Year 9- Oceans



Oceans builds on the basic knowledge of the different oceans around the world and looks at some of the issues facing oceans such as climate change and plastic pollution.

What should I already know?

- Name and locate the world's seven continents and five oceans.
- The basics of convection currents
- Impacts of climate change on oceans.

Key vocabulary and definitions

| Ocean | a very large expanse of sea. |
|-------------------------|--|
| Ocean current | a continuous, directed movement of seawater generated by a number of forces acting upon the water |
| North Atlantic Drift | ocean current flows northwards across the Atlantic Ocean, bringing warm water from the Gulf of Mexico. |
| Microplastics | small pieces of plastic, less than 5 mm (0.2 inch) in length, that occur in the environment as a consequence of plastic pollution. |
| Coriolis effect | an effect whereby a mass moving in a rotating system experiences a force (the Coriolis force) acting perpendicular to the direction of motion and to the axis of rotation |

How does the ocean move?

Ocean currents are the continuous, predictable, directional movement of seawater driven by gravity, wind (Coriolis Effect), and water density. Ocean water moves in two directions: horizontally and vertically.

Ocean currents are similar to winds in the atmosphere in that they transfer significant amounts of heat from Earth's equatorial areas to the poles and thus play important roles in determining the climates of coastal regions. In addition, ocean currents and atmospheric circulation influence one another.



What are ocean currents?

The water in the oceans is constantly moving in patterns called **currents**.

As the currents flow around the planet, they move cold and warm water from one place to another. This changes climate and temperatures all over the world.

The UK would be much colder if it wasn't **warmed by water** that travels from the Caribbean - called the **North Atlantic Drift**, or the Gulf Stream.





Marine pollution

Our oceans are being flooded with two main types of pollution: chemicals and trash.



Chemical contamination, or nutrient pollution, is concerning for health, environmental, and economic reasons. This type of pollution occurs when human activities, notably the use of fertiliser on farms, lead to the runoff of chemicals into waterways that ultimately flow into the ocean. The increased concentration of chemicals, such as nitrogen and phosphorus, in the coastal ocean promotes the growth of algal blooms, which can be toxic to wildlife and harmful to humans. The negative effects on health and the environment caused by algal blooms hurt local fishing and tourism industries.

Marine waste encompasses all manufactured products—most of them plastic—that end up in the ocean. Littering, storm winds, and poor waste management all contribute to the accumulation of this debris, 80 percent of which comes from sources on land. Common types of marine debris include various plastic items like shopping bags and beverage bottles, along with cigarette butts, bottle caps, food wrappers, and fishing gear. Plastic waste is particularly problematic as a pollutant because it is so long-lasting. Plastic items can take hundreds of years to decompose.