

Pre MIS 12 glaciations in Britain and Ireland: synchronisation with other European and circum North Atlantic ice sheets, and geological controls on their preservation.

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The late Middle and Late Pleistocene history of the British-Irish Ice Sheet (BIIS) is well documented in both offshore and terrestrial records, and there is compelling evidence for widespread glaciations during MIS 12 (in Britain), MIS 8 (in Ireland), and within both Britain and Ireland during MIS 6 and 2. Ongoing controversies surround the existence of older ice in Ireland, and the possibility of glaciations during MIS 16 and 10 within Britain. Prior to MIS 12, the history of the BIIS is something of an enigma, especially when compared to the history of other ice sheets within Europe and the North Atlantic region. Equally, the position of Britain and Ireland relative to the Polar Front and the North Atlantic Current, and the highly dynamic nature of the ice sheet during known glaciations, make it perplexing as to why evidence for earlier glaciation is so limited. Is this enigma an artefact of stratigraphic and geological interpretation? Is it a facet of preservation linked to the scale of glaciation? Or, were Britain and Ireland simply not glaciated during this time interval? Within this paper, we examine these issues as we present, based upon new stratigraphic information, an extended glacial history of the BIIS that spans the past 2.6 Ma and demonstrates the repeated expansion of ice into marine areas prior to the Mid-Pleistocene Transition. Whilst, uncertainties exist surrounding the precise timing of many of the Early Pleistocene glacial events, at a crude temporal scale the BIIS exhibits a similar step-wise increase in the scale of glaciation displayed by other ice sheets in Europe and the North Atlantic region.