

Tides

The rhythmic rise and fall of ocean water twice in a day is called a tide. It is **high tide** when water covers much of the shore by rising to its highest level. It is **low tide** when water falls to its lowest level and recedes from the shore.

Warm 55

2020-21

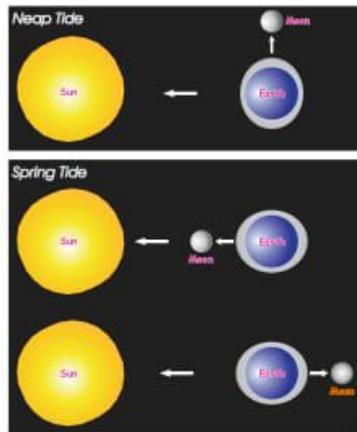


Fig. 5.5: Spring Tides and Neap Tide

The strong gravitational pull exerted by the sun and the moon on the earth's surface causes the tides. The water of the earth closer to the moon gets pulled under the influence of the moon's gravitational force and causes high tide. During the full moon and new moon days, the sun, the moon and the earth are in the same line and the tides are highest. These tides are called spring tides. But when the moon is in its first and last quarter, the ocean waters get drawn in diagonally opposite directions by the gravitational pull of sun and moon resulting in low tides. These tides are called neap tides (Fig. 5.5).

High tides help in navigation. They raise the water level close to the shores. This helps the ships to arrive at the harbour more easily.

The high tides also help in fishing. Many more fish come closer to the shore during the high tide. This enables fishermen to get a plentiful catch. The rise and fall of water due to tides is being used to generate electricity in some places.



Activity

Fill three-fourths of a bucket with tap water. Heat the water by putting an immersion rod on one side of the bucket. On the other side introduce an ice tray just removed from the freezer. Add a drop of red ink to observe the path of current by the process of convection.

OCEAN CURRENTS

Ocean currents are streams of water flowing constantly on the ocean surface in definite directions. The ocean currents may be warm or cold (Fig. 5.6). Generally, the warm ocean currents originate near the equator and move towards the poles. The cold currents carry water from polar or higher latitudes to tropical or lower latitudes. The Labrador Ocean current is cold current while the Gulf Stream is a warm current. The ocean current influence the temperature conditions of the area. Warm currents bring about warm temperature over land surface. The areas where the warm and cold currents meet provide the best fishing grounds of the

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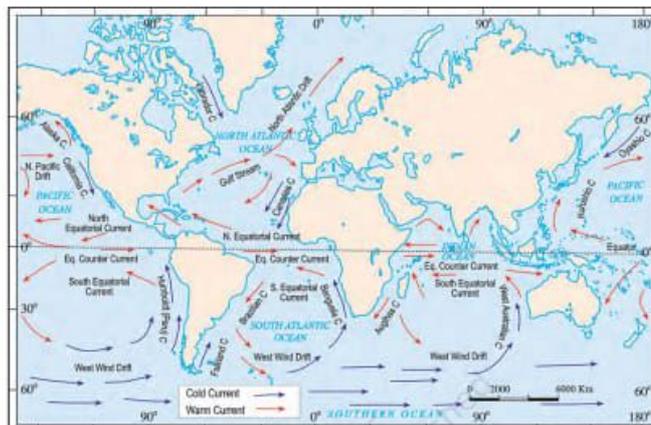


Fig. 5.6: Ocean Currents

world. Seas around Japan and the eastern coast of North America are such examples. The areas where a warm and cold current meet also experience foggy weather making it difficult for navigation.

Ch 5 Water

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Exercises

1. Answer the following questions.

(i) What is precipitation?

Answer

Precipitation means any thing falling from the sky which include rain, snow, hail etc. on the surface of the earth when they become too heavy and unable to float in the air.

(ii) What is water cycle?

Answer

The process by which water continually changes its form and circulates between oceans, atmosphere and land is known as the water cycle.

(iii) What are the factors affecting the height of the waves?

Answer

Factors affecting the height of the waves:

- (i) Speed of wind
- (ii) Duration of wind
- (iii) Distance the wind blows over water

(iv) Which factors affect the movement of ocean water?

Answer

Factors affecting the movement of ocean water:

- (i) Temperature
- (ii) Earthquake or volcanic eruption
- (iii) Gravitational pull of the sun and the moon
- (iv) Underwater landslides

(v) What are tides and how are they caused?

Answer

The rhythmic rise and fall of ocean water twice in a day is called a tide.

The strong gravitational pull exerted by the sun and the moon on the surface of the earth causes the tides.

(vi) What are ocean currents?

Answer

Ocean currents are streams of water flowing constantly on the ocean surface in definite directions.

2. Give reasons.

- (i) Ocean water is salty.
- (ii) The quality of water is deteriorating.

Answer

(i) Ocean water is salty because it contains large amount of dissolved salts. Most of the salt is sodium chloride or the common table salt that we eat.

(ii) The quality of water is deteriorating because we get it from polluted water sources. These water bodies are getting polluted due to dumping of untreated wastes, sewage, pesticides, toxic or decayed materials into it.

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3. Tick the correct answer.

(i) The process by which water continually changes its form and circulates between oceans, atmosphere and land

- (a) Water cycle
- (b) Tides
- (c) Ocean currents

✓ (a) Water cycle

(ii) Generally the warm ocean currents originate near

- (a) Poles
- (b) Equator
- (c) None of these

✓ (b) Equator

(iii) The rhythmic rise and fall of ocean water twice in a day is called

- (a) Tide
- (b) Ocean current
- (c) Wave

✓ (a) Tide

4. Match the following.

(i) Caspian Sea	(a) Largest lake
(ii) Tide	(b) Periodic rise and fall of water
(iii) Tsunami	(c) Strong seismic waves
(iv) Ocean currents	(d) Streams of water moving along definite paths
-	(e) Water cycle

Answer

(i) Caspian Sea	(a) Largest lake
(ii) Tide	(b) Periodic rise and fall of water
(iii) Tsunami	(c) Strong seismic waves
(iv) Ocean currents	(d) Streams of water moving along definite paths