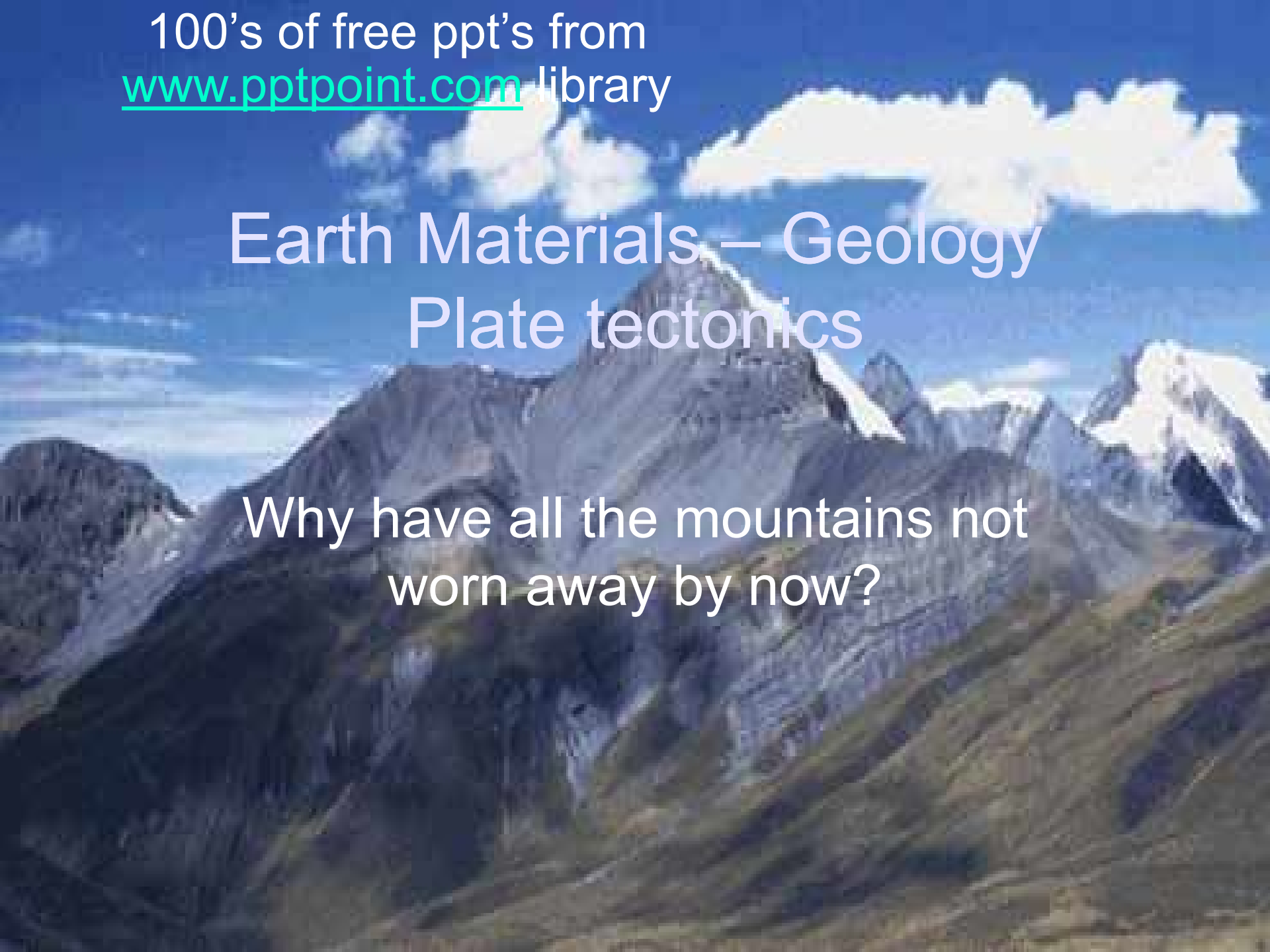


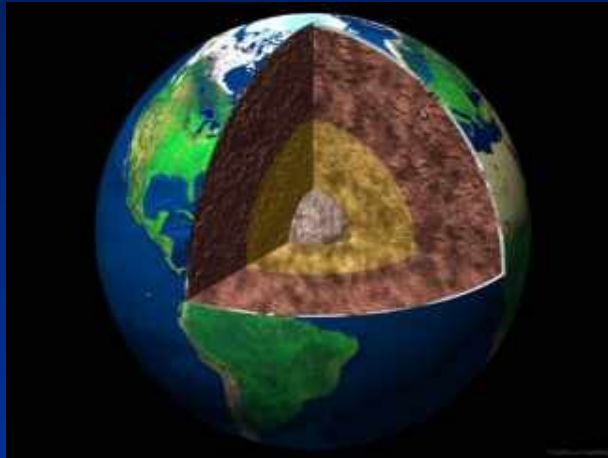
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Earth Materials – Geology Plate tectonics

