

Classic glacial and post glacial landforms of snowdonia



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Cwm Idwal (CI) is a Cirque: which is a glacially eroded semi circular steep walled basin, cirques commonly contain a lake this is what Llyn Idwal is. The Younger Dryas period was when CI was formed as a cirque, around 12, 000 years ago, in the UK the event was called the Loch Lomond Stidial (The BBC, 2002). Various landforms that are associated with glacial and post-glacial are found in this area, with using a base map and Google Maps of the area we were able to determine some landforms before going into the field. By doing this, we managed to predict the Ice Flow Direction and where the Moraine Ridges were in the landscape.

* Next to the footpath, on appendix 1 grid reference 360001: 359004, we can see an Erratic from the annotation on the map that the erratic is small. Appendix 2, figure 1 shows a field sketch of the erratic and rough measurements of 7 meters long and 2 meters high. An erratic is ' a boulder carried by glacial ice from the origin usually in a different bedrock type on destination' (Hug, 1998).

* Roche Moutonnée landforms " Commonly occur in clusters" (Bennett and Glasser, 1996, p118). However, this example on the base map in appendix 1 is a singular mass at 359009: 264009. The mass is 10 meters long and 1. 5 meters high as shown in appendix 2 figure 3 of my field sketches. ' the smooth end faces the direction of flow whilst the other side is steeper' (Summerfield, 1993).

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* The Degraded Rock Wall with loose rock debris is roughly 200 meters high, this was found in appendix 1 at 359008: 264007. Being around 400 meters
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across. The rock debris can be highlighted gratefully by appendix 2, figure 5, on Google maps you cannot see rock debris or scree very clearly, this is why fieldwork is vital for identification. à (Google Maps, 2009)

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* The Glacially Eroded and Steepened Rock Wall on appendix 1 is located at 358002: 264007, is typical of a cirque. The landform is “ located at the heads of deep valleys” (Summerfield, 1993, p274)

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* A Hanging Valley is formed from glaciations, being eroded by a small glacier; the valley sits up above Cwm Valley. In appendix 1 the location is 358002: 264008 and finishes around 359008: 263001. You can see the layout of the hanging valley in appendix 2, figure 9. A typical feature of a hanging valley is a waterfall or stream which can be seen easily on my field sketch.

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* Hummocky Moraine is formed from a high debris concentration it’s “ an irregular collection of mounds and enclosed hollows” (Bennett and Glasser, 1996, p231). These mounds can be seen clearly in appendix 2, figure 8, the cluster is 80 meters wide and 115 meters length ways. The amount on CI is two small belts either side of Llyn Idwal in appendix 1 at 358005: 264003 and 358003: 264004.

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* Infilled Lake Basin is dammed by a rock lip, the movement of the ice in the Younger Dryas period created a deep basin (Owen and Green, 1997). Llyn Idwal is from 50- 305 meters wide and 625 meters long. Appendix 1 locates the lake basin starting at 358004: 359002. The field sketch on appendix 2, figure 7, shows the flat lake basin and the lip in the far distance of the sketch.

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* Whalebacks are parts of bedrock the ice has moved over and so have been smoothed and rounded all over erosion. In appendix 1 the whalebacks are located at 360006: 264001. They range from 145 meters long and 40 meters wide.

Post glacial landforms develop after the glaciation period, landforms highlighted in appendix 4 such as degraded rock wall, forming truncated spurs happen due to weathering. Physical weathering dominates cold climates such as CI.

Freeze thaw happens when temperature is around 0 degrees, water in joints freeze and expand by around 10%, weakening the surrounding rock. Physical weathering affects the majority of glacial and post glacial features on appendix 3, with exception to the infilled lake basin. Pressure release from the former ice sheet covering the rock produces sheet joints parallel to the ground surface, therefore encourages further weathering. Hydrolysis affects feldspar as the water combines with certain minerals in the rock. When weathered it produces Na, K and Mg ions which are clay minerals. Organic action is produced by the action of animals and plant roots breaking up the <https://assignbuster.com/classic-glacial-and-post-glacial-landforms-of-snowdonia/>

rock. Roots seep through existing cracks as they grow and thicken they increase the pressure on the cracks causing them to fracture and expand. In a wet environment, such as CI, the growth rate of vegetation is high.

Weathering is influenced by climate, underlying geology, vegetation cover, relief and aspect.

The geology is hard rock, made up of felsic tuff, an igneous rock rich in light coloured minerals such as feldspar and silica (quartz) (Hug, 1998). The rock has an equigranular texture, and is cooled very slowly and is intrinsic, slow cooling enables the minerals to be very small and confined. Tuff is a hard volcanic rock composed of compacted volcanic ash. Igneous rocks are more resistant than sedimentary, they are older rocks found in upland areas such as North West Wales. Due to the release of pressure from the glacier melting the rock developed cracked joints and bedding planes which causes water to enter the rock, therefore the amount of joints increases the weathering. The chemical composition of the rock determines the vulnerability of weathering. The granite and feldspar are prone to hydrolysis (Alden, 2006).

Vegetation cover is important, organic acids from plants and other matter increase chemical weathering on Cwm Idwal. Due to the low vegetation cover, the organic acids released from bacteria and respiration of the plant roots only produce a small increase in the carbon dioxide for chemical weathering.

Relief and Aspect is a major part of CI, it is a mountainous area, exposed to rain and extreme temperatures, the area is vulnerable to physical processes such as freeze thaw. Gravity has more force on steep slopes, so weathered

material is removed quickly, such as a steepened rock wall. Not like the more gentle slopes in CI such as the degraded rock wall with a debris cone which is scree build up.

Geomorphological mapping is a brilliant way of accessing an area of interest that people go too. Photographs from people previously going to the area is a brilliant example of secondary data, comprising of brilliant detail. This can include being able to see the proper image of the slopes and the landforms such as scree slopes and degraded rock walls. In appendix 4 lies the photographs which were taken from the trip. This can be harder to see from aerial photographs as the picture quality is lower the more you zoom in, conversely, you can get a scale for the landforms and find out the size. Areas that people are unable to climb are easily viewed from aerial photographs therefore has an important part. However, both of these techniques have fixed viewpoints and so acquiring a whole virtual picture of an area before going is impossible.

Field mapping is a longer process which you have to be at the area of study. However, for the viewer it is an in depth analysis with a virtual picture of the whole area. Problems with this method are that areas that are inaccessible due to not having safety equipment cannot be viewed. This is the one major flaw with this approach, landforms associated with this problem are hanging valleys and v shaped valleys. This is where aerial photographs are beneficial.

In conclusion, aerial photographs are congenial to work with for preliminary study of a location; however field work is needed to incorporate understanding of the area. Nothing is more prominent than a 3D view of the

work area. Additionally, photographs, aerial pictures and Google maps are a necessity when trying to understand the location prior to visiting to enable building up a picture and specifying what parts you want to specialise in.

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