

Formation of a limestone and how it produces a Karst landscape| sample answer

Q: 'Examine, with reference to an example you have studied, the formation of one rock-type and how it produces a distinctive landscape' (2008 Q3 B.)

There are 3 types of rock groups these are categorized as to how they were formed. Metamorphic, igneous and sedimentary.

Sedimentary rocks are composed of compressed sediment. Sedimentary can be sub categorized into inorganic and organic. Organic is if the sediments that make up the rock were living matter like plants or animals.

Inorganic is if the sediments were broken down rock cemented together (lithification) eg. Conglomerate. Because of the layers on top of the rock, lithification happens when sediments are put under a lot of weight. As more weight is added the air and water pockets between each sediment are squeezed out and is stuck together with a calcium or silica sticking agent.

Limestone is formed when lithification occurs with dead marine organisms on the sea bed.

In Ireland, limestone was formed in the carboniferous period. Because of the way limestone is formed (in layers) there are strata and bedding and because of plate tectonics there are joints.

The 3 main types of limestone are: Carboniferous, which is composed of 50% calcium, Dolomite which is grey or black and found in Kilkenny and Chalk which is pure soft white limestone found under a layer of basalt in Antrim.

Limestone is made of calcium and as result erodes easily to weak acids found in rain.

Limestone can create a karst region. Karst landscape usually develops on carboniferous limestone that has either been uplifted by tectonics activity or exposed by denudation.

Karst landscapes are most prevalent in regions with tropical or moist temperate climates, eg China.

Another example is the Burren in north Clare.

'Burren' means rocky place and is Ireland's finest example of a limestone plateau that covers 360 kmsq.

The Burren was formed when shale and sandstone was essentially scraped off beds of limestone in glacial times. We guess this because the highest point (Slieve Elva) is capped by shale and sandstone.

Early settlers were also a factor in creating the Burren landscape. They removed forests; therefore the roots to keep the soil down. This exposed the limestone to weathering and carbonation.

The burren has quite a few distinctive physical features:

Drainage, a lot of the rivers are under the bed rock because limestone is porous. There are a few springs such as St Brendan's Wall but they disappear into swallow holes.

Surface landforms, 60% of the Burren is bare rock. This is a limestone pavement, with spectacular swallow holes for example Pollnagollum is over 40m in diameter.

Sub surface, the underground rivers carved caves and caverns under the surface. Aillwee is an example of a dry cave.

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The Burren is starting to become in its mature stage in the karst cycle of erosion. Meaning the underground eroding puts too much strain on the surface and therefore it collapse. These create big indents in the karst landscape.

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