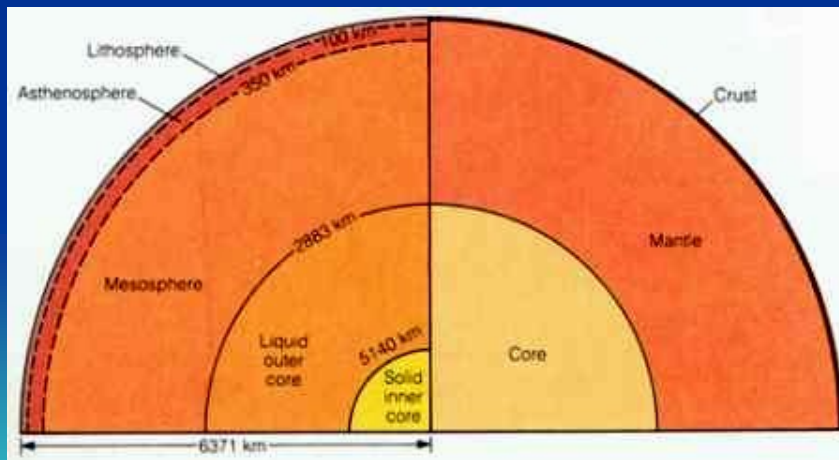
Why have all the mountains not
worn away by now?



Earth Structure

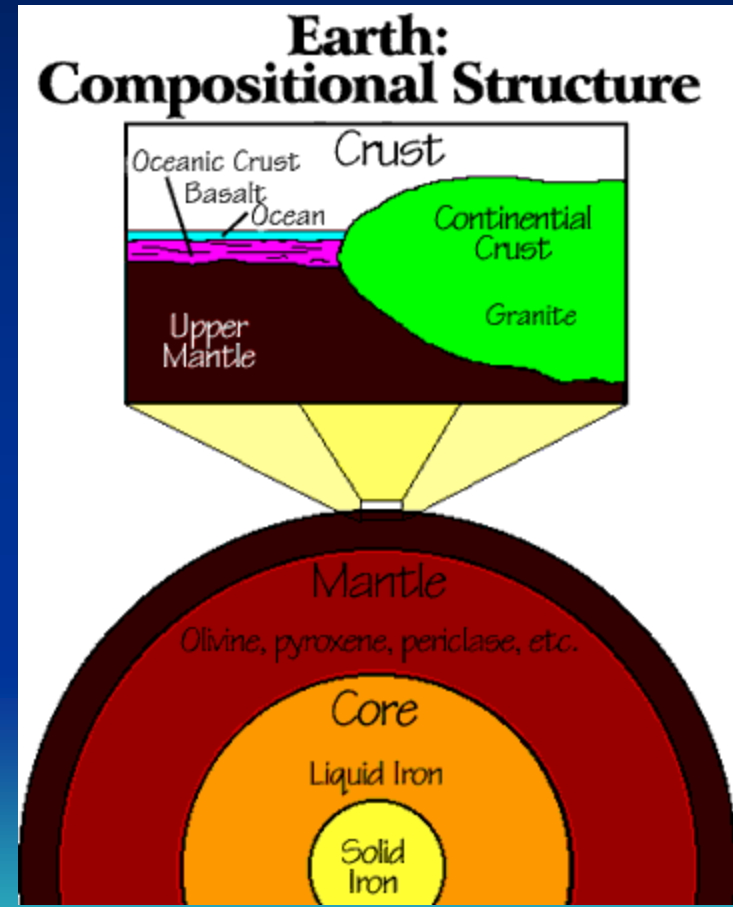


- Radius 6300-6400km
- Thin crust
- Mantle extends almost halfway to the centre
- The core makes up the rest

