

Importance of Oceans

Earth, the Watery Planet

The Earth is a unique planet as it has many conditions which make life possible on it. Life on Earth would not have been possible without the presence of water.

Distribution of Land and Water on the Earth

- While three-fourth surface of the Earth is covered with water, quarter of the Earth is land.
- Much more land exists in the Northern Hemisphere than in the Southern Hemisphere.
- The main landmasses generally taper towards the east.
- Isthmus of Panama joins North America with South America. Eurasia is joined to Africa by the Isthmus of Suez.
- In the North Pole, the Arctic Ocean is surrounded by the continents of North America and Eurasia. In the South Pole, Antarctica is covered with thick sheets of ice.

The Oceans

All oceans in the world are connected to each other. The main oceans on the Earth are

The Pacific Ocean

- It is the largest and the deepest ocean in the world. It is oval.
- It is bounded by North America and South America in the east and Asia and Australia in the west.
- The Pacific Ocean has a much shorter and regular coastline and has fewer harbours than the Atlantic Ocean.
- Because its shores are not bordered by very fertile and commercial lands, it is commercially less important than the Atlantic Ocean.
- The Mariana Trench, the deepest known point on the Earth's surface, is located in the Pacific Ocean.

The Atlantic Ocean

- It is the second largest ocean in the world. It is an S-shaped ocean.
- The Central Ridge runs almost in the middle of the Ocean. It is on this ridge (a ridge is a geological feature which consists of a chain of mountains or hills running for a considerable distance) that most islands of the Atlantic Ocean lie.
- The coastline of the Atlantic Ocean is broken and is bordered by many fertile lands of Europe.
- The Atlantic Ocean is the biggest highway of commerce.

The Indian Ocean

- It is the third largest ocean in the world. It is the only ocean which is named after a country (India).
- It is surrounded by the Indian subcontinent in the north, East Africa on the west and Indo China in the east.
- Sunda Trench is the deepest point in the Indian Ocean.
- After the construction of the Suez Canal (connecting the Indian Ocean with the Mediterranean Sea), its commercial importance has increased.

The Arctic Ocean

- It is located near the North Pole and mostly remains frozen.
- It is connected to the Atlantic Ocean by the eastern and western Greenland channels and the Pacific Ocean by the Bering Strait.
- Many scientists contend that it cannot be regarded as an ocean as it is not navigable. This is because it freezes completely during winters. However, its separate existence and its area spreading over 13 million sq km entitle it to be called an ocean.

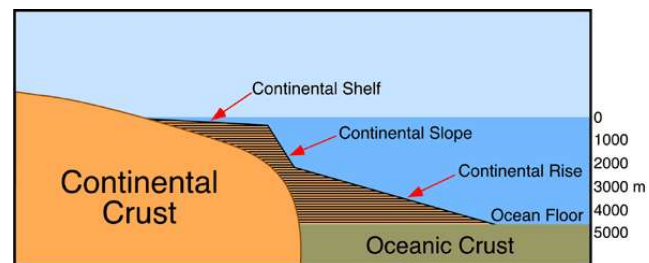
Many geographers regard the area around the Antarctica continent as the Antarctic Ocean, but most scientists are of the view that this portion of the Earth has no natural boundaries to the south. It consists of the southern portions of the Pacific, Atlantic and Indian oceans. It is thus also known as the **Southern Sea**.

Main Features of the Ocean Basin

An ocean basin is a depression in the surface of the Earth in which the ocean lies. Many trenches, ridges, canyons and plateaus exist in the ocean basin as a result of the tectonic, volcanic, erosional and depositional processes. Chief features of the ocean basin are

Continental Shelf: It is the area of the sea bed which is adjacent to the coastline and is not as deep as the open ocean. The continental shelf is so shallow that even sunlight can reach the seabed.

It is rich in oil, coal and non-ferrous metals. One can find many types of plankton here. This makes the continental shelf the richest fishing grounds.



Features of an ocean basin

Continental Slope: The slope between the outer edge of the continental shelf and the deep ocean floor is known as the ocean slope. It occupies 8.5% of the total ocean area. The continental slope consists of light continental rocks which lie over the dense rocks of the ocean floor.

