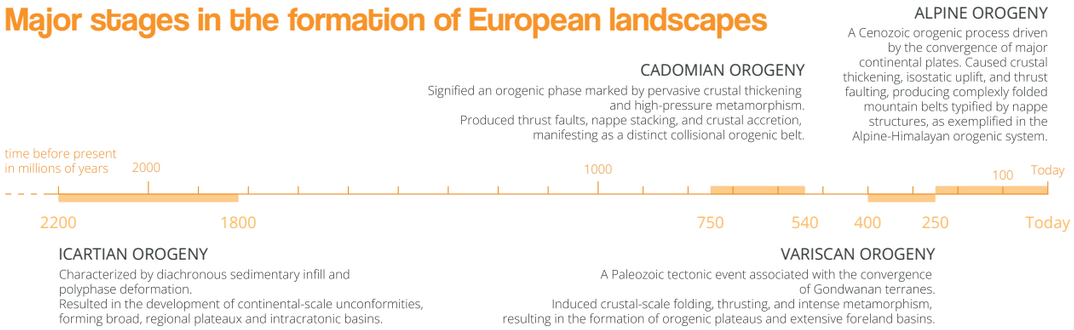
Major stages in the formation of European landscapes



The highest peaks today are young mountains which underwent Orogenesis a few tens of millions of years ago or still are in the process of doing so. The Himalaya range is a notable example, formed by the prolonged collision between the Indian and the Eurasian plates that occurred between 20 and 10 millions years ago. The Rocky Mountains and the Andes are also exemple to be mentioned, even though they are a bit older.
Over time, mountains undergo erosion processes, they are shaped by various agents such as water, wind and ice. Some mountain ranges even went through their Orogenesis phase hundreds of million of years ago and are eroding.

The orogenic periods, notably the Icartian, Cadomian, Variscan and Alpine, have played a key role in the formation of mountainous terrain throughout geological time. These periods mark important chapters in the geological history of our planet, contributing to the formation of the mountainous features we see today. The Armorican range and the Massif Central, in France, are remains of the Hercynian period and so is the Oural range in Russia.
The less elevated Scottish Highlands, on the other hand, originate from the older Caledonian period. There are even older ranges like the Amazonian and the Congo Shield ranges.

Geological formations of Réunion

The essence of volcanic genesis lies in the ascent of magma from the Earth's mantle to its surface - a phenomenon tightly interwoven with plate tectonics, most prominently evident at plate boundaries. Réunion Island, positioned above the Réunion hotspot, stands as a compelling case study for unraveling the geological intricacies of volcanic formation.
Piton de la Fournaise's formation is intricately connected to the Réunion hotspot, a zone characterized by intense magmatic upwelling from the mantle. This hotspot, distinguished by an elevated mantle temperature, serves as a consistent source of magma. As the African tectonic plate drifts over the Réunion hotspot, magma ascends through the Earth's crust, culminating in the creation of volcanic islands. Piton de la Fournaise stands as a tangible manifestation of this continual geological process. Classified as a shield volcano, Piton de la Fournaise boasts distinctive features, including low-angle slopes and expansive basaltic lava flows. The effusive eruptions associated with shield volcanoes are a consequence of low-viscosity magma, predominantly composed of basalt. The gradual accumulation of these lava flows contributes to the shield-shaped profile that characterizes the volcano.
Réunion Island's geographical remoteness from traditional tectonic plate boundaries highlights the phenomenon of intraplate volcanism. This deviation challenges conventional volcanic models and underscores the pivotal role of mantle plumes in creating volcanic features. The sustained activity of Piton de la Fournaise serves as a testament to the enduring presence of the Réunion hotspot beneath the Indian Ocean.