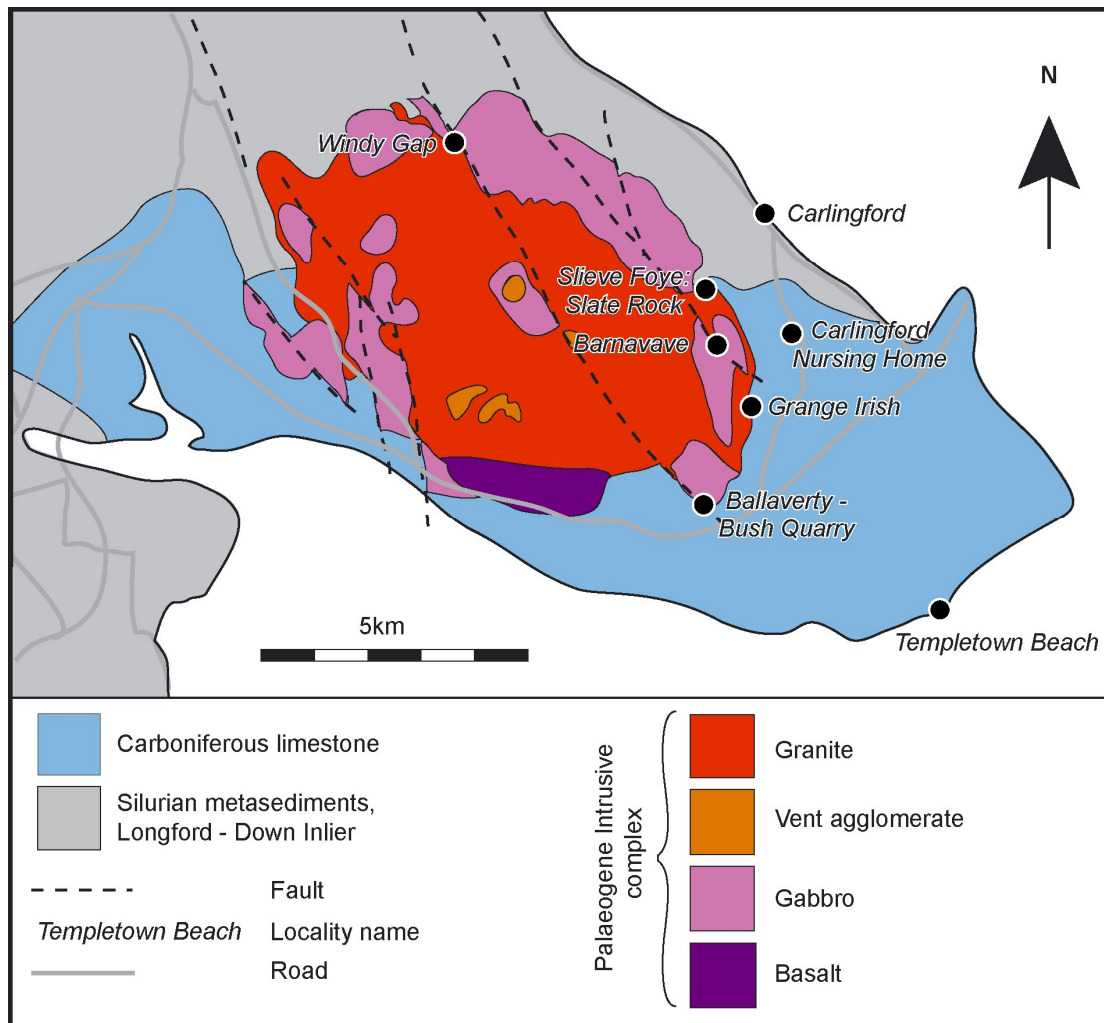
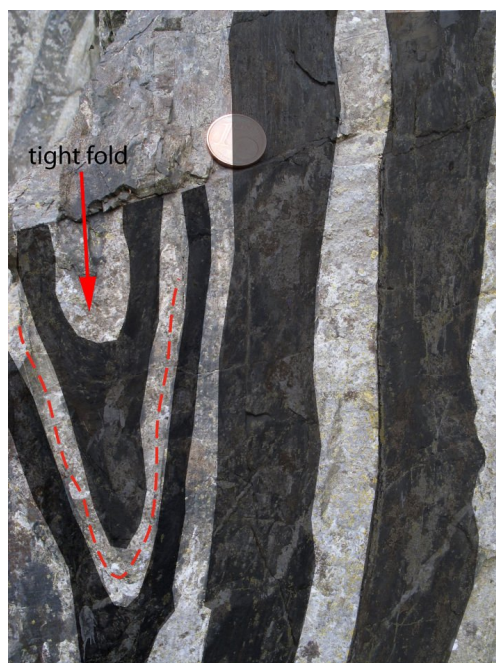
