

# Glaciation

Take a trip through what we call a glacial landscape. Have a good look at these features which were formed by the power of ice! This is the Snowdonia area of Wales. To know why it's like this today, we must look at what happened to it in the past. Do YOU know what might have happened?



## The Ice Ages

Can you imagine most of the world covered with ice? Over the Earth's 4.6 billion year history there have been several Ice Ages. The ice was a lot thicker than the ice which forms on your windows in winter. Guess how deep it could get...? In fact it could reach up to 4km thick! Imagine how heavy that was. Now, imagine what it did when it started to move very slowly. When all the ice melted, no wonder there were left scars on our landscape!



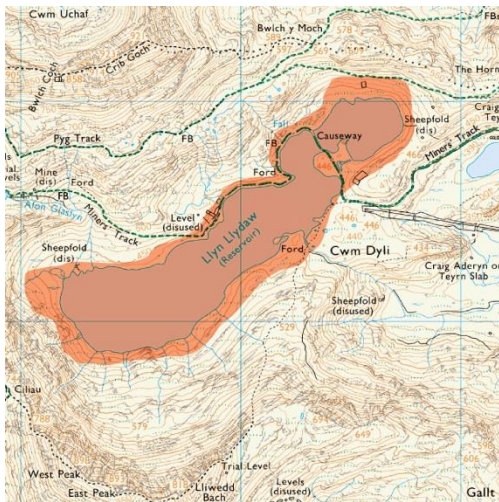
## Glaciation

The moving ice sheets are called glaciers, so the process of them changing the landscape is called glaciation. There are a number of ways they have shaped this particular area of Wales. Have a look at this picture. Look at how the ice has changed the landscape.



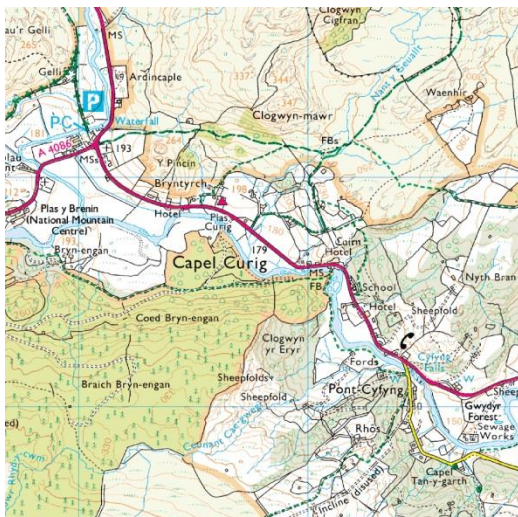
### U-Shaped Valley

How was this made? The glacier flows through an earlier 'V' shaped valley, scouring the sides and the floor as it does so. This makes it deeper, wider and straighter, and when the ice melts the valley is 'U' shaped with very steep sides and a fairly flat floor. U-shaped valleys are also called glacial troughs. Rivers flowing through them today are called 'misfit streams' because they are far too small to have cut the valley.



### Deposition

Like a river, glaciers pick up rocks and stones and carry them along. These could be anything from large boulders to fine clays. Some of these are deposited down on the valley floor, and the clays help to stick them down. These deposits are called moraine or till. The ones that are pushed ahead of the glacier form hilly lumps when the ice melts. This is called terminal moraine. Some of these hilly lumps are so big you can see them on a map.

