

Pre-Palaeogene structure, Palaeogene volcanic districts of Scotland

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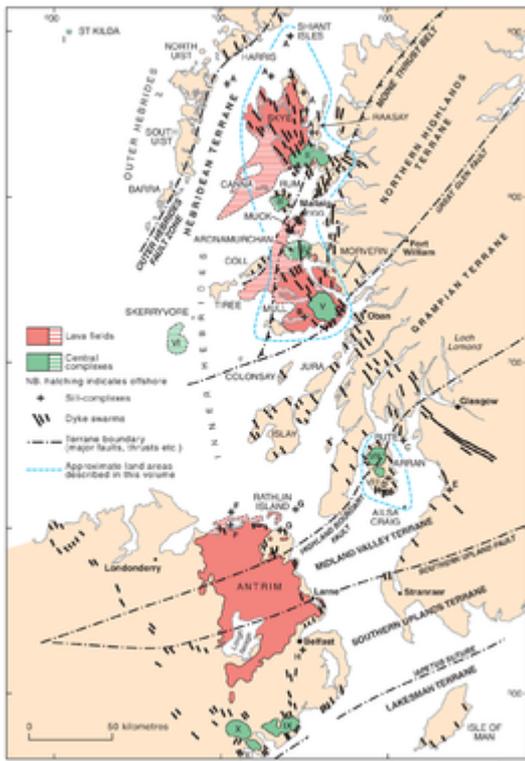
Emeleus, C H, and Bell, B R. 2005. British regional geology: The Palaeogene volcanic districts of Scotland. Fourth edition. Keyworth, Nottingham: British Geological Survey.

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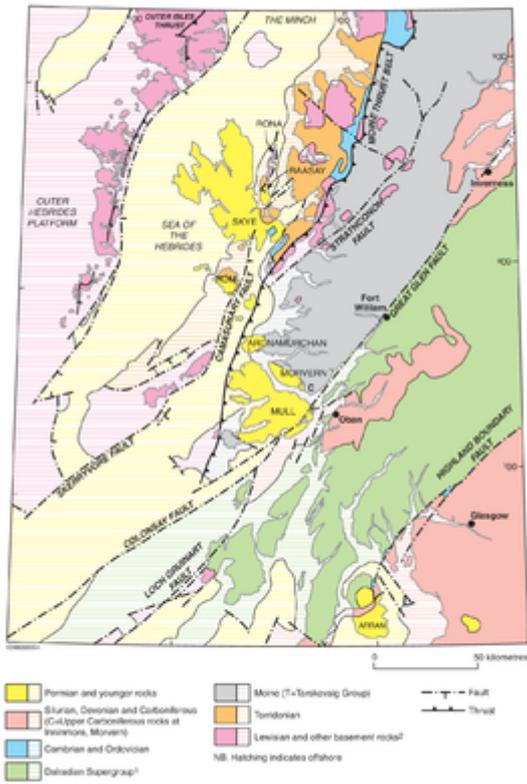
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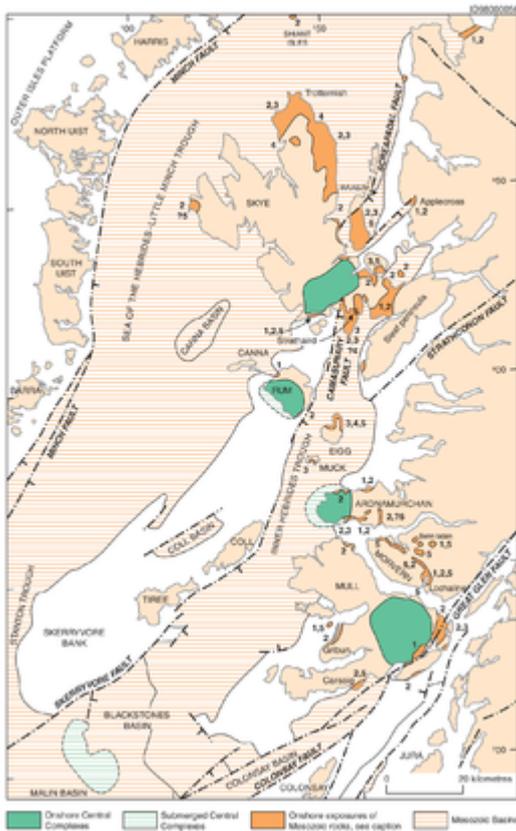
Introduction



Palaeogene central complexes, lava fields, sill-complexes and dyke swarms in western Scotland and north-east Ireland. P914119



Precambrian and Lower Palaeozoic rocks in the district. P914121



Mesozoic basins of the Inner Hebrides and onshore outcrops. P914123

the Torridonian strata before the deposition of the Cambro-Ordovician rocks, so clearly demonstrated in the North West Highlands, is largely obscured on Skye by tectonic contacts within the Moine Thrust Belt. To the south, steeply dipping, north-striking Moine metasedimentary rocks, which were intensely deformed during the Caledonian Orogeny, are invaded by intrusions of the Ardnamurchan Central Complex. Still farther south, the Great Glen Fault and the Highland Boundary Fault, which form two of the major terrane boundaries in Scotland, were active during the Palaeozoic; the Great Glen Fault was subsequently subjected to further significant movement (p. 148).

