CLASS- IX

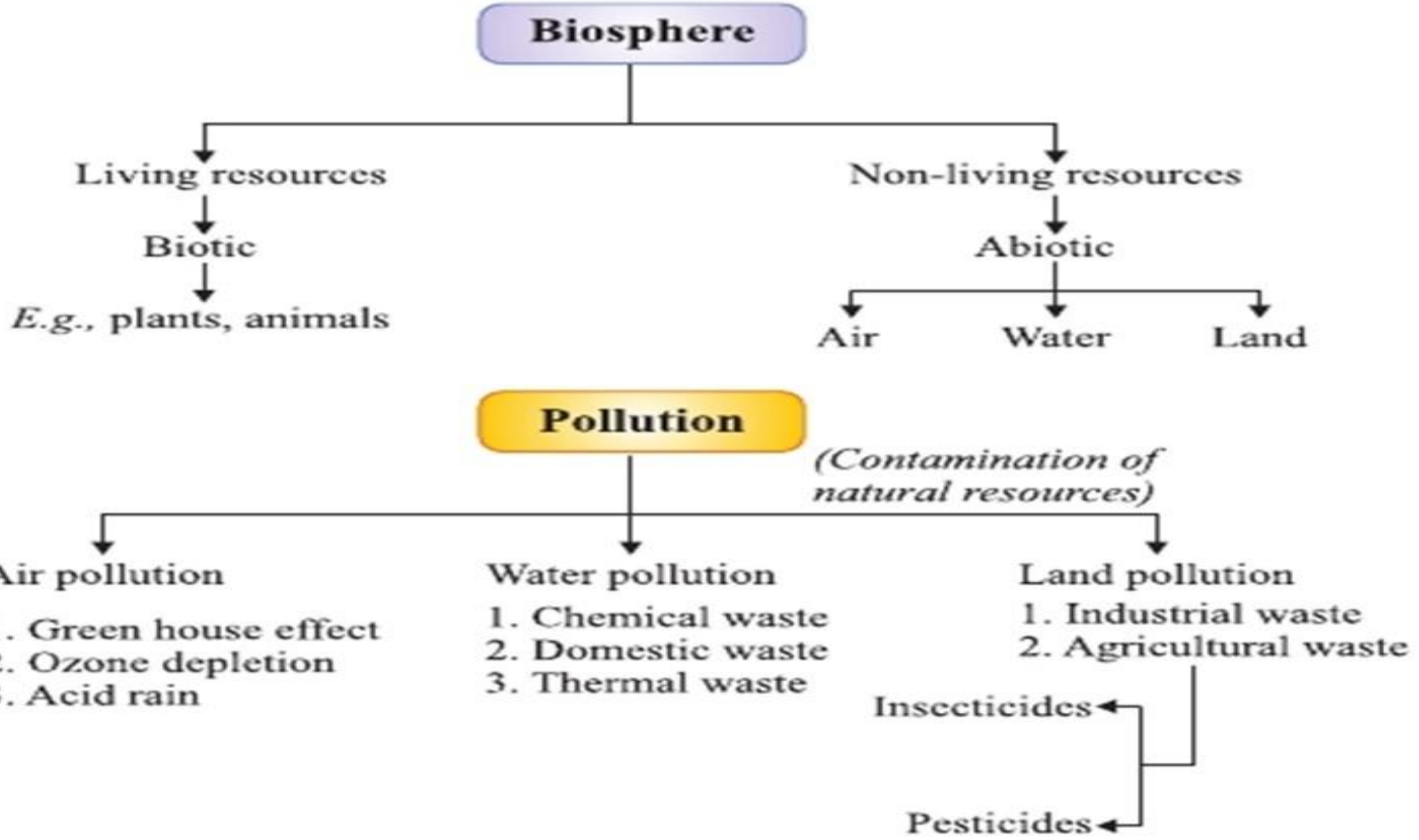
SUBJECT- SCIENCE

CHAPTER - 14

NATURAL RESOURCES

MODULE 1/3

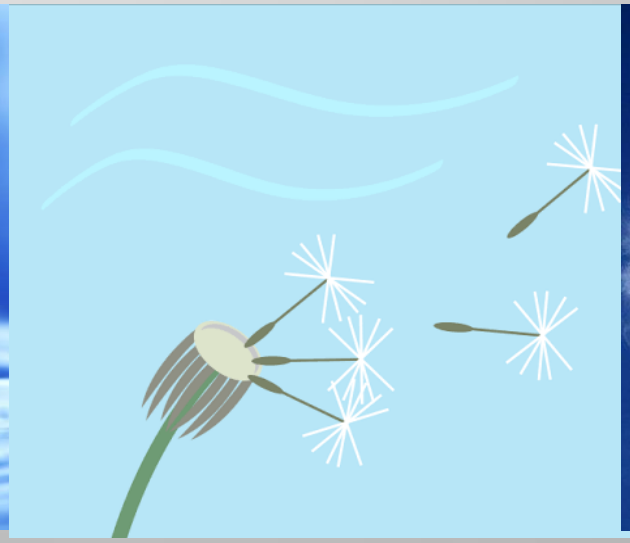
CONCEPT MAPPING



RESOURCES ON THE EARTH

Most life-forms need an ambient temperature, water, and food. The resources available on the Earth and the energy from the Sun are necessary to meet the basic requirements of all life-forms on the Earth.

NATURAL RESOURCE- It is the stock of the nature such as air, water, soil, minerals and living organisms that are useful to mankind in many ways.

