

## Topic Page: [glacial erosion](#)

Summary Article: **glacial erosion**

From *The Hutchinson Unabridged Encyclopedia with Atlas and Weather Guide*

Wearing-down and removal of rocks and soil by a glacier. Glacial erosion forms impressive landscape features, including glacial troughs (U-shaped valleys), arêtes (steep ridges), corries (enlarged hollows), and pyramidal peaks (high mountain peaks with three or more arêtes).

Erosional landforms result from abrasion and plucking of the underlying bedrock. Abrasion is caused by the rock debris carried by a glacier, wearing away the bedrock. The action is similar to that of sandpaper attached to a block of wood. The results include the polishing and scratching of rock surfaces to form powdered rock flour, and scratches or striations which indicate the direction of ice movement. Plucking is a form of glacial erosion restricted to the lifting and removal of blocks of bedrock already loosened by freeze–thaw activity.

The most extensive period of recent glacial erosion was the Pleistocene epoch (1.6 million to 10,000 years ago) in the Quaternary period (last 2 million years) when, over a period of 2 to 3 million years, the polar icecaps repeatedly advanced and retreated. More ancient glacial episodes are also preserved in the geological record, the earliest being in the middle Precambrian era (4.6 billion to 570 million years ago) and the most extensive in Permo-Carboniferous times.

Larger landforms caused by glacial erosion generally possess a streamlined form, as in roche moutonnée and corries. A common feature of glacial erosion is the glacial trough. Hanging valleys, with their tributary waterfalls, are smaller U-shaped valleys that connect with larger U-shaped valleys. The amount of lowering accomplished by glacial erosion has been estimated at 0.05–2.8 mm/0.002–0.11 in per year, a rate of lowering 10 to 20 times that associated with the action of rivers. Depositional landforms cover 10% of the Earth's surface.

Periglacial processes result from frost and snow activity in areas on the margins (edges) of an icesheet. Among the most important periglacial processes are frost-weathering and solifluction. Frost-weathering or freeze–thaw (the alternate freezing and thawing of ice in cracks in the rock) exploits joints and areas of weakness, and results in scree (frost-shattered rock).

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glacial erosion

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glaciation

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## Chicago

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## Harvard

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