

OCEAN CURRENTS

The water in the ocean is constantly in motion through superficial and deep currents. Winds, water density and tide currents cause the water to move, while physical features of the sea floor and coastline determine the direction and speed. This system of water transportation helps regulate Earth's climate since it distributes heat throughout the planet, keeps marine and coastal environmental conditions stable, transports nutrients and food, helps larvae and juvenile individuals travel and even influences reproduction patterns of many marine species.



UPWELLINGS
They occur in less than **1%** of the marine surface, but produce about **20%** of seafood.



SURFACE CURRENTS
They depend on wind patterns that are caused by the heat from the sun and transfer heat from the tropics to the polar regions.

THEY CONTROL
10%
OF THE WATER IN THE OCEAN.

1

NORTH PACIFIC CURRENT

This warm water current travels from the West. As it reaches the North Pacific, it divides into the California Current which travels South with **40%** of the water, while the Alaska Current traveling North transports **40%** of the water.

6.5 years
Duration of one cycle

0.05 m/s
Estimated speed

7.2 – 16.1 °C (winter)
17.8 – 23.3 °C (summer)
Average sea surface temperature

2

GULF STREAM

It originates in the Caribbean, travels along the United States' coast and crosses the Atlantic Ocean towards Europe.

150 million m³/s
Volume of water that it transports in some areas

4 km/hr
Average speed

3

ANTARCTIC CIRCUMPOLAR CURRENT

Travels from the West around Antarctica and connects the Atlantic, Pacific and Indian oceans. It is considered the strongest and largest of all currents.

173.3 Sv
Estimated speed
(1 Sverdrup=1 million m/sec)



DEEP CURRENTS THERMOHALINE CIRCULATION

Differences in water temperature and salinity cause its density to change, which results in the vertical movement of water masses.

THEY CONTROL
90%
OF THE OCEAN'S WATER

1

GLOBAL CONVEYOR BELT

When water at the surface loses heat and ice begins to form, minerals remain dissolved in the marine water causing its density to increase. This cold and dense water sinks as warm surface water takes its place. This vertical movement is what keeps this current moving.



CORIOLIS EFFECT
The Earth's rotation causes currents in the northern hemisphere to flow clockwise, while currents in the southern hemisphere travel counterclockwise.



70%
of the planet is covered in water



94%
of the planet's water is in the ocean



THREAT
The atmosphere's temperature is increasing, causing the speed of currents to decrease, which in turn affects marine ecosystems and the Earth's climate.



3%
Percentage of the excess heat caused by greenhouse gases that is absorbed by the ocean.



1,000 years
Estimated time it takes a drop of water to complete one cycle in the global conveyor belt.



SPILHAUS PROJECTION
This projection places Antarctica at the center of the map and the continents' coasts help emphasize how the ocean is connected.

SOURCES:
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