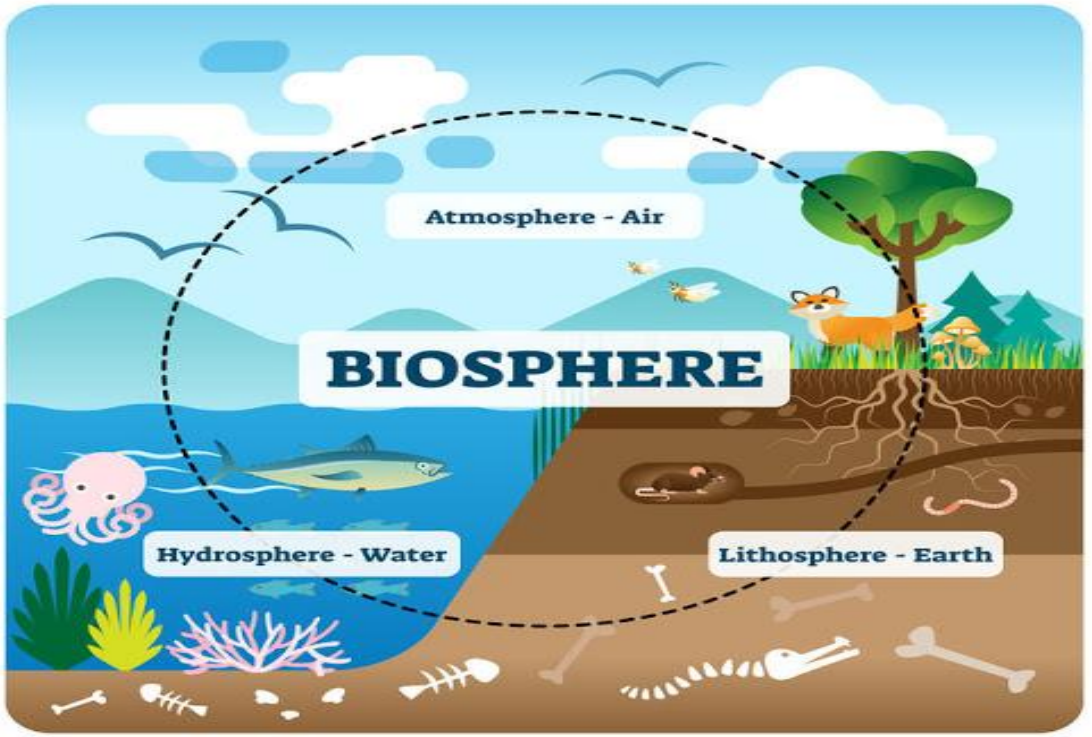
EXHAUSTIBLE OR NON-RENEWABLE RESOURCES

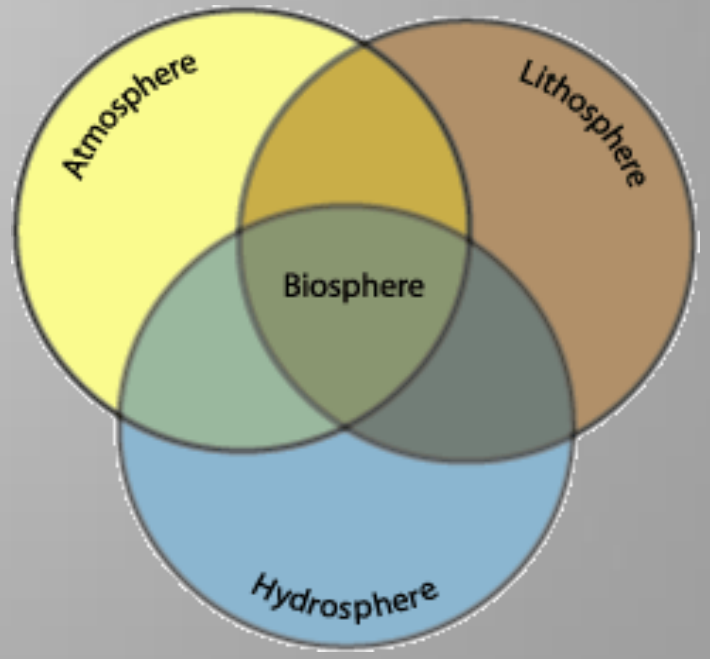
- Natural resources which are limited and which get reduced in quantity after use are called exhaustible or non-renewable resources.
- Example: Coal, Petroleum, Natural Gas, Metals.

INEXHAUSTIBLE OR RENEWABLE RESOURCES

- Resources which are available in plenty in nature and can be renewed are called Inexhaustible or Renewable Resources.
- Examples: Air, Water and Sunlight.

- The outer crust of the earth is the **lithosphere.**
- The water on the earth is the **hydrosphere.**
- The layer of the air around the earth is the **atmosphere.**
- The life-supporting zone of the Earth where the atmosphere, the hydrosphere and the lithosphere interact and make life possible, is known as the **biosphere.**

