

# Lithostratigraphy, Quaternary, Northern England

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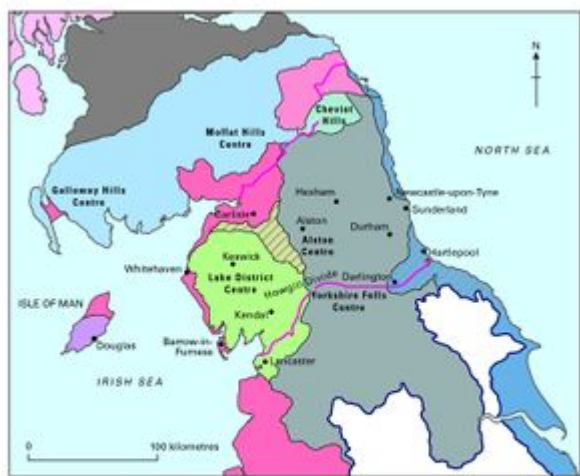
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## Introduction



Distribution of glacial subgroups. The geographical boundaries are approximate, but will be refined as knowledge of the distribution of defining formations of till is improved. P916096.

A comprehensive lithostratigraphical framework covers all onshore Quaternary deposits in Britain. The Albion Glacigenic Group embraces the older glacial deposits previously described as 'Older Drift', although few examples occur in northern England. The Caledonia Glacigenic Group embraces all glacial tills, gravels, sands, silts and clays that form surface deposits within the limits of the

Devensian ice sheet. Being the products of the latest glaciations, these deposits commonly have distinct morphological expression and are equivalent to the 'Newer Drift' of previous classifications. Subgroups within the Caledonia Glacigenic Group ([P916096](#)) are based on the provenance of the constituent till, which strongly reflects the composition of both the underlying bedrock, and that of the particular suite of rocks that the ice crossed before the subgroup till was deposited. The composition of morainic, glaciofluvial and glaciolacustrine deposits is similarly influenced, though to a lesser extent.

Deposits of the Central Cumbria Glacigenic Subgroup are typically yellowish or greyish brown and contain clasts derived mostly from the Lake District, Shap Fell and the Howgill Fells: lithologies present include basalt and welded tuff (Borrowdale Volcanic Group), Lower Palaeozoic slate and wacke-sandstone, granite and Upper Palaeozoic limestone and sandstone. The clasts were derived by an independent ice cap centred over the Cumbrian Mountains. The upland parts of the Isle of Man are generally mantled by stony diamictons containing clasts of Lower Palaeozoic wacke-sandstone and slate that are also of local origin; these comprise the Manx Glacigenic Subgroup. The Isle of Man became a palaeonunatak relatively early in the deglaciation, allowing periglacial processes to rework the till and the frost-shattered bedrock, resulting in thick deposits of head. The several subsequent glacial readvances affected only the margins and north of the island.

The Irish Sea Coast Glacigenic Subgroup includes deposits derived from the floor of the Irish Sea in addition to southern Scotland, the Vale of Eden, the west Cumbrian Coalfield and the Lake District. They are typically vivid reddish brown or grey, containing clasts of red and yellow Permian sandstone, Lower Palaeozoic wacke-sandstone and siltstone, granite and granodiorite. Welded tuff, mudstone and coal, together with Pleistocene shell fragments and reworked marine microfossils, are common to the south of the Solway Firth. The deposits were laid down from ice that flowed around the north-west flanks of the Lake District to merge with ice sourced in the Southern Uplands of Scotland; the combined ice sheet then flowed southwards through the Irish Sea basin towards the Celtic Sea, intermittently overwhelming the north-eastern end of the Isle of Man.

The North Sea Coast Glacigenic Subgroup includes a suite of brownish grey to reddish brown deposits that contain clasts derived predominantly from the Carboniferous rocks of north-east England (yellow, grey and white sandstones, mudstone, limestone, gannister, coal, dolerite), Lower Palaeozoic and Devonian rocks of southern Scotland (wacke-sandstone and mudstone, granite, andesite, red sandstone) and the Permian and younger strata of the North Sea basin (red marl, gypsum, chalk, glaciomarine diamictons). The subgroup was deposited by ice sourced mainly in the Scottish Borders and central Scotland that flowed south-eastwards along the eastern coast of England as far as north Norfolk.

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