Extent of Glaciers

Glaciers can exist only in places where it is cold enough for water to stay frozen year round. Glaciers are found in mountain ranges all over the world and in land regions near the north and south poles.

Today, glaciers cover about 10 percent of Earth’s land surface. However, the amount of land surface covered by glaciers has varied greatly over Earth’s history. Glaciers have expanded during long cold periods called ice ages and have disappeared during long warm periods. About 30,000 years ago—during the last major ice age—glaciers extended across the northern parts of North America and Eurasia. They covered nearly 30 percent of the present land surface of Earth.

There are two major types of glaciers: alpine glaciers and continental glaciers.

Alpine Glaciers

Alpine glaciers, also called valley glaciers, form in mountains and flow down through valleys. As these glaciers move, they cause erosion, breaking up rock and carrying and pushing away the resulting sediment. Over time, an alpine glacier can change a V-shaped mountain valley into a U-shaped valley with a wider, flatter bottom.

Some glaciers extend all the way down into the lower land at the bases of mountains. At an alpine glacier’s lower end, where temperatures are warmer, melting can occur. The melting glacier drops sediment, and streams flowing from the glacier carry some of the sediment away. If an alpine glacier flows into the ocean, big blocks may break off and become icebergs.

Continental Glaciers

Continental glaciers, also called ice sheets, are much larger than alpine glaciers. They can cover entire continents, including all but the highest mountain peaks. An ice sheet covered most of Canada and the northern United States during the last ice age. This ice sheet melted and shrank about 10,000 years ago.

Today, ice sheets cover most of Greenland and Antarctica. Each of these glaciers is shaped like a wide dome over the land. The ice on Antarctica is as much as 4500 meters (15,000 ft) thick.