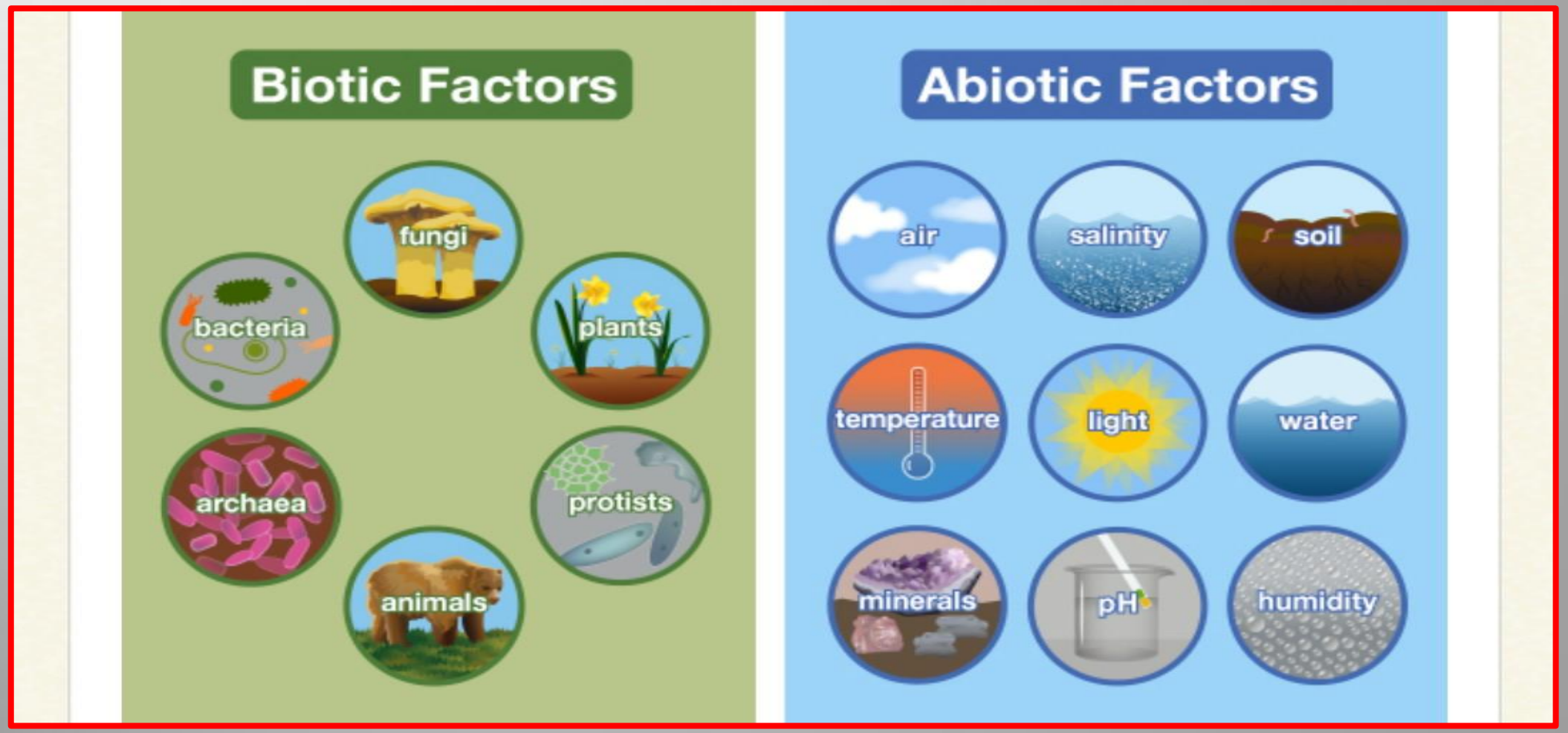




COMPONENT OF THE BIOSPHERE

BIOTIC COMPONENT – Plants, Animal , Micro-organism, etc.

ABIOTIC COMPONENT - Air, Water, Soil, Minerals, Non-living.



