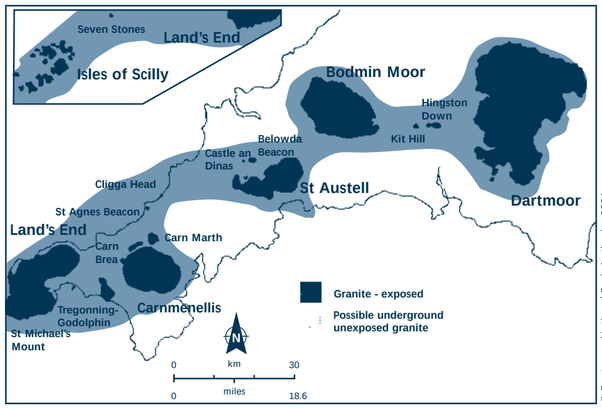
Geology

Dartmoor Poster

Dartmoor's relief, soils, vegetation, farming and many of its buildings and much of its industry have all been to some degree influenced by the nature of the area's geology. Most of Dartmoor consists of a single type of rock - granite. This granite was intruded during the late Carboniferous/early Permian Period (around 280 million years ago) into the area we now know as Devon and Cornwall. From the Isles of Scilly to Dartmoor, a number of granite domes are linked within the Earth's crust, where they form a batholith, one massive intrusion. Gradually, overlying rocks have been eroded thus exposing the granite.

Dartmoor granite covers an area of 241 square miles (625 square kilometres) and represents the largest area of exposed granite in southern Britain. It is this granite which underlies the contrast between Dartmoor and the surrounding countryside.

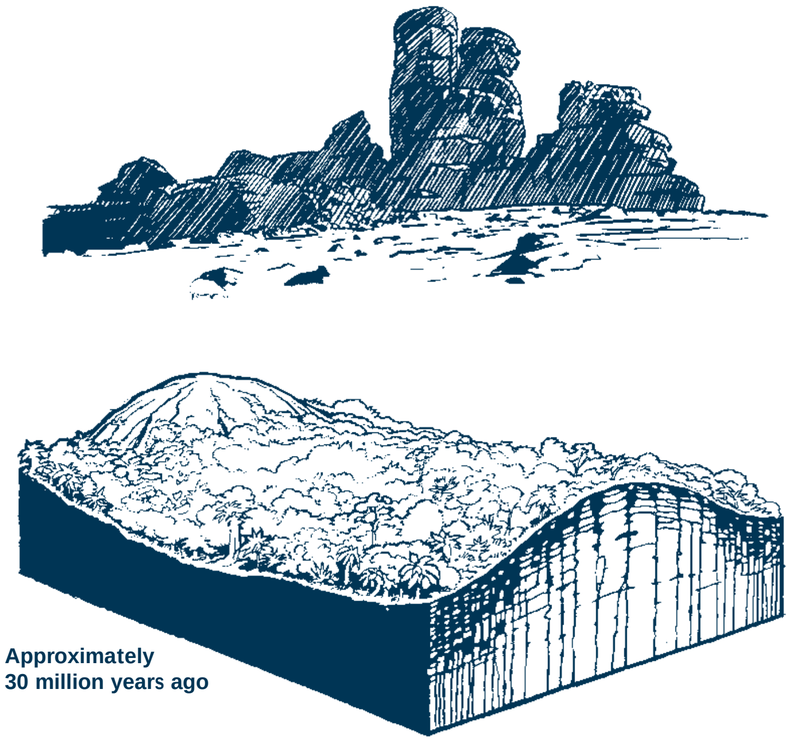
The granite of south west England



GRANITE

The name granite comes from the Latin ***granum***, a grain. Granites are composed of fairly large crystals and have an irregular granular or granitoid texture. Granite is a group name for a family of plutonic or deep-seated acidic igneous rocks. Dartmoor granite is made up mainly of quartz (glassy, grey/white crystals of silicon dioxide), felspar (particularly orthoclase - potassium aluminium silicate: but also plagioclase) and biotite, a type of mica - a complex hydrated silicate of aluminium and potassium with iron, magnesium and fluorine. Dartmoor granite is also characterised by a relatively high proportion of tourmaline, which is blacker than biotite and distinguishable by its finely grooved surface.

Some geologists have identified three major types of Dartmoor granite - the contact granite contaminated by minerals from the surrounding rocks; the ***tor granite*** which contains the large megacrysts typical of many of the tors, and the finer grained ***blue granite***.



Approximately 30 million years ago

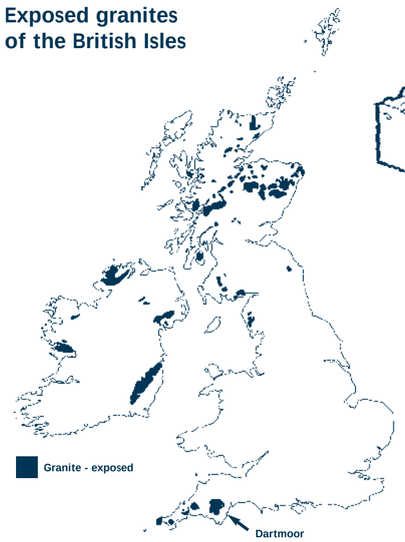
Tor formation

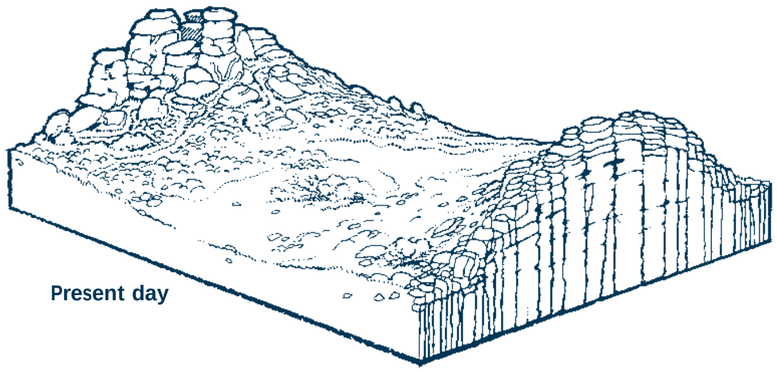
Dramatic rocky outcrops, known as tors, are distinctive features in the Dartmoor landscape. They have been sculpted by weathering into strange shapes. The formation of tors has been the subject of considerable debate. Some observers have noted their resemblance to the granite *kopjes* found in the tropical African savanna.

Debate centres around which type of weathering predominated - the sub-surface chemical weathering leaving the corestone to be exposed later, or the mechanical freeze/thaw action that can shatter rocks and prise one stack away from another.

For many millions of years Dartmoor was covered in tropical and sub-tropical forests. Tropical rainwater ran down into the underlying granite and along the joints (natural cracks) and ate away the rock. This created a landscape in waiting. Some geologists believe that the granite was also weathered by chemical rotting just after its emplacement.

Exposed granites of the British Isles





Present day

Later, the granite was exposed and during the cold glacial phases, water froze in the joints and prised bits off the rock, forming clitter on the ground. Seasonal freezing still continues to attack the tors.

For further information, and a list of other Dartmoor Posters and Fact Sheets available, contact the:
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