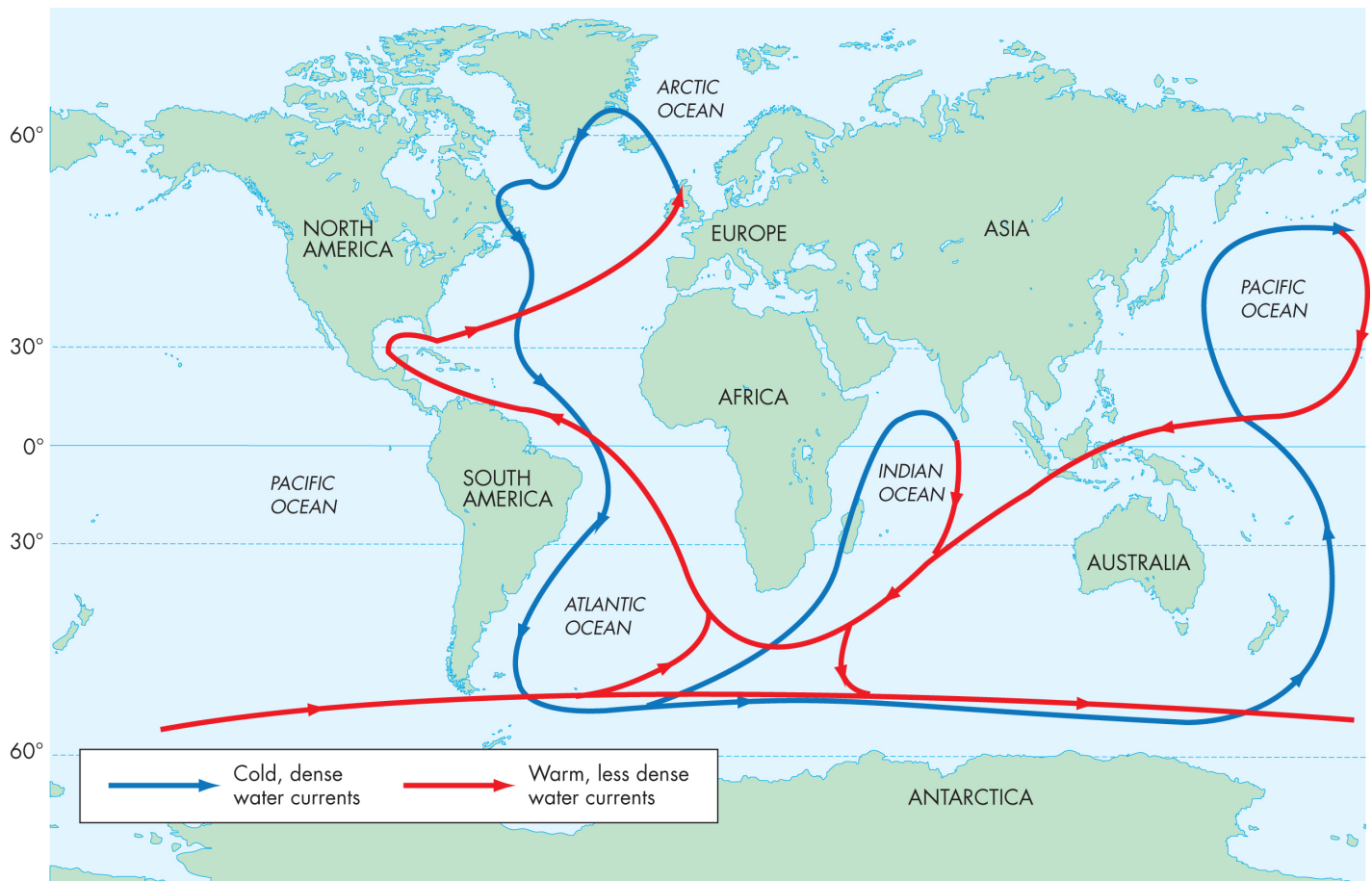


Global Ocean Conveyor Belt

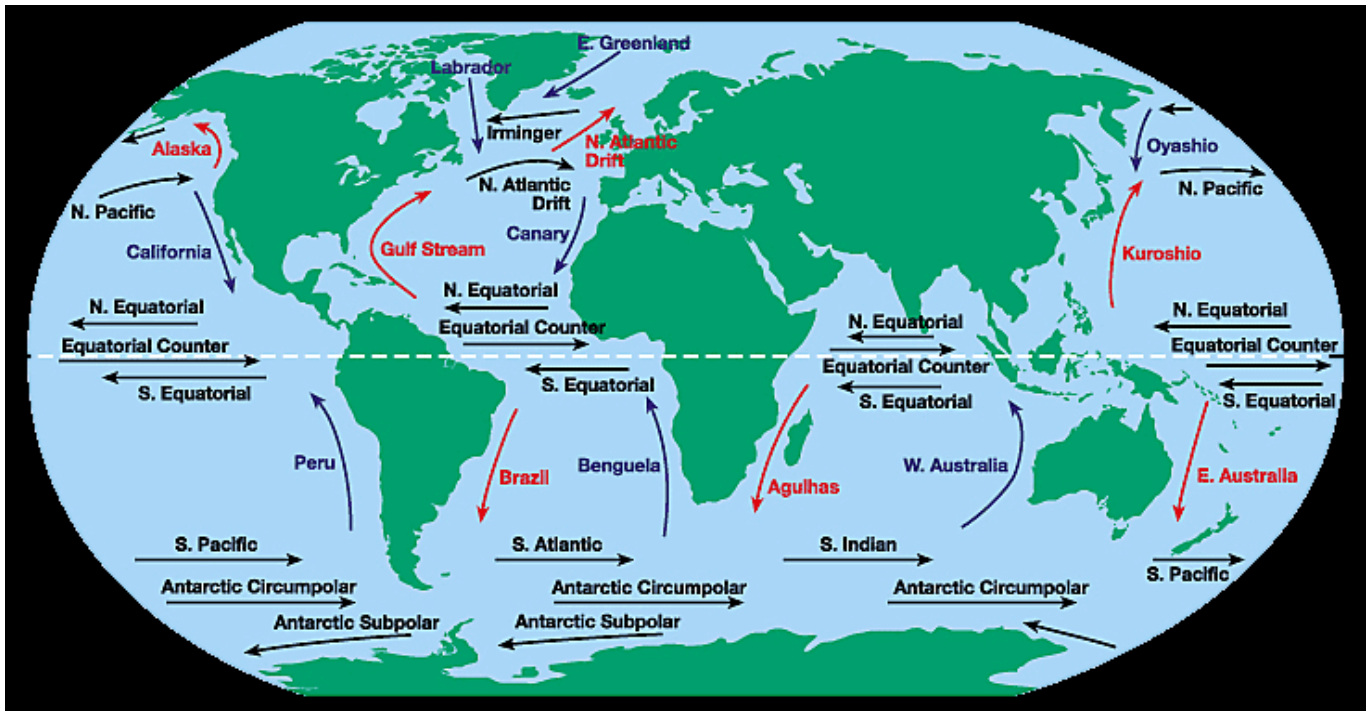
The ocean is not a still body of water. There is constant motion in the ocean in the form of a global ocean conveyor belt. This motion is caused by a combination of thermohaline currents (thermo = temperature; haline = salinity) in the deep ocean and wind-driven currents on the surface. Cold, salty water is dense and sinks to the bottom of the ocean while warm water is less dense and remains on the surface.

The ocean conveyor gets its “start” in the Norwegian Sea, where warm water from the Gulf Stream heats the atmosphere in the cold northern latitudes. This loss of heat to the atmosphere makes the water cooler and denser, causing it to sink to the bottom of the ocean. As more warm water is transported north, the cooler water sinks and moves south to make room for the incoming warm water. This cold bottom water flows south of the equator all the way down to Antarctica. Eventually, the cold bottom waters returns to the surface through mixing and wind-driven upwelling, continuing the conveyor belt that encircles the globe.