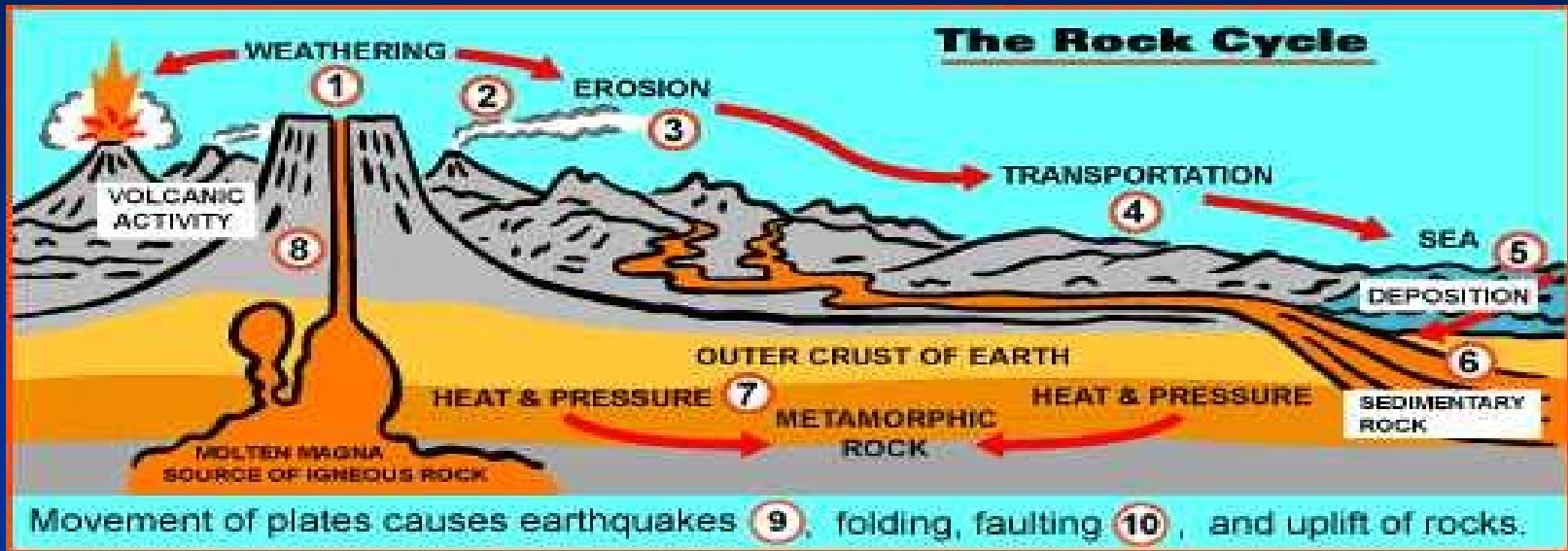


Composition

- Low density solid crust floating on an almost solid mantle
- But overall the Earth is dense
- The core must be very dense
- Probably made of dense metals nickel and iron
- Hot liquid outer core and solid inner core



Rock Cycle



- Weathering breaks down the rocks
- Erosion wears them into smaller pieces as they are transported towards the sea

