

Why no volcanoes? factsheet pdf
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Why are there no active volcanoes in Britain?

There are several volcanoes in the UK, although they are all long since extinct. For example, there are 'supervolcanoes' (ones which have had very large eruptions) in Snowdonia and the Lake District, but they are about 450 million years old; Edinburgh Castle is built on a volcano about 350 million years old, and many of the islands in the west of Scotland (Mull, Skye, Rum) are the roots of volcanoes about 60 million years old.



1 A view of The Great Face, the island of Staffa, Scotland. Massive, straight, well-formed columnar jointing in the Tertiary subterranean volcanic lava flow.
2 The Giant's Causeway, in Northern Ireland, showing columnar jointing.



Arthur's Seat and Salisbury Craigs, Edinburgh.

The reason why we haven't had any volcanoes for about 60 million years in Britain is that we are now in a tectonically quiet part of the world. Most volcanoes occur near the edges of the Earth's tectonic plates but Britain is now a long way from such geologically active areas. The most volcanically active area in the world is around the edge of the Pacific Ocean, from Indonesia to Japan, Alaska, the USA, Central America and South America. These volcanoes all lie on the edges of the Pacific plate (or smaller plates close by).

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When tectonic plates converge, if one of the plates is lighter than the other (e.g. made up of thick continental crust), then the denser plate (the oceanic crust) is forced to depths of hundreds of kilometres in the Earth (subduction), where high temperature and pressure conditions prevail.



The rocks on and above the subducted plate melt, producing magma. The magma rises buoyantly to the surface and erupts as lava to form a volcano. If plates slide past each other sideways, then magma is not usually formed, although there is potential for large earthquakes (e.g. along the San Andreas fault in California). Occasionally, volcanoes occur in the middle of plates above hotspots in the Earth's mantle, e.g. Hawaii.

Britain is neither on the edge of a plate nor near a hotspot. The nearest plate boundary to the British Isles runs down the centre of the Atlantic, and Iceland (with its many volcanoes) lies on top of the boundary.

For further information about plate tectonics and volcanoes:

- www.bgs.ac.uk/education/volcanoes.html
- www.geology.usgs.gov/pdf/planet.pdf
- www.cotf.edu/ete/modules/msese/earthsysflr/plates1.html



1 Largo Law, Fife, Scotland. A denuded volcanic neck dating from Carboniferous times.

2 Volcanic rocks of the Bradgate Formation, Leicestershire, United Kingdom.