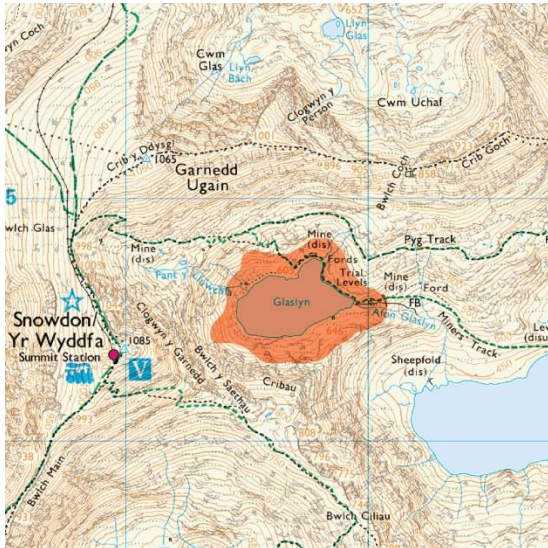




### Cirques

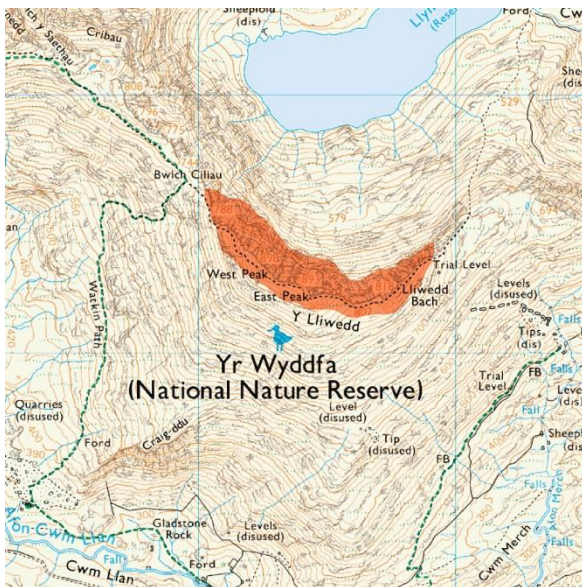
When water turns to ice, it expands. If water collects in a hollow on a mountain and then freezes. Cirques are formed when more and more ice collects inside these hollows and then thaws. Repeated many times over many ice ages, this process gradually erodes the hole, making it bigger and deeper.

So, what started off as a small hollow turns into something much bigger over time. In Wales, cirques are called cwms and in Scotland they are known as corries. They are usually armchair shaped. Sometimes a lake forms in the bottom of a cirque, such as Glaslyn Lake near the summit of Snowdon.



### Arêtes

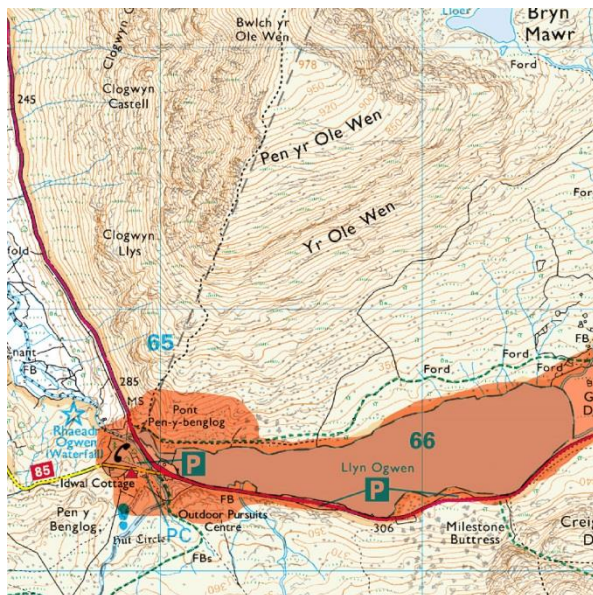
Here's another section of Snowdonia on an OS map. What is the most striking feature? Have a look at the contour lines. What do you think it would look like if you could actually see it? The feature you are looking at is a steep-sided ridge called an arête. These are formed when the walls of two cirques erode backwards against each other. When three cirques erode backwards against each other they form a peak or a horn. The most famous example of this is a mountain in the Alps called the Matterhorn.



### Hanging Valley

When a glacier forms a U-shaped valley, the tributary valleys feeding ice or water into the main glacier are sliced through, and are left hanging above it. A good sign of a hanging valley is a waterfall or several waterfalls flowing into the main glacial valley. A hanging valley is the most difficult glacial feature to find on an OS map. Look at this map to find a U-shaped valley, then try to find a small valley 'hanging' above it. Why not have a go?

## Mapzone resources



Ordnance  
Survey