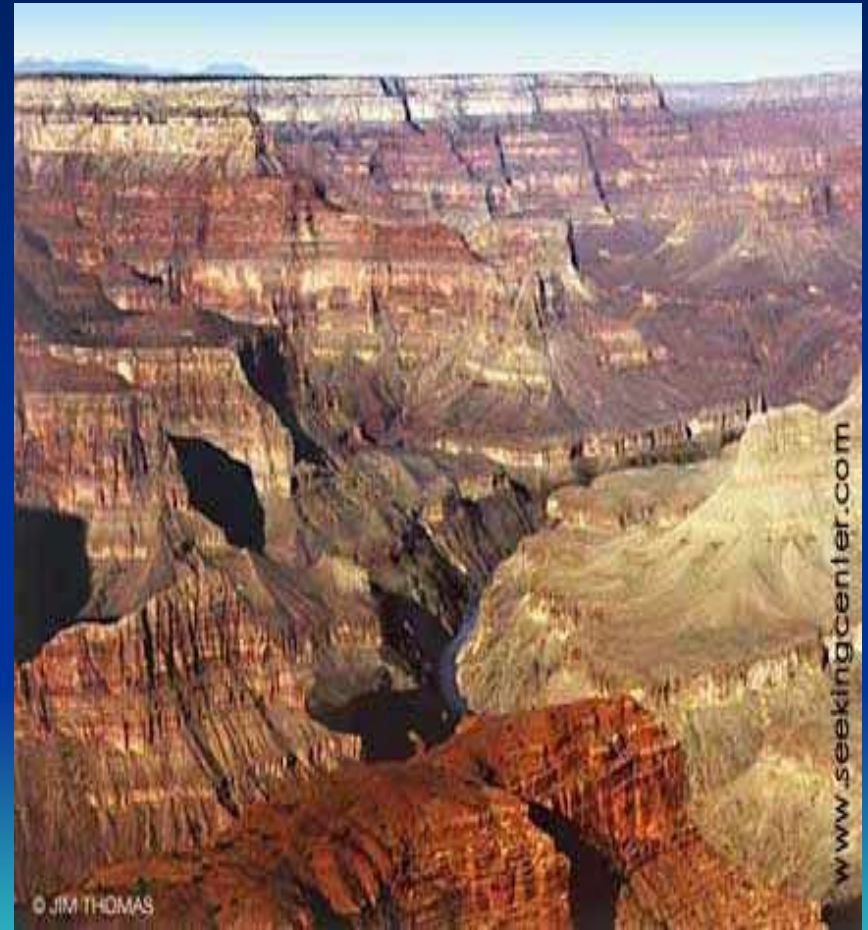
Deposition of sediments

- Most sediments settle in water
- Currents and waves form ripple marks
- Evidence can be found for this in the rock
- Ripple marks can be preserved in the rock

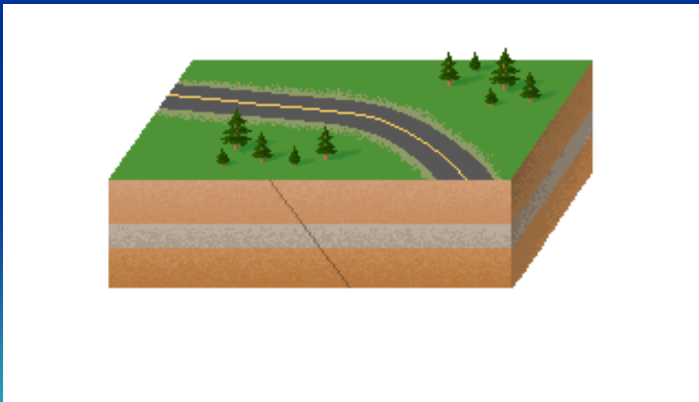


Sedimentary rocks

- Grand Canyon
- Youngest rocks at the top
- Rocks and fossils older as you go down



Unstable Earth



- The Earth's crust is subjected to huge forces
- Very large forces can fracture the rock
- This can be seen as fault lines in the rock layers

Tilted and Folded

- Sedimentary rocks are often found tilted
- They can also be folded by the huge forces
- This has happened at Lulworth cove
- Sometimes the rock layers can even be turned upside down