Deep Ocean Floor: Ocean floors are situated on the base of the continental slope. The depth of the ocean floors varies from 3000 to 6000 metres. On the ocean basins, many plateaus, plains and volcanic summits may be found. About two-thirds of the ocean surface is occupied by deep ocean floors.

The Ocean Deep: Deep trenches are known as ocean deeps. Some ocean deeps are as deep as 36,000 feet. The deepest part in the ocean in the world is Mariana Trench which is about 11,033 metres deep. Its depth is more than the height of Mount Everest on the land. Another deep trench is the Tonga Trench with a depth which exceeds 10,000 metres.

Main Features of Oceans and Land

Some main features of oceans and land:

Isthmus: An isthmus is a narrow stretch of land which connects two landmasses and separates two water bodies. For example, the Isthmus of Panama links North America with South America but separates the Pacific and Atlantic oceans.

Gulf: A deep inlet of the sea almost surrounded by land with a narrow mouth is called a gulf. The Persian Gulf, the Gulf of Mexico and the Gulf of Alaska are some important gulfs.

Strait: A strait is a narrow passage of water connecting two large water bodies. The Davis Strait connects Baffin Bay with the North Atlantic Ocean. The Bering Strait once connected Asia and North America. It is now filled with water and connects the Arctic Ocean with the Bering Sea.

Island: A piece of land surrounded by water on all sides is known as an island. Greenland is the largest island in the world. An island may be formed because of tectonic activities such as folding, faulting and volcanic activities. In India, some islands of the Andaman and Nicobar Islands are of volcanic origin, while the Lakshadweep Islands are formed of corals. Islands near the sea shore have been formed by denudation of the land mass by sea waves.

Importance of Oceans

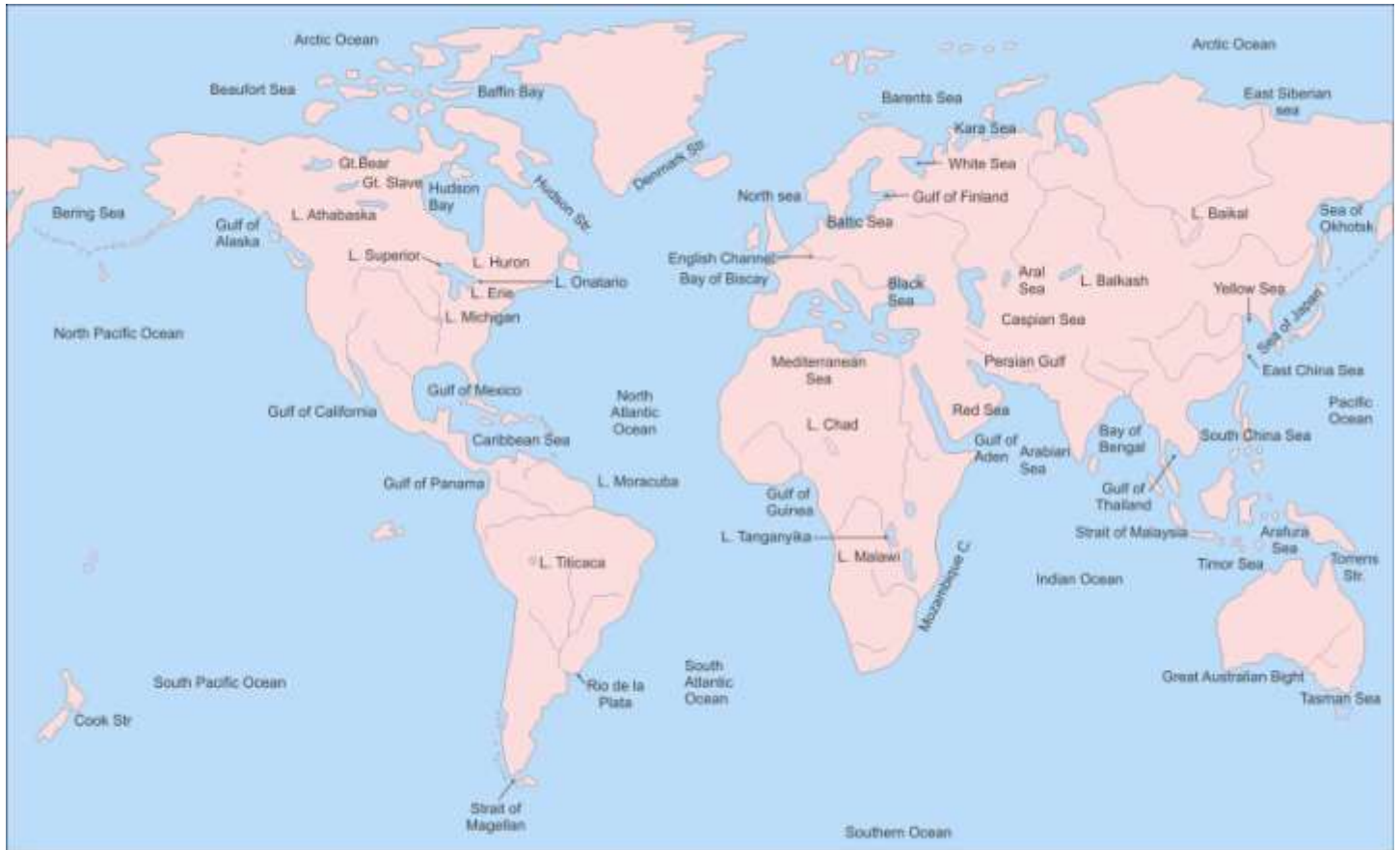
Oceans are extremely important to human life. Following are the importance of oceans:

