

Tendern Heart High School

Section 33 B, Chandigarh

NAME : Varun Salhotra

DATE : 28/10/24

SUBJECT : Geography

CLASS : IX

Chapter 10 (continue)

(1) Tides :

- The periodic alternating rise and fall of level of water in the oceans twice in about 24 hours are known as Tides.
- The rising water is known as Flood Tide and the falling water is known as Ebb Tide.

(2) Time of Tide :

- Since the Earth takes 24hrs to complete one rotation, so every place experiences tides twice.
- every place experiences tides after every 12hrs 26 minutes (approximately)
- The high tide is experienced for more than 6hrs.
- The low tide is also experienced for more than 6hrs.
- After the high tide has taken place, there is fall in water level known as low tide.
- This cycle of fall of water level keeps going on every day.
- Eg: If high tide is occurring at 8: AM, then the next high tide will occur at 8: 26 PM.
- In every 12hrs 26 minutes, in first half high tide occurs and in second half low tide occurs.

(3) Causes of Tides :

(a) Gravitational Force :

- Both Moon and Earth has gravitational pull on Earth.
- The Gravitational Pull of Moon on Earth is more while that of Sun is less.
- The side of Earth that faces the moon results in bulging of Ocean, which ultimately causes Tides.

(b) Rotation of the Earth

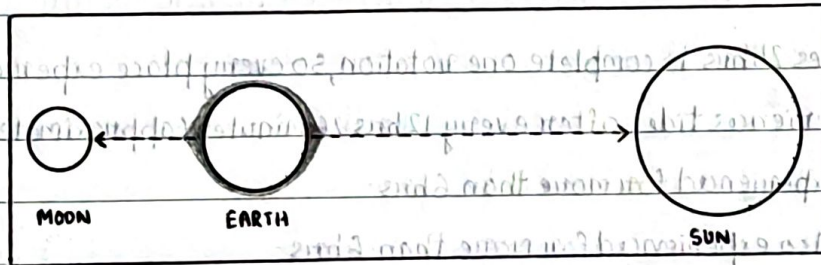
- The rotation of the Earth from west to East causes westward movement of Tides.
- These Tides travels in a great wave around the Earth and follows the movement of moon; except the place where land obstruction is there.

Magnitude of Tide

- Tides have different height in open seas and coastal Regions
- In open Oceans the difference between high tide and low tide on Spring Tide and Neap Tide is about half metre.
- In shallow marginal Seas, the difference between high tide and low tide is about 10 metres
- Thus, In some of the Estuaries it is upto 12 metres

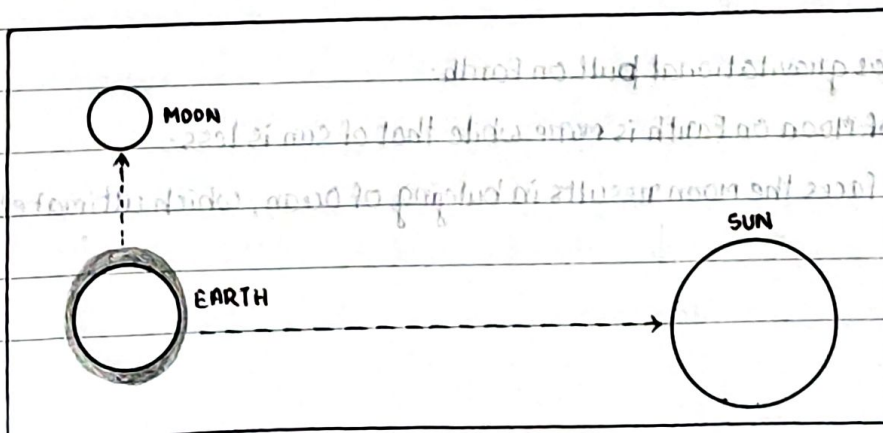
Types of Tides

(A) Spring Tide



- When Sun, Moon and Earth are in a straight line on full moon and new moon, the gravitational pull is at its greatest due to combined force of Sun and moon. This causes high tide to be very high and low tide to be very low. This type of Tide is known as Spring Tide.

