

Plate tectonics



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The hypothesis plate tectonics clarifies the movement of the Earth's plates. The name plate tectonics tell us how the Earth's exterior is composed up of plates. In geology science, a plate is a big block of rock, whereas the tectonics is a word of Greek that has the meanings to build

ThinkQuest(2008). The assumption of plate tectonics turned out to be generally established by scientists of the 1960s and 1970s era. It transformed our perception of the Earth and combined the Earth sciences, from the learning of paleontology (fossils study) to the science of earthquakes which is also known as seismology. According to this theory, the Earth's crust is composed up of about a dozen plates or big rock slabs on which the continents and oceans lie. Plate tectonics explains the big scale movements of Earth's lithosphere. The theory comprises the developed beliefs of continental drift, urbanized throughout the initial half of the 20th century, and seafloor spreading, understood during the 1960s Wiki (2008). The furthest part of the Earth's center comprises two layers: top layer is the lithosphere which surrounds the coating and the inflexible topmost part of the layer. Inferior the lithosphere the asthenosphere lies. While the hard, the asthenosphere has comparatively small thickness and shear potency and is able to stream like a liquid on geological time scales. The inner deeper layer under the asthenosphere is extra rigid yet again due to the higher stress / pressure ThinkQuest(2008).

The lithosphere is divided tectonic plates, if we talk about the Earth; there are 7 main and important plates and many small/ minor plates. These plates are frequently shifting their position because the surface under them, the boiling, hot, soft layer, is changing position gradually similar to a conveyor

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strap/ belt, determined by heat and other forces at work in the Earth's core/ center. These plates or slabs are changing their positions or moving at speed of approximately a centimeter (0.5 inch) to 15 cm (6 inch) per year in diverse directions. In scientific notations this movement is called as "cross motion of the plates is naturally at rate of 50-100 mm/a" Wiki (2008).

Now we talk about the main and big plates of earth. As we have discussed earlier there are seven main plates. Listed below from Earth Science Enterprise (2004).

Figure 1 Earth main plates Source [Zoomschool. com]

The main plates are

African Plate

cover Africa [it is a Continental plate]

Antarctic Plate

cover Antarctica - [it is a Continental plate]

Australian Plate

cover Australia - [it is a Continental plate]

Indian Plate

cover Indian subcontinent and few parts of the Indian Ocean- [it is a Continental plate]

Eurasian Plate

cover Asia and Europe - [it is a Continental plate]

North American Plate

cover North America and north-east Siberia -[it is a Continental plate]

South American Plate

cover South America - [it is a Continental plate]

Pacific Plate

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cover the Pacific Ocean - [it is a Oceanic plate]

Famous small plates include the: Earth Science Enterprise (2004).

Arabian Plate

the Caribbean Plate

the Juan de Fuca Plate

the Cocos Plate

the Nazca Plate,

the Philippine Plate

the Scotia Plate

The lithospheric plates lie on the asthenosphere. These plates change their positions or move in relation to each other at one of three kinds of plate borders or boundaries:

Crash boundaries

Dispersal boundaries

Changed boundaries

Earthquakes, volcanic exploit, mountain formation, and oceanic exhaust configuration happens because of plate boundaries.

Now we talk about the Continental drift. It is the movement of or change in the position of the Earth's continents compared to one another. The idea that continents drift was originally proposed by Abraham Ortelius in 1596 and was fully urbanized by Alfred Wegener in 1912. However it is fully developed after the advancement of the assumption of plate tectonics in the 1960s that is an adequate geological clarification of that movement was understood (Louie, 1996).

Alfred Wegener argued that today's continents were fashioned from a sole landmass, to which he given name Pangaea. It ruined into parts due to the

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weak spots in the earth's crust as they were composed up of less thick materials, which move smoothly centimeter by centimeter over millions of years and they reached at where they are present now. It is probable for the plates to shift appropriate to the convection currents in the mantle (Louie, 1996).

The motion of plates can be explained with an example of water and cattle. The motion of these currents is comparable to the motion of convection currents in cattle of boiling water.

Boiled water inflates and increases the surface of the cattle. In the same way, the magma nearer the core increases and goes upward. Water that has increased the surface of the cattle spreads out crossways the outside, cools and goes down to the base. Similarly, the magma that has increased spreads out under the plates. As the magma spreads out side, the plates are pulled next to and they shift away from each one other. This is known as the sea-floor spreading (Louie, 1996).

When the magma goes down, the plates are drawn towards one another.

This is the procedure of subduction. The frequent warming and rising of the magma locates up nonstop convection currents in the mantle, reasoning the plates to move. So this is the all the process of Continental drift (Louie, 1996)

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