

## Unit 5 - Earthquakes and Volcanoes

### 5.1 Where do earthquakes and volcanoes happen?

Earthquakes and Volcanoes usually occur in narrow belts. These line up with plate boundaries - the places on the earth's surface where tectonic plates meet.

You should take a look at a map of earthquake and volcano locations - try a google search.

The earth's surface is divided into large blocks called **plates**. The heat inside the earth creates **convection currents** in the mantle which the plates float on. This causes them to move very slowly. The movement creates stresses and strains in the plates which eventually cause sudden movements in the plates. This is what causes earthquakes and volcanoes.

Remember, there are 2 types of plates:

- oceanic plates usually carry the oceans. They are thinner but denser so they will go under...
- continental plates which usually make up the land. They are thicker but lighter.

There are 4 types of plate boundary:

The Plates	Moving...	Called...	Causing...
Oceanic meets Continental	Towards each other	Destructive (or subduction zone)	Oceanic forced under Continental - causing earthquakes and volcanoes
Continental meets Continental	Towards each other	Collision	Both push up, creating mountains - causing earthquakes
Oceanic meets Oceanic	Away from each other	Constructive	Magma rises to the surface between the plates, cools and creates new land (think: Rock Cycle) - usually causes gentle earthquakes and volcanoes
Any meets Any	Side to side	Conservative	Move sideways causing earthquakes

You need to know in detail how particular earthquakes and volcanoes are caused - including the names of plates

### 5.2 What effects do volcanoes and earthquakes have?

You should learn the effects of the hazards you studied as case studies - but make sure that you really know about them! Don't just say, "There was a big earthquake in Japan which killed lots of people and collapsed lots of buildings". Include details like dates, places, size of earthquake, number of deaths and some other interesting effects.

Many people live in the areas effected by earthquakes ad volcanoes. There must be good reasons why they live here:

- people feel that it won't happen to them
- the area is very attractive so it's "worth the risk" (e.g. California)
- people think they are prepared
- geothermal energy can be generated from "hot rocks" in areas like Iceland
- volcanic soils are fertile, producing good farm land
- tourism - brings jobs and money. Volcanoes are often tourist attractions.
- people are too poor to be able to move

#### Primary effects (short term):

- death/injury
- loss of land/buildings
- damage to infrastructure

#### Secondary effects (long term):

- lack of shelter
- poor water/food supply
- disease
- loss of income
- cost to rebuild

### 5.3 How can volcanoes and earthquakes be managed?

- people try and predict them (easier for volcanoes) - and then give warnings to evacuate people
- designing buildings to resist them (easier for earthquakes)
- preparing people by practicing rescue drills and having good emergency services
- providing aid after the event - both from the local government and international aid (including from NGOs)
- hazard zoning - making sure that people don't live in the most vulnerable areas: e.g. close to a volcanic crater or on certain types of rock (buildings built on sand or clay are much more likely to be damaged in an earthquake)

Rich countries tend to be able to deal with earthquakes and volcanoes more easily because they have the resources needed - it is much easier for them to build earthquake proof buildings or organise emergency services.