Glaciation

Glaciers are found in the high valleys of many mountain ranges today, although most are melting faster than they are replenished by snowfall. This means the valley end of the glacier is continually retreating higher up the mountain. Today's mountain glaciers are but a small leftover from the great glaciers that filled the valleys in the cold stages of the Pleistocene Ice Age. Ten thousand years ago glaciers started to melt faster than they were supplied with snow. It must have taken the same sort of time for the glaciers to build up. Over the last 2 million years, glacier build-up has happened each time a cold, wet, glacial period followed a warmer, interglacial period. The Earth today is thought to be in an interglacial period of glacier melting. As valley glaciers flow, they carve their valleys wider and deeper, eventually making a U-shaped trough. Melting glaciers are hemmed in by great mounds of sediments which were washed out of the ice. These fragments have been scoured or plucked from the surrounding rocks and transported downhill by the glaciers as they move slowly down the valleys. In this way glaciers can transport huge amounts of rock fragments from mountain summits to valley floors.

CONTINENTAL ICE SHEET

The interiors of Greenland and Antarctica are covered with ice sheets thousands of metres thick. The thickness reduces towards the edge of the land mass. Near the coast of northwest Greenland, valley glaciers are threading their way through mountains which ring the island. Rock fragments are carried along the edges of the glacier (lateral moraines), and also within the ice itself.

SATELLITE SNOWSCAPE

Alaska, Canada, much of the northern USA, and Scandinavia, as well as Antarctica and Greenland, were ice-covered at the coldest stages of the Pleistocene Ice Ages. Today, some of these regions have still snow-covered in winter, while only their mountainous regions have permanent glacier ice. In winter, as seen in Alaska from satellite, peak ice builds up around the coast as the sea freezes and the first winter snow falls. In Siberia, Alaska, and northern Canada, great regions still have permanently frozen ground known as permafrost, though this is reducing in area.