

The oceans have major currents.

Would you ever want to go rafting on the ocean? Thor Heyerdahl of Norway did it in 1947 to demonstrate how early people might have migrated around the world. He floated on a wood raft from South America to Polynesia, without motor or paddles, powered only by an ocean current. An **ocean current** is a mass of moving water. There are many different currents that move water through the ocean. As they move water, ocean currents distribute heat and nutrients around the globe.

SURFACE CURRENTS

Strong winds blowing over the ocean are set in motion by the uneven heating of Earth's surface. These winds cause surface currents to flow. The currents extend only about 100 to 200 meters (300–500 ft) down into the ocean, but they cover large areas.

Earth's rotation curls surface currents into giant clockwise whirlpools in the Northern Hemisphere. In the Southern Hemisphere, currents curl counterclockwise because of Earth's rotation. The shapes of continents also affect the paths of surface currents.

Use your finger to trace a few of the surface currents on the map. Surface currents carry warm water away from the equator and cool water away from the poles. In this way, surface currents moderate global temperatures.

DEEP CURRENTS

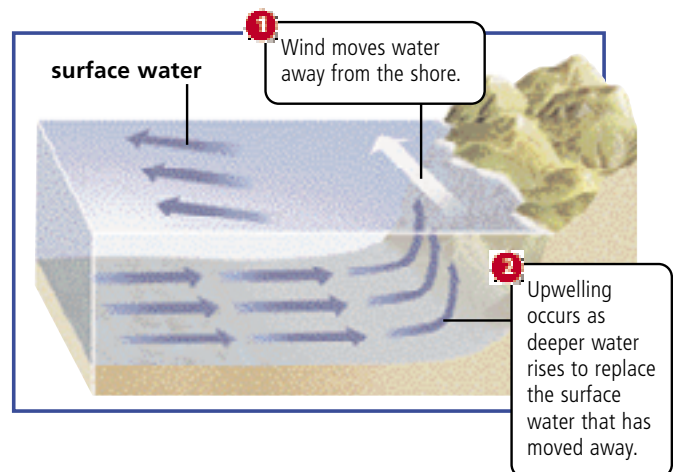
In addition to surface currents, there are also currents flowing deep in the ocean. Deep currents are driven by differences in water density. Dense water sinks in the ocean the same way that dense chocolate syrup sinks in a glass of milk.

Seawater can become more dense because of cooling, an increase in salinity, or both. The densest water is found in the polar regions. For example, as sea ice forms near Antarctica, the salinity of the cold water beneath the ice increases. The highly dense water sinks down the continental slope of Antarctica and then moves slowly across the ocean floor. It may take 1000 years for water from this current to resurface near the equator. Another deep current flows out from the Arctic Ocean.

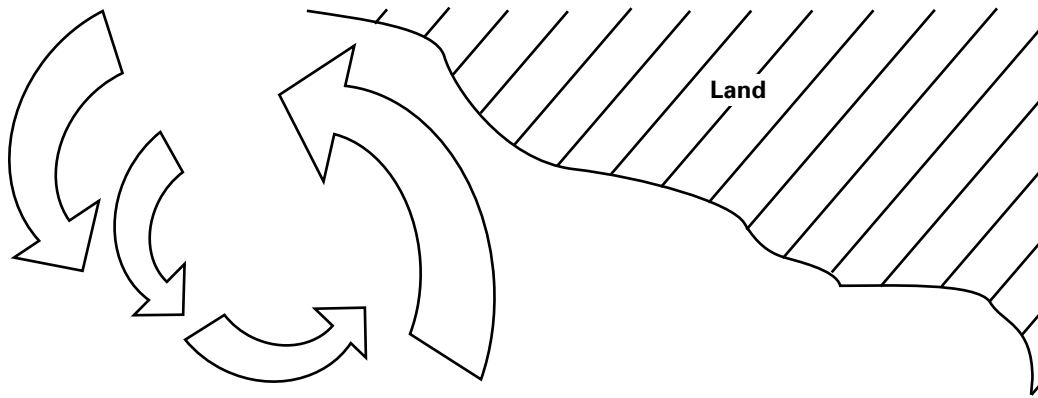
The movement of water in deep currents involves two processes important to ocean life. **Downwelling** is the movement of water from the surface to greater depths. As the water sinks, it carries oxygen down from the surface. The oxygen allows animals to live in the deep ocean. **Upwelling** is the movement of water up to the surface. Because this process brings up nutrients from the deep ocean, large numbers of ocean animals live in areas where upwelling occurs.

How Upwelling Affects Ocean Life

Upwelling provides nutrients that support animals and plants in surface waters.



1. In which hemisphere is the current shown below? How do you know?



2. How do surface currents distribute warm and cold water around the globe?

3. Fill in the chart about downwelling and upwelling. Include the benefits of both to ocean animals.

Downwelling	Upwelling
1.	1.
2.	2.
3.	3.