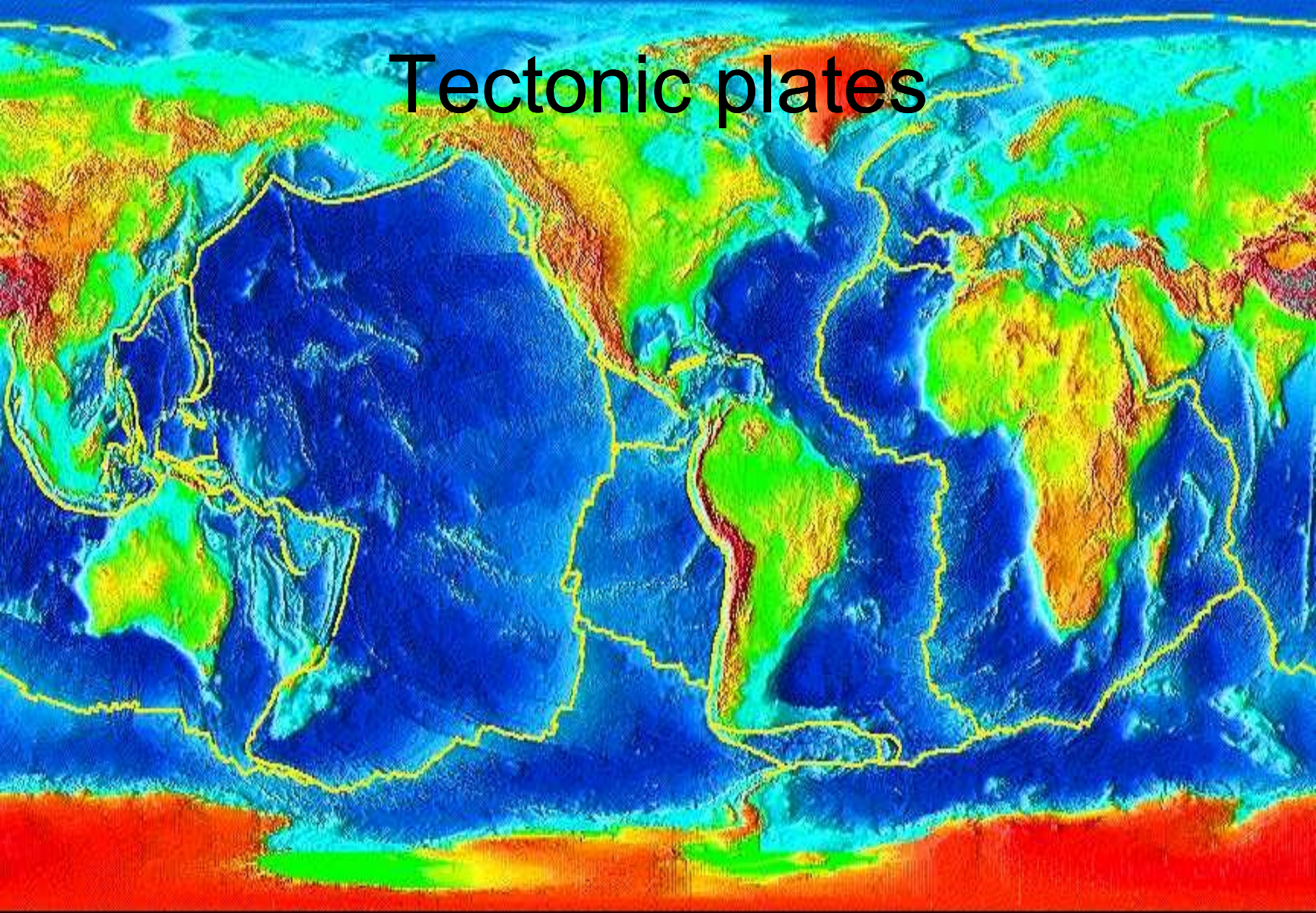


Alfred Wegener

- Some people thought the Earth was shrinking and cracking
- Wegener thought whole sections of the crust moved (plate tectonics)
- Some people did not understand and thought the continents floated around in the oceans (continental drift)
- He died before people accepted his ideas

