

Glaciation

By Lennart Kiil



[Andreas Beeker, CC BY 2.0](#)

The formation and growth of [glaciers](#).

Glaciation is also sometimes used instead of [ice age](#), during which large land areas are covered in thick ice.

Glaciers are large masses of ice. They move slowly due to the action of gravity. They form and grow when snow falls during the winter. In the summer period some, but not all, of the snow melts, which results in the addition of a new snow layer every year. As the years go by, the ice gets thicker and thicker until the ice is so thick that its mass deforms the snow at the bottom and makes it behave a bit like a fluid. If the ice is on a slope then gravity will cause the glacier to move downhill.

Glaciations, especially the ones that occurred within the past two million years, have a large impact on the landscape. This is because of the movement of the ice and the materials that move with it. Rocks and soil are often carried along with the advancing glacier and left behind when it again retreats.

Such deposits of glacier materials created the characteristic moraine landscape, which consists of large boulders and finely grained rock material and till. Till is a mixture of clay, sand and rocky remains. Till sometimes also contains valuable minerals such as diamonds and other gems as well as fossils.

Glaciations also change the landscape through plucking and abrasion. Plucking occurs when a glacier moves across a solid rock bed and runaway melt water from the glacier flows into cracks in the rock bed and subsequently freezes. The expansion that happens during freezing separates parts of the rock from the ground and lifts them into the glacier, where they are carried along. Plucking can create lakes, fjords and lochs.

Abrasion is when the moving glacier is carrying a lot of rocks and other materials that then act like sandpaper on the ground that the glacier is moving upon. This process, for instance, creates the characteristic U-shaped valleys, which come from V-shaped valleys that have been widened by the movement of ice and the materials within it.

Glaciers, in combination with the Antarctic and the [Greenland Ice Sheet](#) also have a big impact on the climate. They help cool the planet through [reflection](#) of [sunlight](#) from the ice. If increased [temperatures](#) caused by [global warming](#) begin to melt the ice, this would give rise to [positive feedback](#), where the decreased ice would cause less reflection and this would then lead to even higher temperatures, which again would result in the melting of more ice and so on.

If all the ice on Earth melted, the [sea level](#) would rise with more than 70 m. Fortunately, not even the most pessimistic [climate models](#) predict that all the ice will melt.

How to cite this entry

Lennart Kiil: "Glaciation". Climate Encyclopedia, climate-encyclopedia.com/glaciation, retrieved 24 October 2026.

Climate Encyclopedia is free and needs no login.