

Formation of glacial landforms

Before we can explore the different types of glacial landforms, we need to understand a little bit more about the forces at play. Glaciers shape the landscape in two main ways: through erosion and deposition. Basically, a glacier picks up materials like rocks and sediments in one place, then later sets them down in a different place. **Erosion** removes rocks and sediments, leaving behind scarred landscapes. The removed rocks and sediments are then *deposited* in different locations. **Deposition** builds up rocks and sediments on the landscape, creating a gently rolling or bumpy-looking terrain. Even after glaciers melt away, we can still see the unique landforms they leave behind.

Let's take a look at a few common glacial landforms types and how they form.

1. Cirque



A small tarn, found within a cirque. Scales Tarn and Sharp Edge, Blencathra by Philip Halling

A steep-walled mountain basin with one open side, located at the upper end of a glacial valley. Sometimes, you will find a small pond (called a **tarn**) in the bottom of a cirque.

Formation: Cirques become carved into the landscape at the start of valley glaciers' paths. A cirque opens to a valley on one side, in the direction that the glacier moved.

Example: Cirque Meadows in northern Colorado, USA (seen from a distance)

2. Arête



Long ago, an arête like this one separated two valley glaciers. [Carn Mor Dearg Arete by David Crocker](#)

A sharp, spiny mountain ridge separating two glacial valleys.

Formation: An arête forms through glacial erosion by two valley glaciers, one on either side of the ridge.

Example: The [Carn Mor Dearg arête](#) of Ben Nevis, Scotland

3. Horn



The Matterhorn in the Alps is a great example of a horn. Photo by Pixabay

A sharp, pointy mountain peak. Horns are places where three or more arêtes meet. At the base of a horn, you will find three or more cirques.

Formation: A horn forms through erosion on all sides by three or more glaciers.

Example: Multiple glacial horns near Laguna Parón, Peru

4. U-shaped valley



A U-shaped valley forms when a glacier moves down a mountain valley. After the glacier recedes, the U-shaped valley is left behind. Photo by Stephan Seeber

A gently sloping valley carved out by a glacier that looks like a U from a profile view. In contrast, a valley carved out by running water will have a V-shape on profile.

Formation: U-shaped valleys become eroded into the landscape by valley glaciers.

Example: Lötschental Valley, Kippel, Switzerland

5. Moraine



Terminal

moraine by Rob Burke

Long mounds of unsorted glacial till that are deposited onto the landscape along the borders of glaciers. There are several different types of moraines including lateral moraines, end moraines, and medial moraines.

Formation: Moraines form as a glacier deposits till along its sides and front.

Example: Kettle Moraine State Forest, Wisconsin, USA (moraines create the gently hilly landscape)

6. Drumlin



Drumlins have one steep end and one smooth, elongated end. Drumlin country by Gordon Hatton

A low, streamlined hill made of glacial till with one steep end and one smooth, elongated end pointing in the direction that the glacier moved.

Formation: Drumlins are depositional landforms that form beneath ice sheets. If the area around a drumlin later becomes flooded with water, the drumlin can become an island.

Example: There are many drowned (island) drumlins in the Clew Bay, Ireland

7. Esker



Esker in Glen Lednock by Gordon Brown

A long, winding ridge made of sand and gravel.

Formation: Eskers form in the outwash from ice sheets. They form as sand and gravel settle out of meltwater flowing in streams underneath and in front of receding glaciers. If the area around the esker later becomes flooded with water, the esker can become an isthmus.

Example: Eskers Provincial Park in Alberta, Canada (look for subtle, s-shaped ridges in the landscape)

8. Kettle



Devil's Lake in Wisconsin is a classic example of a kettle.

A depression in the earth where a buried ice block melted. Kettles are often filled with water (e.g., a kettle lake).

Formation: A kettle forms when a large chunk of ice is deposited and buried in glacial outwash. As the buried ice melts, a depression forms and often fills with water.

Example: Devil's Lake, Wisconsin, USA

9. Fjord



A fjord. Photo by Aleksey Kuprikov

A fjord is a deep, narrow inlet found along a coast.

Formation: Fjords are carved out by valley glaciers, then fill in with ocean water when the sea level rises.

Example: Eyjaflörður near Dalvik, Iceland