

Land of fire and ice

This Centrepiece looks at some of Iceland's well-known landforms and explains the processes that continue to create this extraordinary landscape

Iceland is a country of great geodiversity where fluvial, glacial and volcanic processes interact. It is one of the youngest landmasses in the world, straddling the mid-Atlantic ridge. More than 11,400 km² of Iceland is covered in ice and there are over 30 active volcanoes.

It is the least populated country in Europe — around two thirds of its inhabitants live in the capital, Reykjavik. Much of the wider Icelandic landscape is inhospitable and hazardous. The photographs here from southern Iceland show landforms created by the interaction of the fluvial, glacial and volcanic systems. The dominance of these processes varies markedly in space and time.



Mýrdalsjökull

Mýrdalsjökull is one of the many glaciers in Iceland and is situated on top of the Katla volcano. This can have devastating consequences when Katla erupts, as the glacier ice rapidly melts creating catastrophic floods known as jökulhlaups. The 2010 eruption of the nearby volcano Eyjafjöll has blanketed the glacier in dark volcanic ash. This type of event changes the **albedo** (reflectivity) of the glacier surface and increases melting — another example of interaction between volcanic and glacial processes.



Gullfoss

Gullfoss means 'golden waterfall'. It consists of two adjacent waterfalls with vertical falls of 11 and 21 metres respectively. Gullfoss is on the River Hvítá which has its source in a glacial lake of the Lángjökull glacier. The waterfall began to form when a fissure in volcanic rocks was exploited by the river. This fluvial landform has been created by the glacial process of **ablation** (loss of ice mass) and by past volcanic eruptions. The flow velocity averages 109 m³ s⁻¹. It peaks in the summer at 130 m³ s⁻¹ when ablation is greatest. Iceland's high latitude means there is almost continual daylight in the summer months.



Geysir

The number of tourists visiting Iceland has more than doubled since 2000. One key attraction is Geysir, a geothermal spring which blasts boiling water around 30 m into the air. Volcanic activity heats sub-surface water to a base temperature of around 250°C before the water is forced upwards to give the spectacular spout seen by tourists every few minutes of the day.



Skaftafell National Park



Figure 1 Map showing the location of the features mentioned

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