Dalradian (DAL)

Block Description

Visit https://jncc.gov.uk/gcr-site-list, for more information on GCR blocks and sites
For Precambrian and Structural Geology GCR block descriptions and GCR site lists, visit https://jncc.gov.uk/gcr-blocks-precambrian-and-structural-geology

Introduction

The GCR sites selected for this GCR Block represent youngest stratigraphical division of the Precambrian strata of Scotland (cf. **Lewisian (LEW); Moine (MOINE); Torridonian (TOR); Precambrian of England & Wales (PRE-EG-WL)**), the uppermost part containing a Cambrian fauna (see **Cambrian (CAM)**). 'Precambrian' is a broadly used term for rocks that pre-date the Cambrian Period, i.e. were formed before the Phanerozoic Eon. It encompasses such a vast span of time, extending back to at least 4000 Ma, and has been subdivided into two Eons, the Archaean —and the younger Proterozoic Eon. The Precambrian rocks selected for this block belong to the latter, specifically to its youngest part, which has been given the chronological term 'Neoproterozoic'.

Dalradian rocks are typically developed in the high ground that lies to the east and south of the Great Glen of Scotland. This was the old Celtic region of Dairadia. The rocks consist in large proportion of altered sedimentary strata, now found in the form of mica-schist, graphite-schist, andalusite-schist, phyllite, schistose grit, greywacke and conglomerate, and epidiorites, chlorite-schists, hornblende schists that probably mark sills, lava-sheets or beds of tuff, intercalated among the sediments. The Dalradian rocks include the 'Eastern or Younger schists' of eastern Sutherland, Ross-shire and Inverness-shire, as well as the metamorphosed sedimentary and eruptive rocks of the central, eastern and south-western Highlands. The Dalradian has been traced into the north-western counties of Ireland. The whole of the Dalradian complex has suffered intense crushing and thrusting.

The Dalradian Supergroup of Scotland is one of the thickest (~20km) and allegedly most complete Neoproterozoic-Cambrian stratigraphic successions world-wide, containing a possible 250 million year (Ma) record of evolving Neoproterozoic environments. In the absence of a fossil record, the geochronology and stratigraphic correlation of these metasediments have relied on the use of local time-markers (e.g. dating volcanic rocks) and chemo-stratigraphical correlation techniques, and are therefore largely unconstrained. Although subjected to regional metamorphism and multi-phase deformation, the Dalradian contains large tracts of low-grade and less intensely deformed rocks. Within these, lithostratigraphic relations and sedimentary features are well preserved, providing critical evidence of sedimentary environments, and the wider tectonic and environmental controls on sedimentation and basin evolution.