(B) Neap Tide:



→ When the Sun, Earth and Moon are in Right Angle, the force exerted on earth is very least. This is because the Sun and moon are not exerting combined force on Earth. This resulted in very less difference between high tide and low tide. Hence, this type of tide is called Neap Tide.

Effects of Tides

- Tides helps to remove debris from seashore.
- Tides helps ships to enter the shallow harbour.
- Tidal energy is harnessed to generate electricity.
- Tides helps in producing salt in Coastal Area after water is collected in low lying areas.
- Tides helps fisherman to sail in oceans.
- Tides prevents the ports from getting frozen in cold regions.

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Chapter 11 - Composition and Structure

of Atmosphere

(1) Introduction

- Atmosphere is the gaseous envelope that surrounds our Earth.
- It has thin layer of Air that is held by the Gravitational Pull of the Earth.
- It extends over 1600 kms from the surface of the Earth.
- Around 99% of Total mass of Earth's Atmosphere is found below 100 kms from the Earth's Surface.

(2) Composition of Earth's Atmosphere:

→ Atmosphere is composed of various components, mainly oxygen, Nitrogen, carbon dioxide, water vapour and Particulate Matter.

→ Nitrogen:

- * It forms 78% of Earth's Atmosphere.
- * It slows down the process of Oxidation.
- * It combines with other elements to form nitrogen compounds.
- * It is necessary for growth of plants.
- * It is used in manufacturing of fertilizers, ammonia, nitric acid etc.

→ Oxygen:

- * It is essential for respiration of all living organisms.
- * It helps in burning, breathing and decomposition of organic matter.
- * It combines with other elements to form oxide.
- * It forms 21% of Earth's Atmosphere.

→ Carbon dioxide:

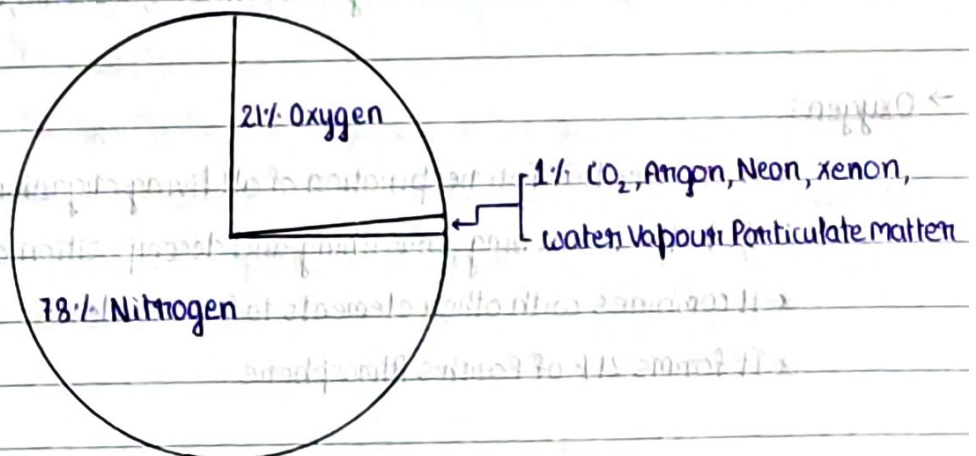
- * It is used by plants during the process of photosynthesis.
- * It absorbs terrestrial radiation and keeps the lower layer of Atmosphere warm at night.

→ Water Vapour:

- * It plays very important role in the atmosphere.
- * It is the source of condensation, clouds and all forms of precipitation.
- * It is added to atmosphere by the process of Evaporation of water from various waterbodies and also by transpiration from leaves of plants.
- * Water Vapour also absorbs the heat that is radiated by Earth and keeps the lower layer of Atmosphere warm at Night.

→ Particulate Matter:

- * The particulate matter consists of Dust, Smoke, Salt Grains, Pollen Grains etc.
- * They scatter Solar Radiation and causes red or orange colour in the sky during sunrise and sunset.
- * They also help in condensation.
- * The dust particles float in air and plays an important role in deciding weather phenomena.
- * The dust particles also absorb the terrestrial radiation and keeps the lower layer of Atmosphere warm at night.



