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The Earth: A Changing Planet

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Abstract text:

We describe a didactic unit that rises from our own living impression about our experience on the planet. Most of us feel the Earth to be a very static place. Rocks don't easily move and most landscapes always look the same over time. Anyone would say (the same way most scientists believed until the beginning of the last century) that our planet has always remained unchanged, never transformed.

But then, all of a sudden, as a misfortune for so many humans, natural hazards appear on the scene: an earthquake causing so many disasters, a tsunami carrying away everything in its path, an eruption that can destroy huge surrounding areas but also bring new geographical relief.

Science cannot remain oblivious to these events, we must wonder beyond. What does an earthquake mean? Why does it happen? What about an eruption? If it comes from the inside, what can we guess from it?

Researching about all of these events, scientists have been able to arrive to some important knowledge of the planet itself:

It has been possible to theorize about Earth's interior. It has also been confirmed that the planet has not always been the quiet and stable place we once thought. Continents, as Wegener supposed, do move about and the Tectonic Plates Theory, thanks to the information obtained through earthquakes and eruption, can provide some interesting explanations.

But how do we know about our planet's past? How can we prove that the Earth has always been moving and that its surface changes? The Earth's rocks yield the answer. Rocks have been the only witnesses throughout millions of years, since the planet first came to existence. Let's learn how to read them... Shouldn't we realize that rocks are to Geology what books are to History?

This discursive process has been distributed in four learning sequences: 1. Land is not as solid nor firm as it would seem, 2. The Earth planet: a puzzle, 3. The rocks also recycle , 4. Field trip to "Sant Miquel del Fai". The subjects take about 30 hours of class time for students from 13 to 14 years of age.

During the learning process, different methodological tools of teaching and learning have been used. After reading and understanding news about natural disasters such as earthquakes and eruptions, cooperative group work and an oral presentation are prepared. In addition, it has been very useful to follow-up with some web simulations to predict natural phenomena, which can then be tested in the laboratory. Finally, the students apply their new understanding on a visit to a geological formation, where applying the language learned by observing the rocks, they demonstrate that the planet Earth has changed over the course of many millions of years. Natural hazards are a small and timely demonstration of the ability to change our planet.