

FOLDING IN ROCKS WITH 565 MILLION YEARS

EARTH, with its 4570 million years (Ma) of age, is a living planet in **constant transformation**.

The mutations occur because the plates that make up the **lithosphere** - in the continents or in the seabed - have never stopped moving since about 2500 Ma ago, **plate tectonics** became the determining process in the evolution of the planet.

The **geodynamics** is induced by convective currents that develop under the lithosphere, as a result of the degree of viscosity in which the rocks are and the lower temperature in the upper part of the mantle, just below the lithosphere.

In this constant movement, the tectonic plates move away or approach, collide or fragment. Thus the oceans opened and closed, generating rifts or mountain ranges and grouped six times all continental masses into a single **supercontinent**. The latter, designated by **Pangea**, reached its greatest dimension about 250 Ma.

Although the scale of human life does not allow us to grasp these processes in their entirety, we are confronted with their specific **manifestations** on a global scale: earthquakes, tsunamis and active volcanoes. Over time this cyclic dynamics generated igneous, metamorphic and sedimentary rocks and recorded the **marks** of its kinematics in the pre-existing rock formations: normal and inverse geological **faults** and strike-slip faults; **folds** (anticline / syncline and sinforms / antiforms).

Geodynamics caused **changes** in the geography of our planet, in the oceanic and atmospheric circulation and, consequently, in successive climates and even in the evolution of life on Earth.

On occasion of the International **Day of the Earth**, celebrated on April 22th, we propose to your attention this extraordinary specimen featuring **metalyddites** (metamorphic rock consisting of microcrystalline quartz, rich in organic matter, originated in oceanic sedimentary basins) with 565 Ma. They were **folded** by the effect of compression actions during the formation of the mountains related to the Cadomian (650-550 Ma) and Varisca (380-280 Ma) **Orogenies** that affected the territory, where today the Alto Alentejo (Portugal) is located.