(3) Significance of Atmosphere

- Atmosphere provides oxygen to support human life and Animal Life.
- It provides Carbon dioxide to support plant life.
- Atmosphere protects us from harmful Ultraviolet Rays of the Sun.
- The Atmosphere helps to maintain suitable temperature of Earth that helps to sustain life.
- Atmosphere traps terrestrial radiation and keeps the Earth warm during nights.
- Atmosphere protects the earth from meteors by not allowing it to reach the earth's surface.
- All weather phenomena takes place in the lower layer of Atmosphere, that is Troposphere.

(4) Structure of Atmosphere

(a) Troposphere:

- It is the lowermost layer of the Earth's Atmosphere.
- It is nearest to the Earth's Surface.
- All the weather phenomena takes place in this layer.
- This layer is also regarded as a **region of Intense mixing** due to Air turbulence created by horizontal and vertical circulation of Air.
- Around 90% of Atmosphere's total mass is found within this layer so it is the densest layer of the Atmosphere.
- The height of Atmosphere is 18 kms at Equator and it gradually decreases to a height of 8 kms at Poles.
- There is decrease in temperature with increase in height in this layer at the rate of $6.4^{\circ}\text{C per 1 km}$.

(b) Stratosphere:

- This layer extends from Tropopause to about 50 kms above the Earth's Surface.
- In this layer the temperature does not decrease with increase in altitude.
- Jet Aircrafts flies in this layer because this layer is free from Weather Phenomena.
- This layer has no water vapour and dust particles and moreover the temperature here is constant.
- This layer has ozone layer that protects us from harmful UV Rays.
- The end point of this layer is Stratopause.

Mesosphere:

- It is the middle layer of Earth's Atmosphere.
- It extends from 50 to 80 kms.
- In this layer temperature decreases with increase in height.
- It is the coldest layer of Earth's Atmosphere and temperature here becomes -80°C .
- Meteors from space mostly burn in this layer, creating Shooting Stars.
- This layer ends at Mesopause.

Thermosphere

- It is the uppermost layer of Earth's Atmosphere.
- It extends from 80 kms to upper limit of Atmosphere.
- In this layer temperature increases rapidly and it cannot be measured due to low density.

This layer is divided into two parts:

(a) Ionosphere:

- It extends from 80 to 640 kms.
- It is divided into D layer, E layer, F layer and G layer.
- It helps in radio communication.
- This layer disappears with sunset.

(b) Exosphere

- It is the outermost layer of the Earth's Atmosphere.
- It extends beyond 640 kms.
- It has predominance of hydrogen and helium.
- The temperature in this layer reaches up to 6000°C .
- The density of this layer is very low.

Ozone Layer and its Importance

- Ozone Layer is found in Stratosphere.
- It is made up of 3 molecules of Oxygen.
- It is found above 20-30 kms above Earth's Surface.
- This layer protects us from harmful UV Rays of Sun.

Harmful Effects of Ozone Depletion

- The excessive radiation of UV Rays of Sun leads to damage of man and animals.
- It also causes skin cancer, Eye blindness, Sunstroke and destruction of microscopic form of life.
- If ozone will get depleted, it will fail to absorb UV rays also.
- The depletion of ozone layer also leads to destruction of Oceanic Food chain.

Efforts to prevent ozone depletion

- Limit the use of Private Vehicles.
- Limit the use of CFCs.
- Use 3R Techniques.
- Use alternative form of energy, Solar, Wind, Hydro etc.
- Stop the use of Fossil fuels.

Global Warming

Global Warming is the phenomena of gradual increase in the average temperature of the Earth. It is caused due to gases like Carbon dioxide, carbon monoxide etc and CFCs.

Consequences of Global Warming

- Global Warming results in the increase in temperature of the Earth.
- Due to increase in the temperature of the Earth, the Glaciers have started to melt.
- Now, due to melting of Glaciers, there is rise in Ocean level.
- This rise in ocean level have resulted in submergence of land under ocean water.
- This submergence of land under water have resulted in destruction of Flora and Fauna.