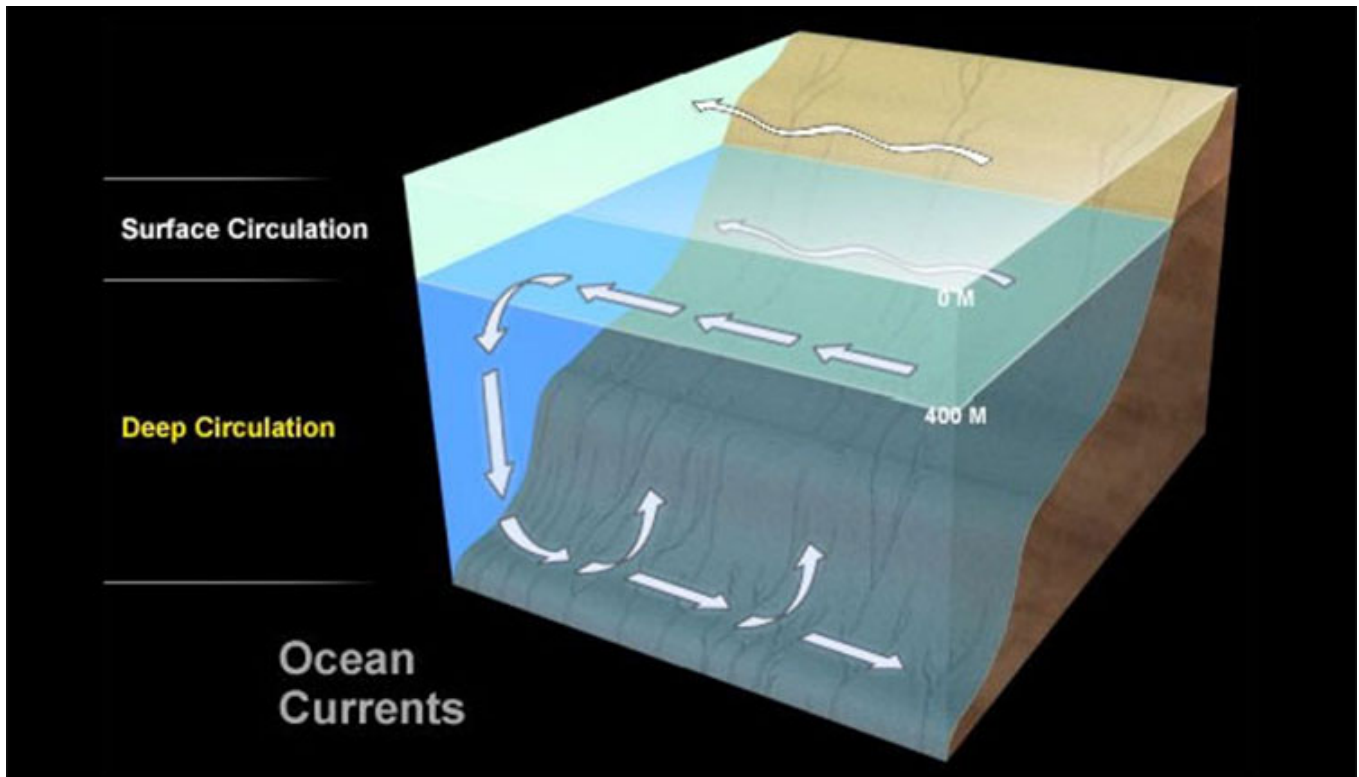


Major Ocean Currents

An ocean current is a continuous, directed movement of seawater generated by forces acting upon this flow, such as breaking waves, wind, the Coriolis effect, temperature, and salinity differences.

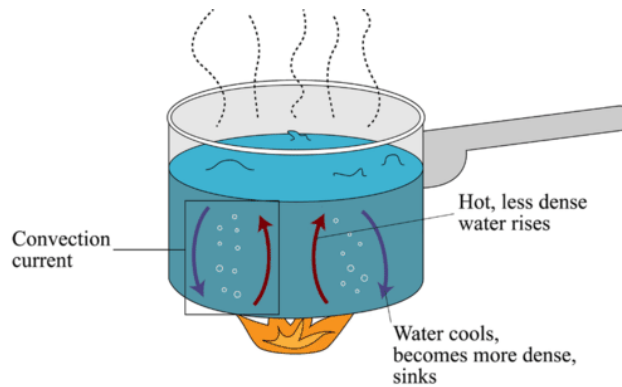


Surface currents make up only 8% of all water in the ocean, are generally restricted to the upper 400 m (1,300 ft) of ocean water, and are separated from lower regions by varying temperatures and salinity which affect the density of the water, which in turn, defines each oceanic region. Because the movement of deep water in ocean basins is caused by density-driven forces and gravity, deep waters sink into deep ocean basins at high latitudes where the temperatures are cold enough to cause the density to increase.



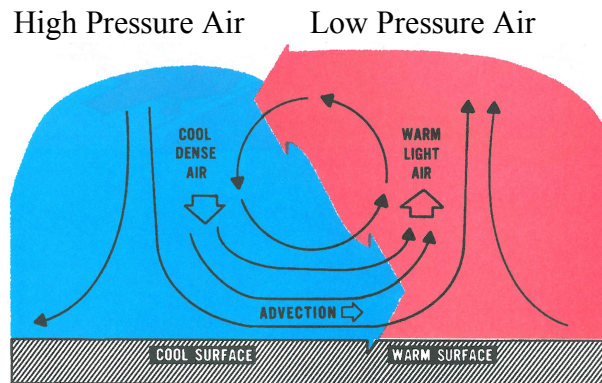
Convection Currents in Water

The hot water becomes less dense and rises. When the water cools it becomes more dense and sinks. The process starts again when the water get hot again.



High Pressure and Low Pressure Air

When the ground is hot, it heats the air and the air becomes lighter in weight and rises creating a low pressure. When the ground is cold, it cools the air and the air becomes heavy in weight and sinks creating a high pressure.



Coriolis Effect

The main cause of the Coriolis effect is the Earth's rotation. As the Earth spins in a counter-clockwise direction on its axis, anything flying or flowing over a long distance above its surface is deflected. This occurs because as something moves freely above the Earth's surface, the Earth moves east under the object at a faster speed.

Convection Currents

- Convection happens on a global scale in the atmosphere and causes global winds (6.4.9). These winds then move weather systems and surface ocean currents in particular directions.