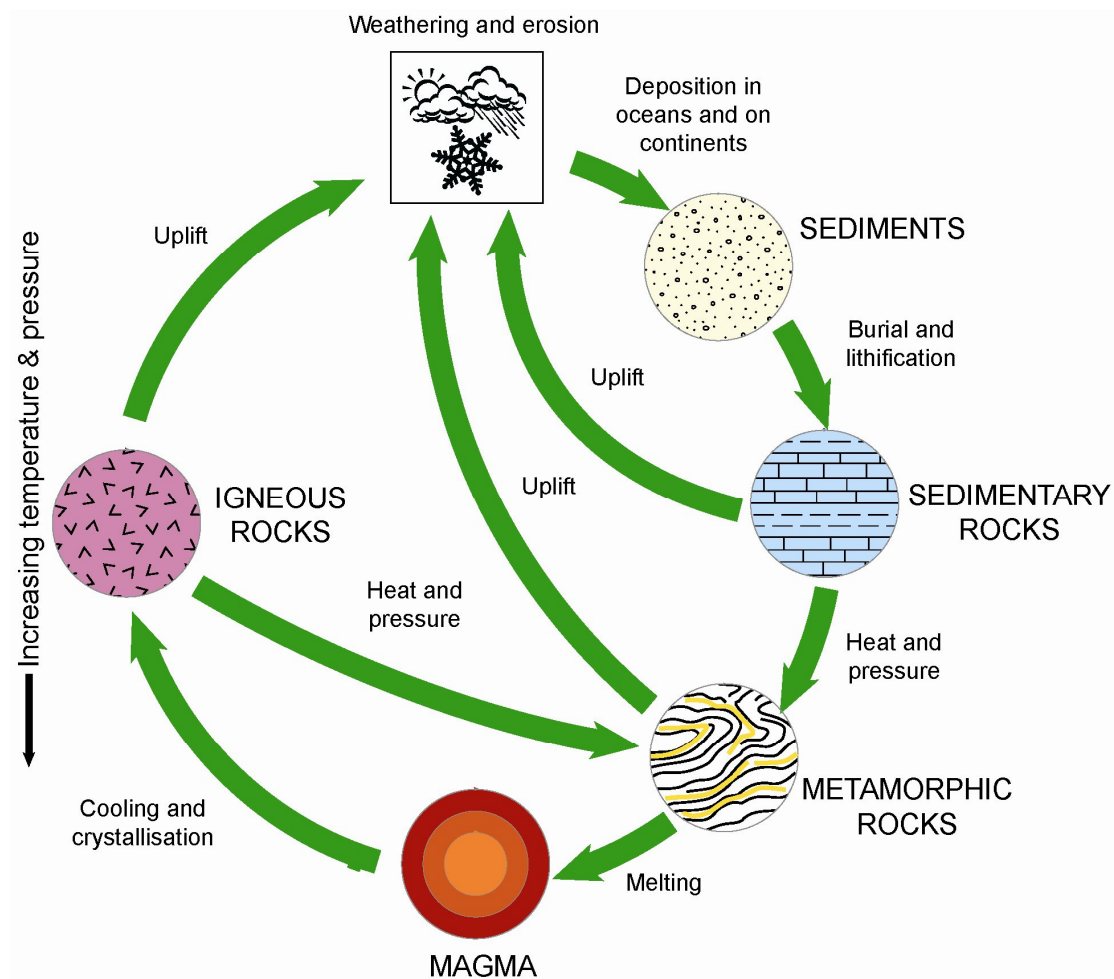


