Variscan Structures of South-West England (VAR-STR-SW)

Block Description

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Introduction

The GCR sites selected for this GCR Block represent a major episode of Earth history that occurred as a result of the 'Variscan Orogeny', which was a period of mountain building and continental collision that began in the Devonian Period, which lasted from 417 to 354 million years ago (Ma) and continued through Carboniferous (354–292 Ma) time, as represented by geological features present in south-west England; geological structures of south Wales and the Mendips produced by the same events are covered by a separate GCR, for both geographical and geological reasons (**see Variscan Structures of South Wales and the Mendips (VAR-STR-WM)**).

The Variscan Orogeny occurred as a result of the northward convergence and collision of the continent of Gondwana (comprising South America, Africa, India, Australia and Antarctica) with the southern margin of the stable continent of Laurasia (comprising North America, Europe and Asia). On collision, the supercontinent Pangaea was formed, being a single, huge landmass in the ocean Panthalassa. The Variscan Orogeny resulted in the formation of a mountain belt that included the Appalachians of eastern North America. The main orogenic belt associated with this collision was located far to the south of Great Britain in the Iberia–Armorica–Massif Central region. However, the northern limit of strong Variscan deformation, commonly known as the 'Variscan Front', migrated northwards during the orogeny and the final limit extends across southern Britain, between the Thames and Severn estuaries. To the north of this orogenic front, back-arc extension controlled structure, sedimentation and igneous activity in the British Isles throughout Late Devonian and Carboniferous times (**see Carboniferous - Permian Igneous (C-P-IG**)).

Cornwall, or the Cornubian Massif, represents part of a trough into which sediments, eroded from the forming mountains, were accumulated. This trough, called the 'North Variscan Foredeep' would once have extended along the whole of the strike of the belt from Poland to western Ireland. Only small fragments are now exposed.

During the final stages of continental collision, the sediments were folded and a large granite batholith was intruded into this trough, and cupolas of this granite are seen as the Dartmoor, Bodmin Moor, St. Austell, Carnmenellis, Land's End and Scilly Isles intrusions (**see Igneous Rocks of South-west England (IGN-SW-E)).**

The Cornubian Massif also contains a feature highly typical of continent–continent collision, The Lizard Complex. This is a remnant of the old ocean that once existed between Gondwana and Laurasia (sometimes called the 'Rheic Ocean'). Its emplacement and age are still not fully understood, but it was undoubtedly pushed North from the Variscan Suture Zone (which probably lay somewhere within what is now the Bay of Biscay) along a large-scale, major crustal thrust. The igneous rocks are encompassed within their own GCR Block, Igneous Rocks of South-West England. See **Igneous Rocks of South-west England (IGN-SW-E).**