quaternary deposits on the Malin Shelf, northwest of Ireland

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An updated regional seismostratigraphy is presented for Quaternary deposits on the Malin Shelf off NW Ireland. This seismically well-determined part of the Irish continental shelf provides a natural link between north-eastern Atlantic deep-sea and mainland sequences. The area includes a gas pock-marked region of the seabed with thick Quaternary deposits up to 160m. This study assesses 2650 km of regional 2D, 310 km of Sparker and >7000 km of Pinger lines. The determination of sediment type and quantity (i.e. extent and thickness) along with geomorphological features are crucial components of understanding ice-sheet/shelf interactions.

The confluence of Scottish and Irish Ice during previous glaciations have resulted in a complex Quaternary stratigraphy on the Malin Shelf. At least seven sedimentary packages inferred to range from pre-Devensian to the present, are deposited in a region that represents a major control on past ice-sheet dynamics and has implications for glaciation and deglaciation of ice margins around the British-Irish Ice Sheet. These record evidence for repeated extent and style of mid to late Quaternary glaciations and correlate well to seismic stratigraphies of the inner continental shelf west of Scotland. The last glacial maximum unconformity is extended to south of the Malin Sea, encompassing the southern margin of cross-shelf area ice flow pattern. Buried glacial geomorphological features including drumlins are interpreted.