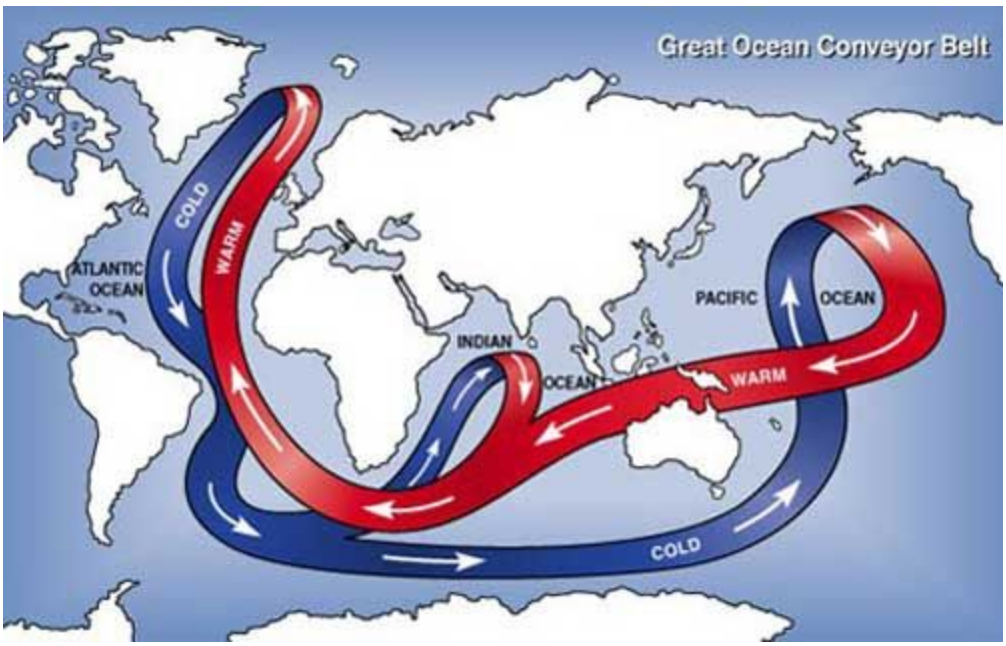
# How does the ocean affect the climate?

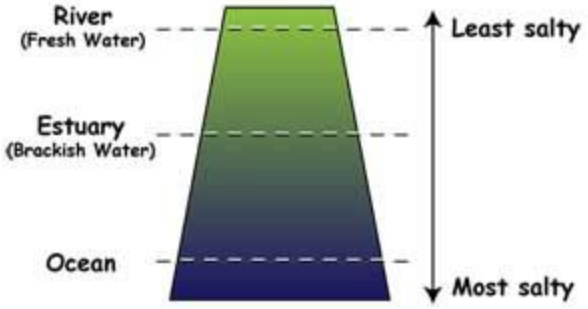

One way the ocean affects the climate in places like Europe is by carrying heat to the north in the Atlantic Ocean. Way up north, cold water in the North Atlantic ocean sinks very deep and spreads out all around the world. The sinking water is replaced by warm water near the surface that moves to the north. Scientists call this the Great Ocean Conveyor Belt. The heat carried north helps keep the Atlantic ocean warmer in the winter time, which warms the nearby countries as well.

NASA missions that very accurately measure the hills and valleys in the ocean and changes in sea level help scientists understand what is happened with ocean currents.



*The "great ocean conveyor belt" refers to the major ocean currents that move warm water from the equator to the poles and cold water from the poles back toward the equator.*

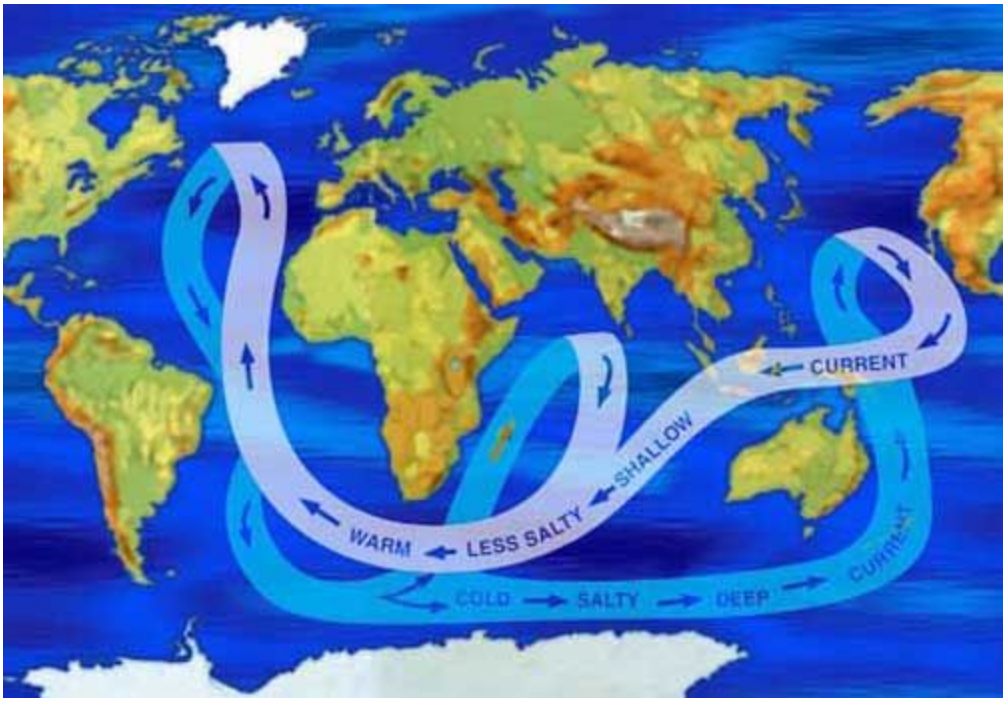
## Does the salt in the ocean do anything?




*Fresh water has lower salinity (saltiness) than estuary water, where the ocean water mixes with river water. The ocean itself is most salty of all.*

The amount of salt in the ocean water also affects currents. Saltier water is heavier than less salty water. When salty ocean water freezes, the ice can no longer hold on to the salt. Instead, the salt mixes with the water below making it saltier and heavier.

Glaciers, land ice and icebergs are made of fresh water, so what happens when this ice melts? Good question!




*The Great Ocean Conveyor Belt carries warmer, less salty water from the equator to the poles, and colder, saltier water from the poles back toward the equator. Colder water and very salty water are heavier than warmer water and less salty water.*

The water in the North Atlantic sinks because it's cold, but also because it's salty. Being both cold AND salty makes it really heavy, so it can sink very far. But if too much ice melts in the North Atlantic, the water could become less salty. If that happens, what about the Ocean Conveyor Belt? Would it stop warming the North Atlantic? Could Europe get really cold? Scientists say it seems unlikely, but NASA satellites are keeping a close eye on the melting ice and the ocean currents to try to understand this complicated system better.