**INTERNAL DYNAMICS OF THE EARTH.**

Why is the interior of the Earth so hot? The interior of the Earth is hotter than the exterior, because of the heat generated when the Earth was formed. 4600 million years ago, giant meteorites continually collided with the Earth making it hotter. Metal materials sunk to the centre of the Earth; these formed a nucleus made mainly of iron. Nowadays the Earth has two cores: the inner core is solid, due to the tremendously high pressure at the centre of the Earth; however the outer core is molten.

The temperature in the inner core is hotter (above 6000 ºC) than the surface of the Sun. The temperature increases by about 25ºC for every kilometer in depth (geothermal gradient).

The intense heat from the inner core of the Earth causes materials to move in the liquid outer core and the mantle. Heat is transferred by convection, hotter materials rise while colder materials go down.

The convection produces the movement of the plates above. Plates are approximately 100 kilometers thick and they are made up the crust and the upper mantle. Tectonic plates are massive slabs of solid rock. These large plates move extremely slowly: Atlantic Ocean is increasing its width 2 centimeters per year.

Many important phenomena take place in the plate boundaries: earthquakes, volcanoes, mountain ranges… We can find igneous and metamorphic rocks in the plate boundaries. An igneous rock is formed from magma, molten rock, which has cooled and solidified. There are two types of igneous rocks: volcanic rocks are formed when magma cools and solidifies quickly on the Earth's surface and plutonic rocks are formed from magma which solidifies slowly beneath de Earth's surface.

Metamorphism is a rock transformation process due to increases in temperature and pressure. This process involves many changes, although the rocks always remain solid. Metamorphism is very slow and takes several million years. It happens deep under the Earth's crust.

For instance, clay can be transformed in slate, usually dark and with a clear lamination; later it becomes a schist, also with lamination and big minerals of shiny mica; if the metamorphism goes on, a gneiss appears, with bands of white minerals (feldspar) and black bands of mica.

Marble is also a metamorphic rock. Limestones, sedimentary rocks made of calcite, suffer an increase of pressure and temperature and calcite crystals grow in size and the result is marble.

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