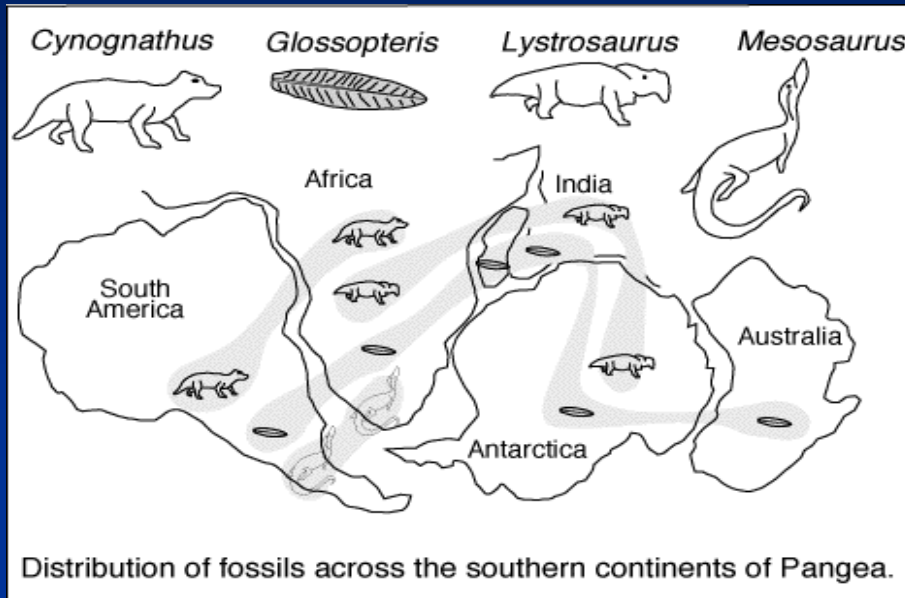


Tectonic plates



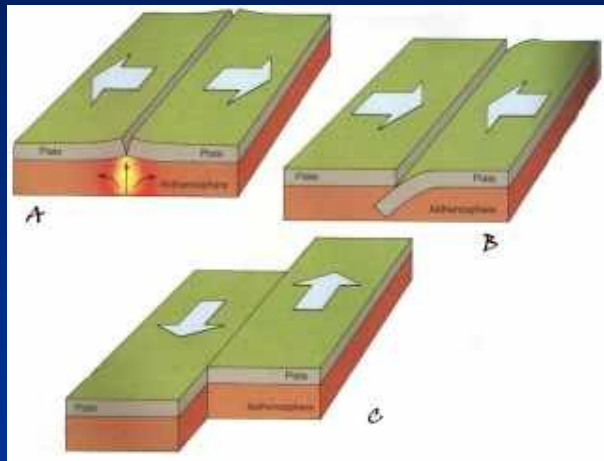
Crustal Plate Boundaries

Evidence



- Same fossils and rocks found in different parts of the world
- Africa and South America look like pieces of a jigsaw

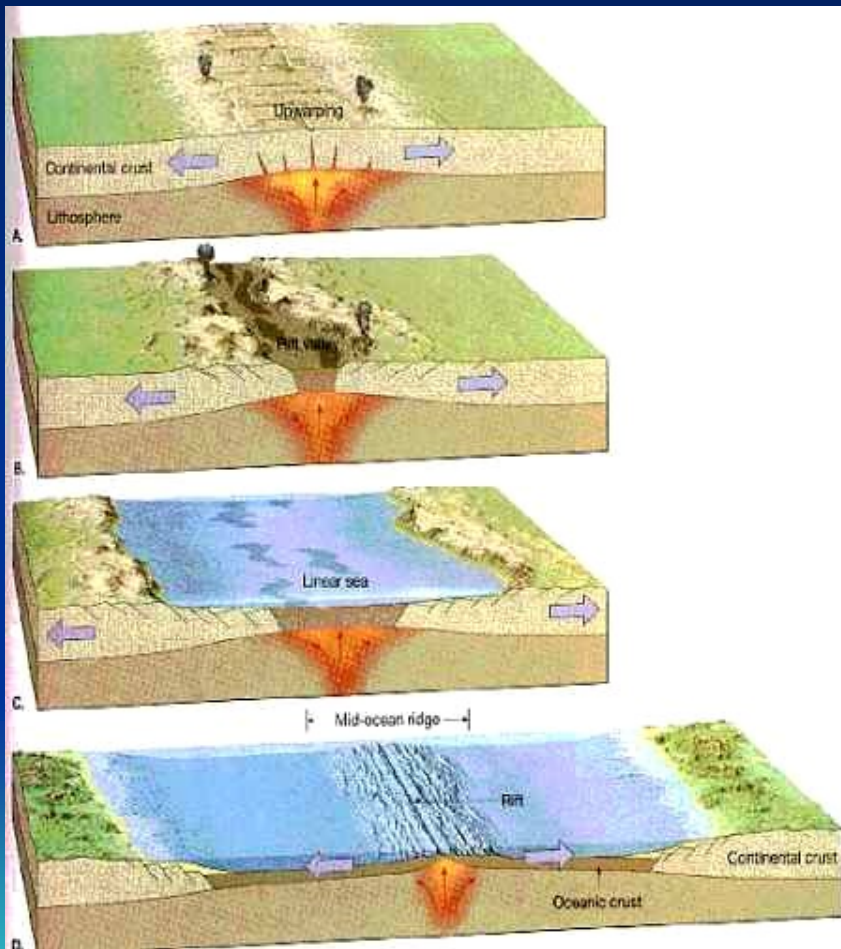
Earthquakes



- Plates moving in any direction causes earthquakes
- The worst are caused by plates rubbing past each other as in C
- This happens along the Californian coast



