

Discuss the geographical distribution and impacts of plate boundaries.

(2016 Q3C)

The crust of the earth is broken into huge slabs of rock called plates. These plates float on semi molten rock of the upper mantle and are moved by convection currents of magma.

Constructive plate boundaries occur where plates diverge and where new earth crust is constructed resulting in new land forming due to this plate movement.

Convection currents occur as hotter, less dense magma rises to meet with the lithosphere. As it does, it spreads out horizontally creating tension to pull the lithosphere apart.

The earth's crust eventually breaks into plates and diverges. There are seven major and several minor plates. The cycle continues as the hot magma cools, becoming less dense and sinks down to the core, forcing hotter magma up to the asthenosphere.

Cracks and fissures begin to form on the earth's surface over the diverging plates and magma from the mantle starts to emerge up through them helping to push plates apart.

As the American plates move away from the Eurasian and African, the magma builds up a mid ocean ridge called the mid Atlantic ridge separating at a rate of 10-15mm/year.

It is constructed by fissure eruptions, where large amounts of lava flow out from a long crack in the surface of the ground. The M.A. ridge is 16,000 KM long.

Basic lava emerges through the cracks. This lava has a low silica content allowing volcanic gases to escape and has a low viscosity causing gentle eruptions. The cooling forms basalt rock. A lot of it is still under water, but some has risen to form new land seen as islands along the ridge e.g. Iceland

Iceland is 19-20 million years old. Iceland has many active volcanoes formed from the basic lava and low silica content. Hekla is a volcano on the boundary.

Over 65 million years ago, the American and Eurasian plates began to separate and basic lava began to emerge and spread quickly forming a plateau of basalt rock e.g. the Antrim Plateau.

Over time lava flows occurred with some having a thickness of 40 metres. This formed the Giants causeway in the North of Ireland.

As plates began to separate more, the Atlantic Ocean began to expand with the formation of new land eventually pushing Antrim away from the plate boundary causing volcanic activity to cease.

When convection currents start to go in opposing directions, a constructive plate boundary begins to occur below a continental plate. This tension causes parallel faults to occur e.g. African Rift Valley

Diagram on previous SRP