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The response of the last British and Irish Ice Sheets.

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Notions of the geometry of the last British and Irish Ice Sheets (BIIS) vary widely. For example, some authors claim that the ice sheet reached the continental shelf-edge yet others have contested that it was considerably thinner and less extensive, terminating only a short distance offshore. These differences in extent have implications not only for underpinning the geometry and dynamics of the whole of the BIIS during build-up to maximum extent and subsequent deglaciation but also for palaeo-environmental reconstruction on a wider-scale. Questions regarding total ice sheet volume, concomitant sea-level, isostatic loading and the impact of melt-runoff and calving flux are fundamental to a full understanding the ocean-cryosphere-atmosphere system. We present results from an ice-flow model applied to a 1 to 5km adaptive domain of the British Isles which includes Eire and extends from Brittany to north of the Shetlands. A suite of experiments is initiated where the parameters controlling ice sheet thermomechanical response are perturbed, whilst reference climatology and eustacy are held constant. Direct comparison of modelled output against the onshore and offshore glacial-geomorphic record enables validation, clustering and elimination of parameter choices. Initial results reveal the BIIS to be a dynamic, relatively low-aspect ice sheet with much of its bed grounded below sea-level characterised by numerous independent accumulation centres drained and drawn-down by a series of fast-flowing outlet glaciers and ice-streams. However, extensive core upland areas, despite being overridden, experienced cold based ice and were hence preserved and protected from the full impact of glacial erosion. Further field constraints on ice elevation and basal flow/thermal-regime are required to provide the necessary three-dimensional fix on modelled basal and englacial thermomechanics.