

GEOLOGICAL HISTORY OF THE LAKE DISTRICT

Lakeland's geology, scarred by seismic upheavals over millennia, presents a complicated physical landscape of mountains and lakes. In the deep past tectonic plate movements destructured and reconstructed Earth's landforms, realigning continents and causing immense upheaving, faulting and folding. Across northern landmasses, within the past 500 million years continental drift, volcanism, glaciation, erosion and cataclysmic changes in land and sea levels have created, destroyed, remade and redefined the underlying geology and terrain seen today in the Lake District (as a part of wider Britain and northern Europe).

The grandeur of The Lakes is the result of earth-shaping, glaciation and erosion across eons, overlaid by altered patterns of vegetation distribution and occurrence. More recently, since the last glacial maximum, the effects of human settlement, land use change and development have impacted the landscape.

Major rock formations

The Skiddaw Group

The oldest is the 500-million-year-old Skiddaw Group, formed from marine sediments. Over millions of years these deposits were metamorphically altered, pressured, compacted and uplifted as landmasses collided and shattered, developing into the shale and slate mountain ranges and rocks that now stand exposed in the northern fells. The uplands north of Keswick, centred on the Skiddaw massif, epitomise the rough and rolling scenery of the Skiddaw Group, rising to an elevation of 931m (3,054') on Skiddaw itself.

The Borrowdale Group

The second oldest is the 450-million-year-old Borrowdale Group, formed from volcanic eruptions. These rocks formed from super-heated ash and lava spewed from vents or cascaded into the atmosphere during frequent violent eruptive episodes. Borrowdale Group rocks are generally hard, impermeable and resistant to erosion. Most of the high ground across the western, central and eastern fells (including England's highest mountain, Scafell Pike, 978m, 3,210') comprise granite or similarly durable igneous material.

The Windermere Group

The youngest is the 420-million-year-old Windermere Group, formed from more readily eroded limestones and sandstones. These rocks underpinned loftier ranges but now, long eroded, appear as the gentle rolling landscape of southern Lakeland.

Mineral nutrients enable sustainable vegetation

Over time, rock dissolves and erodes due to chemical and weathering processes. Erosion results in mineral nutrients being released into the ground where, in solution, the roots of trees/plants can absorb and exploit them. Surface water run-off plus the vertical/lateral percolation of groundwater distributes nutrients by leaching minerals through layers of substrate. Chemical interactions aggregate, reduce or recombine elements. Where mineral nutrients are available to roots trees and plants are sustained (or conversely, where unavailable, plant growth is inhibited, restricted or stopped).