



## Ocean Currents

Oceans cover approximately 70% of the Earth's surface. However, they are not homogenous: the water is not the same temperature, it does not flow at the same speed, and it does not flow in the same direction everywhere. Currents in the ocean have different temperatures and flow at different speeds and in different directions from the surrounding water. These currents have important effects on climate in Oceania.

Ocean currents are created by many different forces. Water expands with the sun's heat, making the level of the sea higher at the Equator. Water is colder at the poles, making it sink and flow downhill toward the Equator. At the Equator, the sun's heat makes the water expand. As a result, the sea level is higher at the Equator than at the poles. Winds press on the surface, driving water in front of them. And finally, the Earth's rotation affects the oceans. Known as the Coriolis effect, rotation deflects the direction of both water and wind; to the right in the Northern Hemisphere and to the left in the Southern Hemisphere.

In the Southern Hemisphere, the dominant currents flow in a counterclockwise direction (in the Northern Hemisphere major currents such as the Gulf Stream flow clockwise). In the Southern Hemisphere the Humboldt or Peru Current flows along the coast of South America toward the Equator. Before reaching the Equator it turns westward, becoming known as the South Equatorial Current. The current then moves in a counterclockwise direction, turning south along the coast of Australia as the East Australian Current. By this time the water has become warm and winds from the east carry moisture to the coast of Australia and New Guinea and to the South Sea Islands. A North Equatorial Current moving clockwise brings moisture to islands north of the Equator.