THE BREATH OF LIFE: AIR

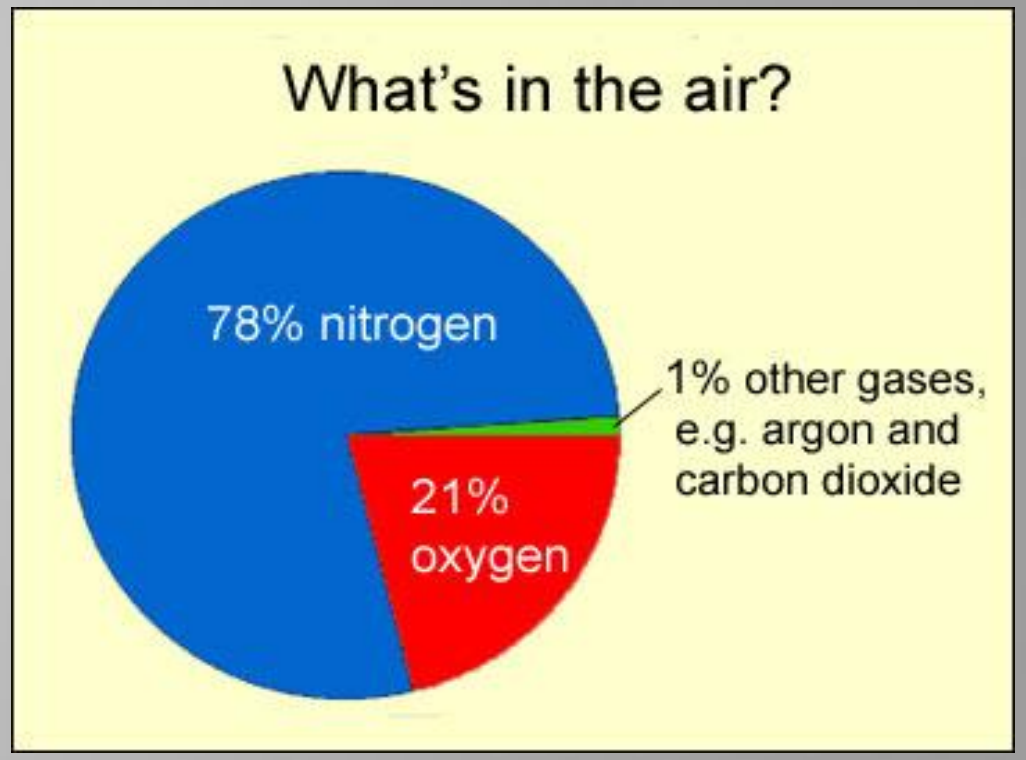
Air is a mixture of gases like

Nitrogen,

Oxygen,

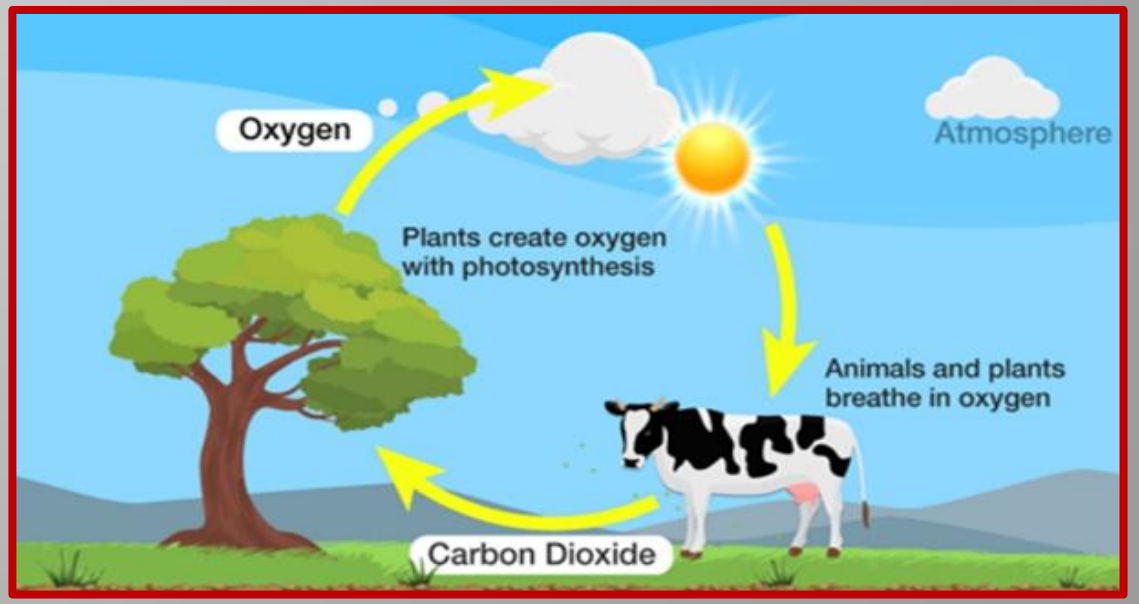
Carbon dioxide,

Water vapour and other gases.