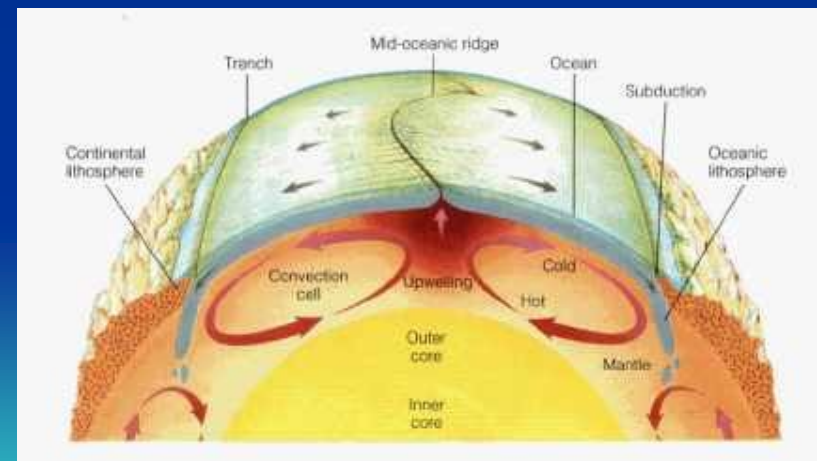
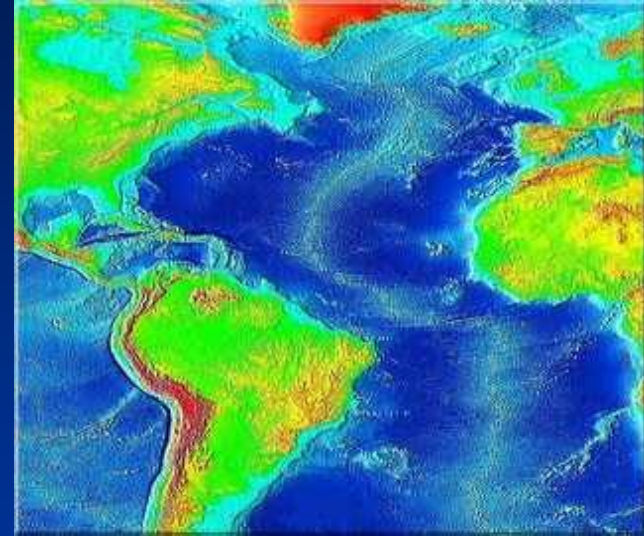
Sea floor spreading



- Large continents begin to crack and split apart
- The gaps fill with water
- Small seas become oceans
- The mid ocean ridge continues to produce new crust

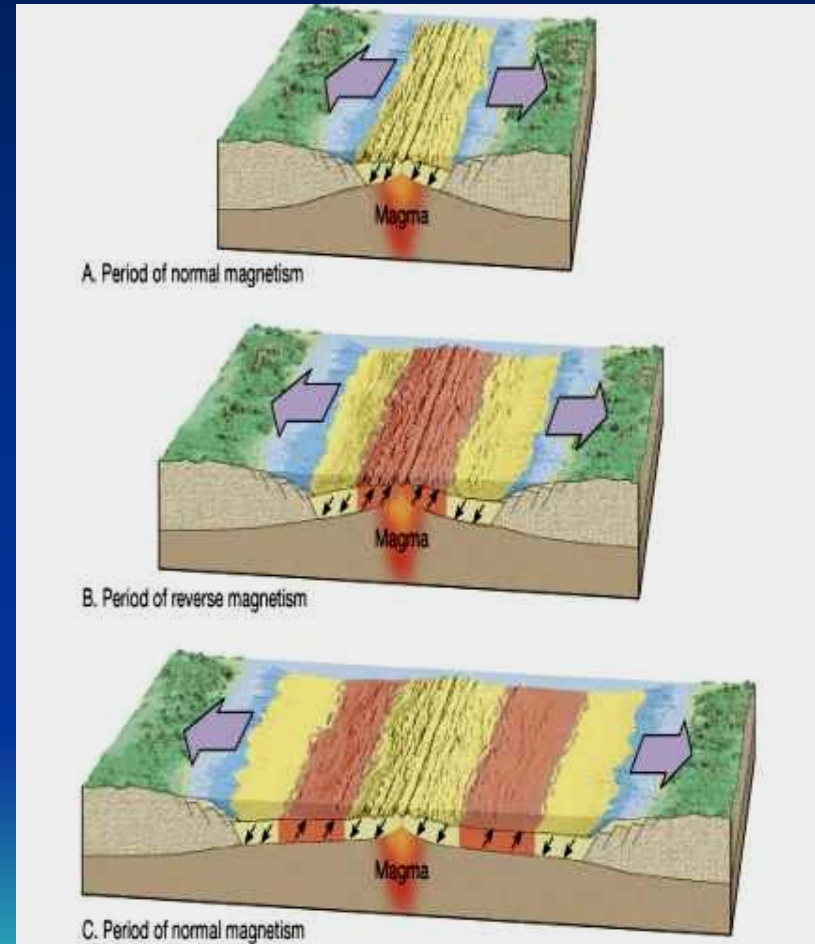
Why spread?

