

## SUBSOIL JUNIOR

Do we want to discover the characteristics of the Earth's surface and its internal structure? The planet we live on is the Earth and it is shaped like a large ball floating in Space. The Earth has a particular structure consisting of three parts: an external part known as the crust, a central part known as the mantle and an internal part known as the core. The crust, is the outermost layer and consists of a coating of a modest thickness that covers the Earth. Its surface is partly covered by the waters of the seas and of the oceans and in part it forms the five continents. Its structure is varied, and characterized by plains, mountain ranges, faults (deep cracks in its surface) and volcanoes, where the surface communicates with the Earth's deepest layers! The mantle is the intermediate layer, it is the thickest layer and occupies 82% of the volume of the Earth. It is formed by very hot rocks, some of which are molten and are known as magma. The nucleus, is formed by liquid matter externally and by a central part that is solid, made of two metals: iron and nickel.

Both the nucleus and the mantle are characterized by a homogeneous composition, however the same cannot be said for the Earth's crust that is made up of three alternating types of rocks; igneous, sedimentary and metamorphic. A mineral is a chemical substance present in nature that has a regular structure as for example the crystals of cooking salt. Some examples of minerals are gold, silver and quartz. Rocks are solid structures made up of the aggregation of various minerals.

Igneous rocks are the product of the consolidation of the magma that tends to rise from the deeper layers of the Earth's crust towards the surface, and as it moves, it cools and solidifies. Examples are granite and porphyry that are used for flooring. Sedimentary rocks are the result of a complex mechanism: superficial rocks are broken down and fragmented by the action of the rain and the wind, into small sized debris. These fragments slide away and accumulate at the foot of mountains and in the valleys and after very long periods of time they stratify and are compacted and they form new rocks as for example limestone. Metamorphic rocks derive from the transformation of igneous and sedimentary rocks under the action of a strong pressure and high temperatures in the deep layers of the Earth's crust. An example is marble.

The Earth's surface is divided into various plates which, during the course of the years, have carried out very slow movements. Due to these movements the continents now occupy the positions that you see on the globe! The moving plates are formed by the continents and the ocean beds that move very slowly, diverging from or converging towards one another. If two plates converge and come into contact, it may occur that one of the two sinks below the other, thus forming a real rift. In other cases it may occur that the two plates converge and clash provoking a rise in the borders that come into contact, thus forming mountain chains. When this phenomenon takes place at the bottom of the oceans, oceanic ridges form.

On the Earth's surface and on the ocean ridges, crevices known as faults form; in this case the plates slide next to one another. The faults are points of the Earth's crust where energy may be freed, and this can determine strong movements and vibrations that we know as earthquakes. The volcano, generally a large cone shaped mountain, is a break in the Earth's crust. When the magma starts to rise towards the Earth's surface, it accumulates in an area called the magma chamber, and when there is a strong increase in pressure, it is pushed upwards and it comes out of the volcano's crater giving rise to an eruption. Which one of you has not seen the images of the volcano Etna erupting?