



Physical Geography

Geography - Module 1

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Physical Geography

Abstract

Plastics are found everywhere in our oceans, but they do accumulate in certain regions. Where in our oceans is most of the plastic accumulated? And how does plastic find its way to the most remote parts of the world? We will also look into initiatives that are trying to remove plastics from these systems: what ways are there and what complexities arise during removal?

Students will learn about important geophysical processes that take part in the ocean by tracing a bottle from its source to a garbage patch, and then looking into three different methods that can be used in water bodies in order to address the plastic pollution in our oceans.

Key Concepts

- i. Ocean currents
- ii. The ocean conveyor belt
- iii. Ocean gyres
- iv. Garbage patches
- v. Ocean current
- vi. Thermohaline circulation
- vii. Photodegradation

Learning Outcomes

At the end of the module, students are able to:

- i. Understand geospatial developments of plastic pollution in the world's oceans, and link this to ocean current dynamics

- ii. Explain the ocean conveyor belt and the importance of its role within plastic pollution, and explain how plastic accumulates in ocean gyres
- iii. Understand the complexities of garbage patches and their formation
- iv. Discuss solutions to combating mass accumulation of plastic

Glossary

Term	Definition
Currents	A body of water or air moving in a definite direction, especially through a surrounding body of water or air in which there is less movement: ocean currents.
Thermohaline circulation	Large scale water circulation in our oceans driven by flows of heat and freshwater across the sea surface which lead to interior mixing of heat and salt, leading to upwelling and overall movement in the ocean.
Coriolis Effect	A phenomenon created by the rotation of the Earth that causes rotation in a clockwise direction in the Northern Hemisphere and counter-clockwise in the Southern Hemisphere.
Ocean gyre	Large system of swirling ocean currents
Garbage Patch	Higher concentration of marine debris in the ocean in certain specific regions
Photodegradation	The process through which the sun breaks down plastic into smaller pieces