WHAT MAKES WATER MOVE?

Primary forces are:

1. Solar Heating (temperature, density)
2. Winds
3. Gravity
4. Coriolis force

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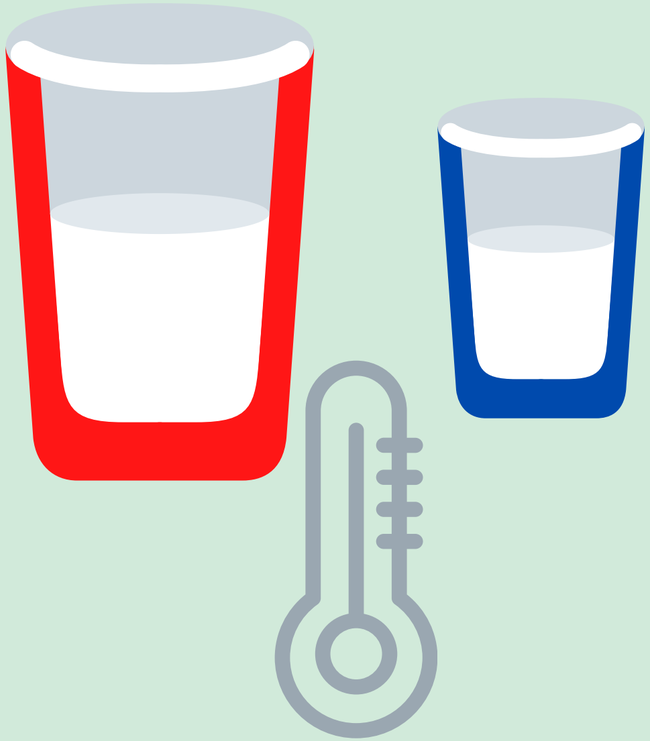
Secondary forces are
temperature difference;
salinity difference

THERE ARE SO CALLED RPRIMARY AND SECONDARY FORCES

Influence of INSULATION

Heating by solar energy causes the water to expand.
That is why, near the equator the ocean water is about 8 cm higher in level than in the middle latitudes.
This causes a very slight gradient and water tends to flow down the slope.
The flow is normally from east to west.



Influence of WIND (atmospheric circulation)

Wind blowing on the surface of the ocean
pushes the water to move. Friction between the wind and the water surface affects the movement of the water body in its course.
Winds are responsible for both magnitude and direction of the ocean currents.

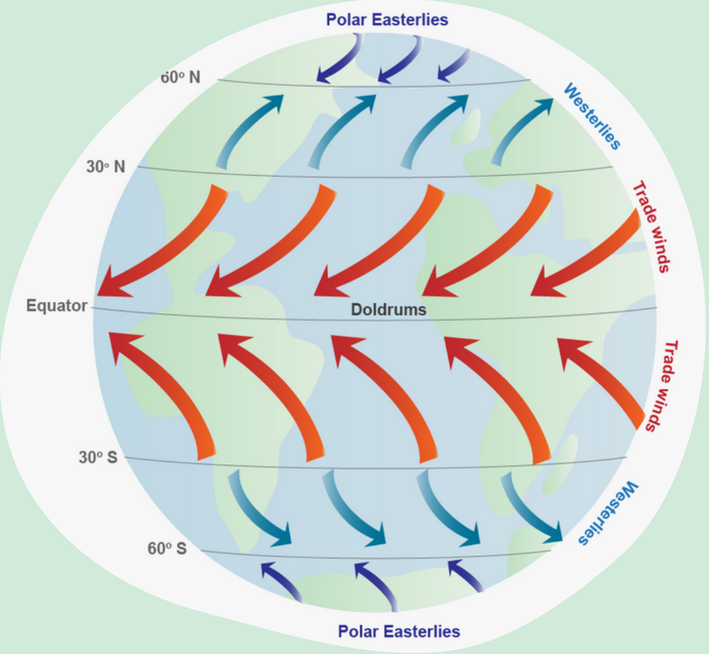
Influence of GRAVITY

Gravity causes the more dense (heavier) water to fall, pushing away the less dense water, which shoots sideways and rise

Influence of CORIOLIS FORCE

The Coriolis effect bends the direction of surface currents to the right in the Northern Hemisphere and left in the Southern Hemisphere

Why? Because the Earth rotates on its axis!

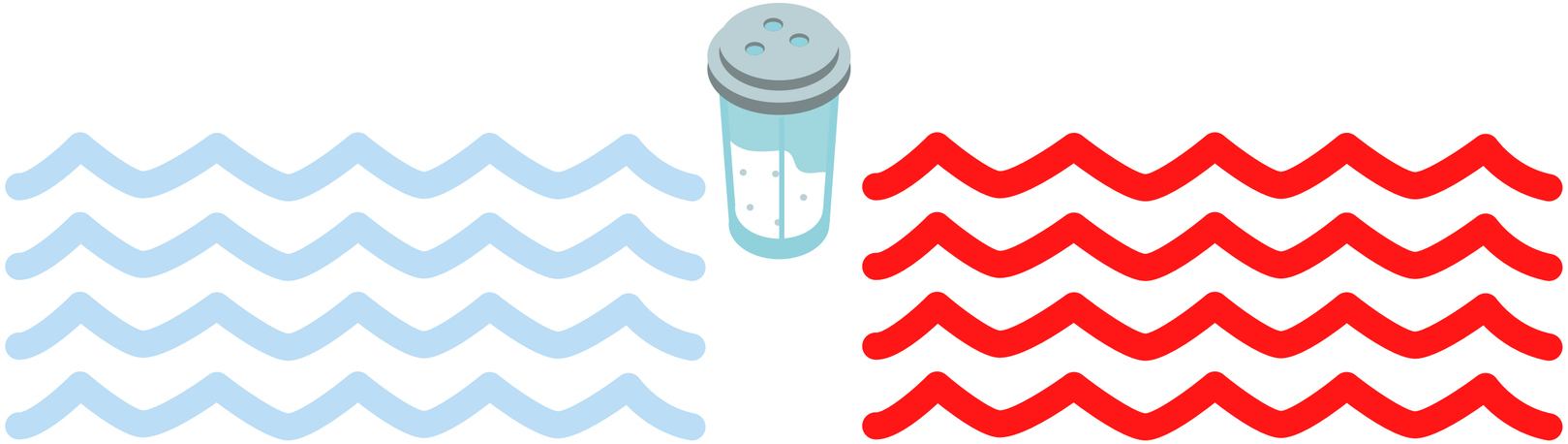


SECONDARY FORCES

temperature differences

salinity differences

both affect vertical mobility of ocean currents



Water with high **salinity** is **denser** than water with low salinity.

Cold water is denser than warm water.

Denser water tends to sink, while relatively lighter water tends to rise.

Cold-water ocean currents occur when the cold water at the poles sinks and slowly moves towards the equator.

Warm-water ocean currents travel out from the equator along the surface, flowing towards the poles to replace the cold water that sank and moved toward the equator