Fjords Encyclopedia Article

Fjords

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Fjords

Fjords (sometimes spelled fiords) are drowned glacier valleys. The depth of a fjord may exceed 1 mi (1.6 km) while the length sometimes exceeds 60 mi (97 km).

Geologic evidence indicates that some fjords form when a glacier cuts a deep, U-shaped valley through a river valley and advances into the sea. Given enough height and mass, the glacier may cut a valley into the sea floor as well. As it advances further into the sea, the glacier melts. The resulting reduction in size and mass causes the leading tongue of the glacier to float. A steep ridge is formed at the farthest reach of the glacier where the cutting stopped; this ridge is called a **sill**. In general, fjords can be identified by their steep sided, narrow channel, and sills.

Other evidence regarding the formation of fjords suggests that some of the deepest and most dramatic (such as those of Alaska, Norway, British Columbia, New Zealand, and other locations in the high latitudes) were formed during the most recent **ice** age. Evidence supports two scenarios to explain this process.

The first scenario suggests that some fjords resulted from landlocked **glaciers**. During the Ice Age, vast amounts of **water** were locked in enormous ice sheets. This reduced the availability of liquid water to Earth's **oceans** and exposed miles of coastline. In the coldest latitudes, glaciers excavated valleys as they moved onto the newly exposed coastline without ever reaching the sea. With the coming of warmer climatic conditions, ice sheets began to melt, causing the oceans to rise. At the same time, glaciers on the dry coastal shelves retreated. As they retreated, the rising **seas** filled the U-shaped valleys left behind.

The second scenario poses a combination of events that might account for the existence of some of the largest fjords. This explanation suggests that some glaciers did not remain land-locked on the coastal shelves during the ice age, but advanced for great distances and then continued their cutting on the sea floor. As the **climate** warmed, the rising seas occupied the deeply cut sea floor and advanced up the glacial valleys as the glaciers retreated.

It should be noted that fjords are classified as estuaries. However, due to their great depth and length, plus the height of their sills, they are semi-enclosed environments, similar to that of the open ocean. This characteristic sets fjords apart from all other estuarial environments.

See Also

Glacial Landforms