- Fish is an important source of food and nutrition to human life. It has been a vital part of the human diet since prehistoric times. Fishing has become a well-developed industry today and significantly contributes to the economy of many nations.
- Oceans provide food and other marine products to humans. Several kinds of edible oil are manufactured by humans from marine animals. Besides, food and oil, marine animals and plants also provide leather, glue and cattle feed.
- Much research is on to extract essential oil and other products of marine life which can cure different diseases. Marine pharmacologists are researching on the physical and chemical properties of marine organisms such as crab, sea cucumber, shark and cod.
- Oceans provide us with a variety of mineral resources. Some of these are common salt, magnesium, bromide, sulphur, gold, platinum, tin, sand and petroleum.
- The most important mineral resources obtained from the sea are petroleum and natural gas. Petroleum known as the 'Black Gold' is mainly found in the continental shelves and slopes. Bombay High is an important source of oil in India.
- Oceans also provide us with non-conventional sources of energy such as tidal energy—the energy generated from waves. The rise and fall of seawater is known as tides. Powerful tidal waves generate a large amount of force when they strike the shore. This energy is tapped and used to produce electricity.
- Many countries are researching on the prospects of harnessing energy from the surface of ocean waters. Water at the surface of the sea in tropical regions may reach up to 30°C. Belgium and Cuba have designed floating generators which can be used for the production of electricity.
- Oceans have been used as a means of transport since the ancient times. Water transport is one of the cheapest means of transport in the world.
- Oceans also regulate the temperature of the Earth. They cover about 71% of the Earth's surface. They store the heat of the Sun and keep the Earth warm. This is because oceans absorb the heat of the Sun and release it after a long time. On the other hand, land gets heated and releases the heat quickly. Had the land been greater than the water, it would have remained frozen for most time of the year.
- Oceans play an important role in the water cycle. About 97% of the total water available on the Earth is stored in oceans. Water evaporates from the oceans in the atmosphere. It then condenses and precipitates on the Earth in the form of rainfall, dew and snow.

The importance of oceanic resources has created disputes regarding the control of oceans by various nations. Many nations claim their rights over sea waters located near their land. However, it is to be noticed that every country with a coastline has its own territorial waters and exclusive economic zone. The concept of the defence of oceans has acquired significance in the past few years.

It is important to keep oceans free of any pollution. Spilling of oil from oil tankers, dumping of radioactive wastes from ships and conducting of nuclear explosions in the sea need to be checked to preserve the rich marine life.

Map



Map showing oceans, important seas, Lakes Bays and Gulfs