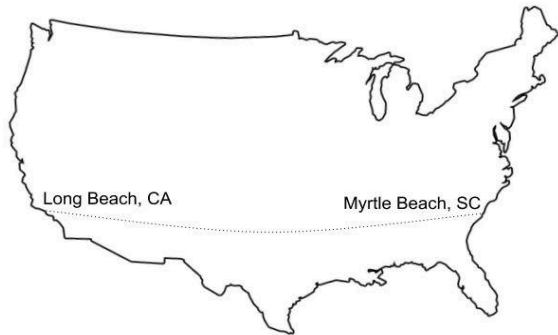


## Reading: How the ocean changes our weather

The ocean water along the west coast of the United States is very different from the ocean water along the east coast. The difference in the water affects the weather and climate of the communities on the coast. We will look at one example of how differences in the ocean could affect a place's weather and climate.



In the month of June, the temperature of the ocean water near Long Beach, California is around 64°F. People who live in Long Beach have pleasantly warm days with low humidity. The days may have a high temperature near 79°F with a 0% chance of rain.

If you were to trace a line at the same latitude to the other side of the United States, you would arrive at Myrtle Beach, South Carolina. The ocean water near this location is much warmer at 77°F. People who live in Myrtle Beach experience warm, humid days. The high temperatures may reach 85°F and there is a 35-50% chance of rain.

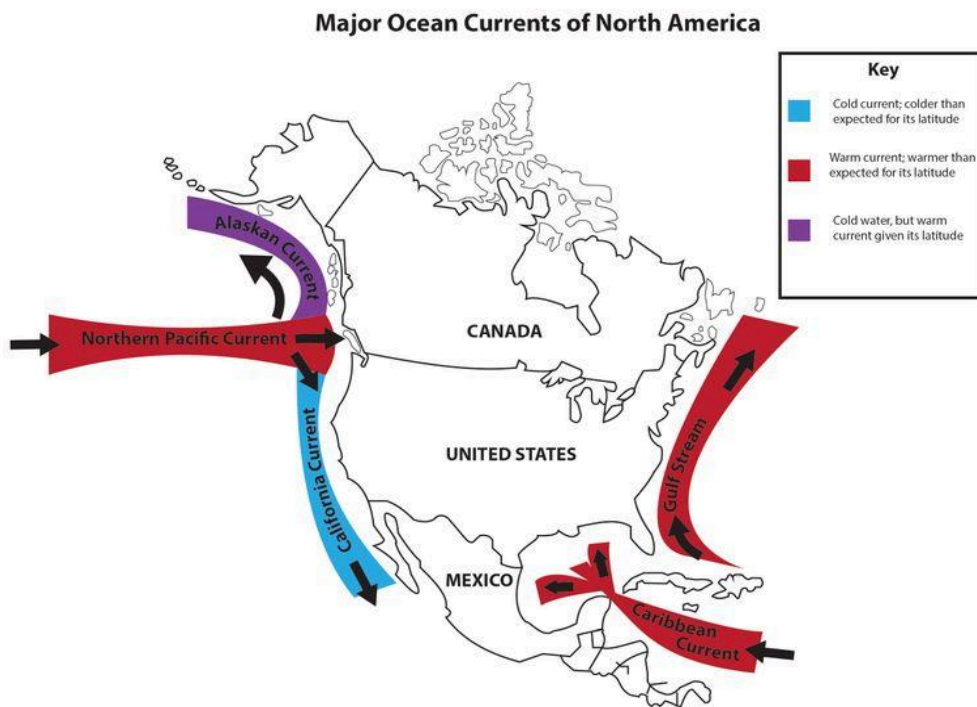
The temperature difference between the ocean water near Long Beach and Myrtle Beach has a lot to do with the weather people experience in these two places. Imagine zooming in on the surface of the ocean water in each location. What do you think you would see happening to water molecules at the surface of the warmer ocean water near Myrtle Beach compared to the surface of the colder ocean water near Long Beach?

As sunlight warms the ocean water, energy from light transfers into the water. When enough energy transfers, the water molecules evaporate into the air. As more water molecules enter the air, the humidity of the air increases. As more evaporation occurs over warmer waters, the air above the warm ocean water becomes more humid. If the ocean water is cooler, then less evaporation occurs. Therefore the air above the cooler water is less humid.

Since Long Beach and Myrtle Beach are about the same distance from the equator, should we expect their water temperatures to be similar? If the water in the ocean never moved, this would be true. But the ocean is always on the move, just like the air in the atmosphere. This movement of water in the ocean is called an

**ocean current.** Some ocean currents move warm water away from the equator toward the poles. Other ocean currents bring colder water from the poles toward the equator. Can you guess which type of current is located next to Long Beach and which is located next to Myrtle Beach?

The California Current runs along the west coast of the United States. This current brings much cooler waters to Long Beach. This cool water current is the reason that Long Beach tends to have slightly cooler and sunnier summer days than Myrtle Beach. Off the coast of Myrtle Beach, there is another powerful current called the Gulf Stream. This current circulates warm water from the equator toward the poles. The warm water is ideal for more evaporation and brings Myrtle Beach warmer, more humid or rainy days.



The temperature of ocean currents does not always match what we would expect. In the northern Pacific Ocean, for example, we may think the water would be cold because it's really far from the equator. While you would not want to swim in the water because the water is chilly, it is not as cold as you would expect. The Northern Pacific Current is considered a warm ocean current. Even though it is far from the equator, this current constantly causes evaporation to occur, which brings lots of moisture toward Alaska, Canada, and the northwest United States.