

Factors that Affect Climate

Climates are determined by the precipitation and temperatures in a region over a period which can be affected by the following factors:

Distance from the Sea (Nearness to Land or Water):

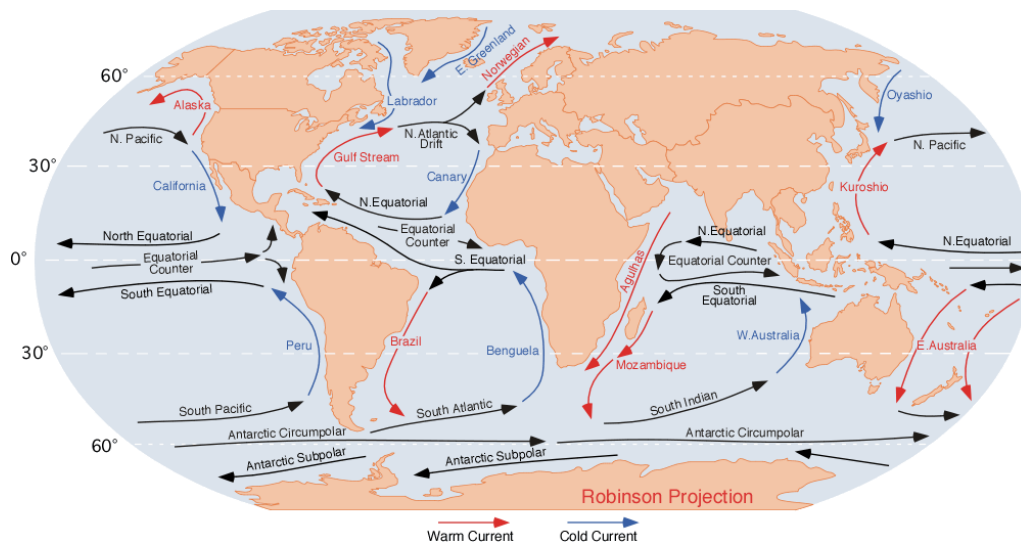


The sea affects the climate of a place. Coastal areas are cooler and wetter than inland areas. Clouds form when warm air from inland areas meet cool air from the sea. The centers of continents are subject to a large range of temperatures. In the summer, temperatures can be very hot and dry as moisture from the sea evaporates before it reaches the center of the land mass. Oceans heat up and cool down much slower than land. This means that coastal locations tend to be cooler in summer and warmer in winter than places inland at the same latitude and altitude. Glasgow (UK), for example, is at a similar latitude to Moscow (Russia), but has a milder climate (less of a range in temperatures) because it is nearer to the coast than Moscow.



Ocean Currents

Ocean currents can increase or reduce temperatures. The diagram below shows the ocean currents of the world. Warm ocean currents will bring warmer weather while cold water currents bring cooler weather.



Wind Currents

Winds that blow from the sea often bring rain to the coast and dry weather to inland areas. Large global wind systems are created by the uneven heating of the Earth's surface. These global wind systems, in turn, drive the oceans' surface currents. Cold wind currents will bring cooler temperatures while warm wind currents will bring warmer temperatures.

Altitude/Elevation/Nearness to Mountains

Climate can be affected by mountains. Mountains can have an impact on climates because sides closest to wind currents have more precipitation than the other side of the mountain which will in turn be a dry area.

The higher the place is above sea level the colder it will be. This happens because as altitude increases, air becomes thinner and is less able to absorb and retain heat. Therefore, mountains receive more precipitation than low lying areas because as air is forced over the higher grounds it cools, causing moist air to condense and fall out. That is why you may see snow on the top of mountains all year round.



Distance from the Equator (latitude)

The distance from the equator affects the climate of a place. At the poles, energy from the sun reaches the Earth's surface at lower angles and passes through a thicker layer of atmosphere than at the equator. This means the climate is cooler further from the equator. The poles also experience the greatest difference between summer and winter day lengths; in the summer there is a period when the sun does not set at the poles; conversely, the poles also experience a period of total darkness during winter. In contrast, day length varies little at the equator.

Temperatures drop the further an area is from the equator due to the curvature of the Earth. In areas closer to the poles, sunlight has a larger area of atmosphere to pass through and the sun is at a lower angle in the sky. As a result, more energy is lost, and temperatures are cooler.

In addition, the presence of ice and snow nearer the poles causes a higher *albedo*, meaning that more solar energy is reflected, also contributing to the cold.

Sources:

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