On Mull, the Great Glen Fault is readily defined between Craignure and north-west of Loch Spelve, where Moine rocks crop out, and Loch Don, where phyllite and limestone of the Dalradian Appin Group occur. The volcanic breccias of Centre I in the Mull Central Complex provide further proof of this fault in eastern Mull. Moine clasts are common in the breccias, whereas there are none of Dalradian lithologies. South of Loch Don, the fault departs somewhat from its north-east-trending course, deviating to the south-east along Loch Spelve and Loch Buie, where it has been deflected by the Mull Central Complex.

The Highland Boundary Fault and the associated Highland Border Complex cross Scotland from Stonehaven in the east to Bute in the west. In northern Arran, where Dalradian rocks crop out extensively, the pillow lavas, cherts and mudstones in North Glen Sannox are assigned to the Highland Border Complex. Various faults in north-east Arran have been proposed as continuations of the Highland Boundary Fault, for example the Corloch Fault and the fault at the eastern edge of the North Arran Granite Pluton, exposed in the White Water above Corrie. On the south side of the granite, the contact between Dalradian rocks and Devonian

(Old Red Sandstone) sandstones and conglomerates was also once regarded as the continuation of the Highland Boundary Fault, deflected during forcible emplacement of the granite pluton (Tyrrell, 1928). Subsequently, however, the Devonian strata have been shown to lie unconformably on the Dalradian rocks south of the granite (Friend et al., 1963) and so movement on these faults appears to have been at least in part contemporaneous with granite emplacement (England, 1992b). Remnants of the Highland Boundary Fault are present in the North Glen Sannox area, but the course of the fault to the south-west is unclear. There is no evidence of significant movement on this fault on Arran during the Palaeogene, or subsequently. Folding and associated cleavage development in metasedimentary rocks of the Dalradian Supergroup predates folds imposed during emplacement of the Paleocene granites of North Arran (p. 151; [P914151](#)).

Late Palaeozoic to Mesozoic structures

The Sea of the Hebrides and Inner Hebrides basins, or troughs, are amongst the most striking pre-Palaeogene structures in the district ([P914123](#)). On Skye, there is unequivocal evidence that the main movement on the Camasunary-Skerryvore Fault, which forms part of the western boundary of the Inner Hebrides Basin, occurred prior to the eruption of the Paleocene lavas. At Camasunary, Middle Jurassic rocks are downfaulted by as much as 200 m against Lower Jurassic and Torridonian strata to the west, but there is only minor displacement of the Paleocene lavas that overlie both. To the south, the thin Lower Jurassic succession on Rum is separated from the thick Middle Jurassic rocks of Eigg by the southern continuation of the Camasunary-Skerryvore Fault. Farther south, for example east of Coll, the proven movements on this fault postdate the Paleocene lavas. On Skye, the northern continuation of the Camasunary-Skerryvore Fault is disturbed and largely obscured by the central complex, which may have caused a westerly offset of the fault. Splays of the fault may

continue on Raasay as the Screapadal Fault ([P914123](#)) and as a major fault in south-east Scalpay.

On Rum, the general moderate west-north-west to north-west dip of the Torridonian and Triassic strata predates the emplacement of the Paleocene central complex. A major fault displacing Torridonian strata on Bloodstone Hill predates Paleocene lavas and intrusions, and a monoclinial structure in the Triassic rocks of north-west Rum was probably synsedimentary in origin (R J Steel in Emeleus, 1997). It is likely that the major north-trending Long Loch Fault on Rum had considerable pre-Paleocene movement, and on Eigg movement on the normal Laig Gorge Fault affects the Mesozoic rocks in the opposite sense to that found in the overlying Paleocene basaltic lavas. Throughout the district there is evidence of a period of uplift prior to deposition of the Upper Cretaceous strata. Small, scattered outcrops of these rocks overlie a wide variety of older rocks that range in age from Proterozoic to Jurassic (Table 7). Further, there is widespread evidence that uplift and denudation at the close of the Cretaceous, or very early in the Paleocene, gave rise to an undulating land surface that may have had significant local relief. Hence, the earliest Paleocene lavas and the associated sedimentary strata rest on a variety of older rocks and some of the Paleocene clastic sediments were clearly derived by vigorous contemporaneous erosion.

References

[Full reference list](#)

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