- Why is the Atlantic still getting wider
- The plates are pulled apart by convection currents in the mantle below
- Caused by heat released from natural radioactive processes
- At the mid Atlantic ridge molten rock from below rises up to fill the gap with new basaltic rock



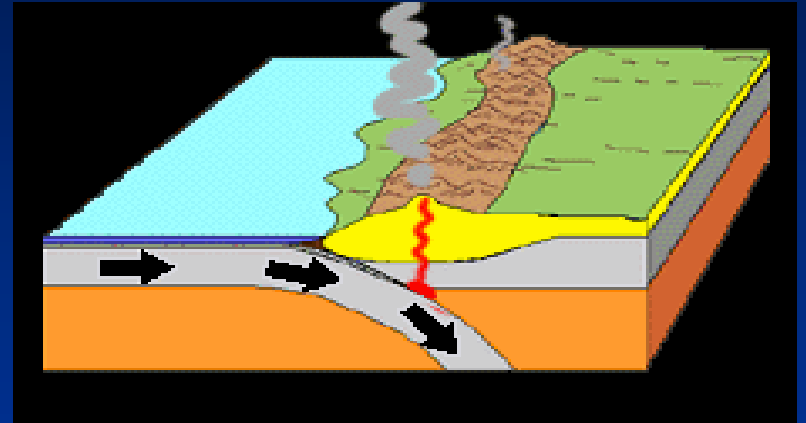
More evidence

- More evidence has been found for Wegeners theory
- The Earths North and South pole have flipped many times
- These leaves magnetic 'stripes' in rock containing iron minerals

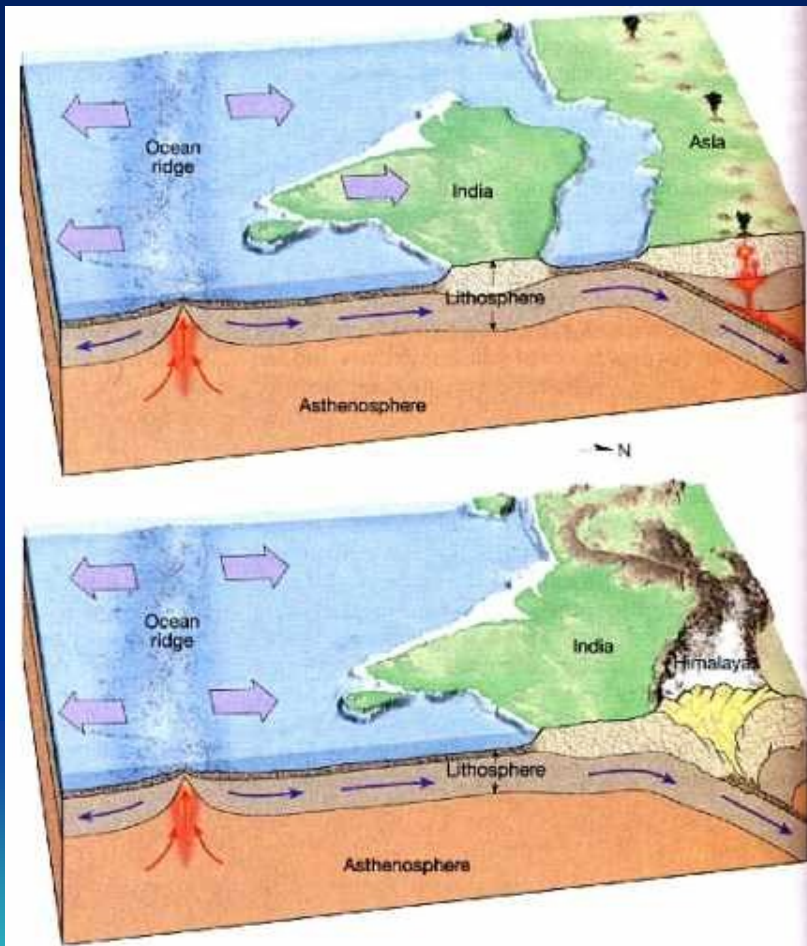


So the Earth must be growing?

- Dense heavy oceanic crust can be subducted below less denser continental crust.
- The friction melts rock
- This magma rises through the crust to form new volcanoes
- This is happening in South America (The Andes)



Continents Collide



- Eventually when plates move together the continental crust collides
- The heat and pressure make metamorphic rock
- It also pushes and folds the rocks into high mountains
- The Himalayas rise to 8848m and are still growing today