



Precambrian of England & Wales (PRE-EG-WL)

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 the English and Welsh geological record of Earth history up to the beginning of the Palaeozoic Era, which began about 543 million years ago (Ma). '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'.

In British rocks, the beginning of Cambrian time is commonly marked by a widespread unconformity, and also marked by what is often considered to be the onset of the appearance of small shelly fossils, which here therefore marks the end of the 'Neoproterozoic'.

Scottish Precambrian rocks, which had a very different geological history have their own GCR Blocks: **Lewisian (LEW)**, **Torridonian (TOR)**, **Moine (MOINE)** and **Dalradian (DAL)**.

Outcrop pattern

The Precambrian basement of England and Wales is exposed within a number of inliers, which are regarded as 'windows' through the cover strata. The rocks that are revealed are of considerable geological diversity. The Precambrian outcrops are sparsely distributed and generally occupy relatively small areas of southern Britain.

Palaeoenvironment and palaeogeography

The Precambrian basement of southern Britain is most conveniently grouped into a number of large crustal entities, called 'terranes'. Each terrane represents a microcosm of geological evolution and its rock assemblages may have arisen from a diversity of geological processes, commonly involving episodes of volcanism, igneous intrusion, sedimentation and deformation, all of which can be framed in the context of plate tectonic interactions. Each terrane represents views Precambrian rocks not as a single basement entity, but rather as belonging to a number of crustal fragments that together formed a late Precambrian microcontinent known as 'Avalonia'. Many of these fragments initially evolved independently of each other and were subsequently joined together, forming a 'collage' of terranes. This terrane amalgamation took place along major tectonic boundaries that are now seen as wide shear zones or fault complexes. Although the terrane boundaries mostly date back to late Precambrian time, others possibly formed during younger orogenic events. Many terrane boundaries were also re-activated in the relatively recent geological past. the principal terranes are:

- The Charnwood Terrane
- The Wrekin Terrane
- The Cymru Terrane
- Monian Composite Terrane

This series of 3 terranes, amalgamated into the network of GCR sites represents by far the largest exposure of Precambrian rock in southern Britain.

- Monian Supergroup ('Terrane 1').
- Coedana Terrane in central Anglesey ('Terrane 2')
- Aethwy Terrane exposed within a narrow linear belt in south-east Anglesey ('Terrane 3')

GCR site selection

For the purposes of site evaluation and selection, the featured GCR sites are intended to show the broad spectrum of lithologies and geological processes representative of each terrane. Consequently, there are several themes or 'networks':

- Volcanic sequences formed in a variety of tectonic settings
- Plutonic igneous complexes
- Sedimentary and volcanoclastic strata ranging from deep-water marine to terrestrial environments
- Low- to high-pressure metamorphic rocks
- Intricate deformational structures

Palaeontology, fauna and flora

See Precambrian Palaeontology (PRE-PAL).