The geology of the Cooley Peninsula – a rough guide!

As can be seen on the map, the geology of the Cooley peninsula (where different colours represent different rock types) is quite varied. In a small area, we can see good examples of all three rock types – igneous, sedimentary, and metamorphic – as well as more recent sediments. The ages of the rocks range from about 450Ma (million years ago) to 60Ma. The more recent sediments are 15,000 – 5,000 years old. The area records the death of an ancient ocean, and the birth of a current one, with a period of tropical paradise somewhere in the middle.





The oldest rocks in the area (the grey on the map) are metamorphic rocks of what is known as the Longford-Down Massif. These rocks were initially laid down as sediments – muds and sands – at the edge of an ancient ocean called Iapetus, which lay between what is now Europe, and North America. The island that we now call Ireland was in two parts, one either side of this ancient ocean. As the ocean closed (similar to what is happening on the west coast of S America today) the sediments were squeezed and buried and changed into the harder metasediments that we see today. The NE lower slopes of Slieve Foye are metasedimentary, and you might notice the near vertical layering, which is aligned NE-SW (just in case your compass fails!) and folding in these rocks as you pass under the bridge near the castle (left).

The next oldest rocks in the area are mainly limestones of the Carboniferous age (c. 350Ma). These form the lower, more fertile land, at the tip of the peninsula. These limestones were deposited in warm shallow seas as Ireland lay close to the equator. Many of the stone walls in the village contain limestone blocks, and if you look carefully at them you might find some

fossils of sea creatures such as brachiopods (which look like cockle shells) or corals (which look like little bicycle wheels). The very bottom of the series of Carboniferous rocks consists of a conglomerate – a rock made up of large pebbles and cobbles of older rocks – and this is easily seen at Slate Rock (right), on the SE end of Slieve Foye, at the sharp turn in the trail leading over the mountain .



The youngest rocks, and those which create the most dramatic scenery in the area, are igneous rocks of Palaeogene age – about 60Ma. These formed as the Atlantic Ocean was born, and the continent that had formed with the close of Iapetus was ripped apart (as is happening to Africa in the Red Sea today). The rocks of Carlingford are gabbros and granites, with the dark gabbros forming the rugged slopes of Slieve Foye and Barnavave. The granite occurs (but without much outcrop) on the col between the two mountains, and over on the SW slopes of Slieve Foye – there is a noticeable change in the appearance of the mountain at the change in geology. Both of these rocks are *intrusive* rather than *extrusive* or volcanic, meaning that they cooled and hardened from magma below the surface, but it is likely that there was volcanic activity, much like what we are seeing in Iceland at the moment, associated with their formation.



Some minor intrusions were injected into this main body of gabbro as thin sheets – they are almost all associated with the thin long marshes that run along the contour on the side of the mountain, as they have weathered more readily than the gabbro. If you examine them, you will see a spotty looking rock, with pale spots (crystals of plagioclase) in a darker matrix. Faulting and

fracturing of the rocks has also led to parts of them being more susceptible to weathering – the gap of ‘Barnavave’ (Maeve’s Gap, above) marks a fault in the gabbro, which can be followed across the col and up the slopes of Slieve Foye. Many of the streams also follow traces of faults in the rock.

The intrusion of the gabbro and granite has also uplifted and baked some of the carboniferous limestones to form a rock called a skarn – these can be examined on the SE slopes of Barnavave over in Grange Irish. Skarns sometimes contain valuable minerals such as rubies – unfortunately none have been found in those of Cooley!

About 2Ma ago Ireland, along with much of the world, experienced a series of ‘ice ages’ – probably 6 episodes of ice advance and retreat in this part of the country. The final advance and retreat, about 15,000 years ago, deposited the surficial deposits that we see here – the



boulders, the sands and gravels (seen in Bush Quarry, left) – and shaped many of the hills and valleys. As the ice melted, and sea level rose, and then dropped (relatively speaking) as the land rebounded from the great unloading of weight, raised beaches were formed – seen along the SE tip of the Cooley Peninsula (left, below, at Templetown Beach). Finally, about 5,000 years ago, the first of the bogs were formed, leading to the formation of peat.



If you wish to read more about the geology and landscape of the area, ‘A Geological Field Guide to Cooley, Gullion, Mourne and Slieve Croob’ by Sadhbh Baxter, is available as a pdf download from

www.louthheritage.ie/publications. This guide is aimed at second level teachers and students, and should be accessible to any interested reader.