



Rocks in Andorra



La situation

Andorra is located in the geological nucleus of the Pyrenees, in the so-called Pyrenean axial zone, where the rocks are the oldest.







Age

Except for quaternary materials, the rocks in Andorra are very old.

- The sedimentary materials (except sediments left by glaciers) are of an age contained probably between 590 million years (Precambrian) and 390-370 million years (middle Devonian).
- It is considered that the gneiss could be around 500 million years old.
- The granodiorites are calculated to have an age of 305 million years.

Can you imagine these figures in comparison with a person's life today?

Complexity

The rocks in Andorra have a complex geological history when we realise especially the fact that they have suffered two orogenesis processes (formation of a relief through the lifting action of the earth's surface). During the Carboniferous era, 300 million years ago, they experienced the effects of hercynian orogenesis, which culminated in the formation of a folded mountain system, subsequently eroded during the Paleozoic era. During the Tertiary era, the alpine orogenesis took place which formed the Pyrenees as we know them today. This long history means that the rocks in Andorra show important evidence of metamorphism.

The type

The rocks in Andorra can be divided generally into rocks of magmatic origin and rocks of sedimentary origin. Most, however, have been subjected to metamorphism.











Granodiorite Plutonic rock rich in silicon composed of quartz, feldspars, and biotite mica.
Conglomerate Large grain detritic sedimentary rock, with more than 50% of the components measuring over 2 mm. In Andorra many conglomerates are found in La Rabassa, formed by pebbles of slate, quartz and quartzite.
Quartzite Metamorphic rock of silica composition which comes from sedimentary rocks such as quartzarenite and conglomerates.
Slate Rock of sedimentary origin (detritic with very fine grain) which has been through a very low-grade metamorphism. It has a matt appearance and a foliated structure.
Clay-pelite series The clay-pelite series, in Andorra, are alternations of different types of rock very widespread throughout the Principality: schists, quartzites, conglomerates, sandstones, limestones, etc.









Gneiss Metamorphic rock which has been subjected to strong compression and high temperatures. It can be of sedimentary or igneous origin. It is composed of potassic feldspar (forming large crystals), quartz and biotite.
Limestone Limestone rocks contain more than 50% of calcium carbonate. They are of very different origins, chemical, biochemical and biological. They normally contain many fossils.
Phyllite Metamorphic rock, of low metamorphism, derived from clayey sediments. It has a silky appearance and a foliated texture. It is intermediate between slate and schist.
Schist Metamorphic rock of low to medium grade, derived from sedimentary rocks such as lutites and, from time to time, basic igneous rock (poor in silicon). In Andorra, the schists are included in the clay pelite series.