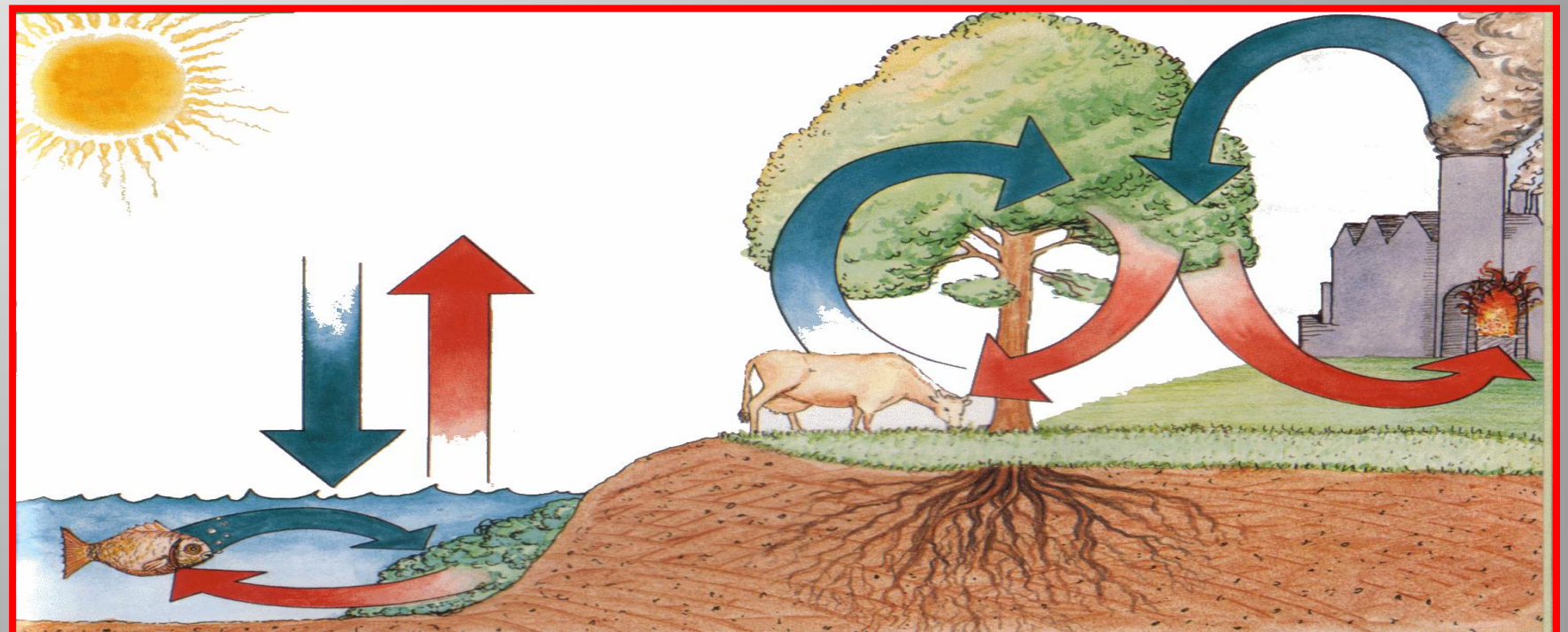
Carbon dioxide constitutes up to 95-97% of the atmosphere on Venus and Mars, where no life is known to exist.

- During respiration living organisms use oxygen to break down glucose and get energy for their activities. This results in the release of carbon dioxide.
- Burning of fuels also use oxygen and release carbon dioxide.
- During photosynthesis green plants convert carbon dioxide into glucose in the presence of sunlight. This results in the release of oxygen.
- These processes help to maintain the oxygen – carbon dioxide balance in nature.



Despite this, the percentage of carbon dioxide in our atmosphere is a mere fraction of a percent because carbon dioxide is 'fixed' in two ways:

- (i) Green plants convert carbon dioxide into glucose in the presence of Sunlight and
- (ii) many marine animals use carbonates dissolved in sea-water to make their shells.



THE ROLE OF ATMOSPHERE IN CLIMATE CONTROL

The atmosphere covers the earth like a blanket. Air is a bad conductor of heat.

It prevents sudden increase in temperature during the day and also slows down the escape of heat during the night.

So the atmosphere keeps the average temperature of the earth fairly steady during the day and night throughout the year.

*** THINK AND ANSWER–**

[The moon, which is about the same distance from the Sun that the Earth is. Despite that, on the surface of the moon, the temperature ranges from –190° C to 110° C.]

The movement of air (Winds) :-

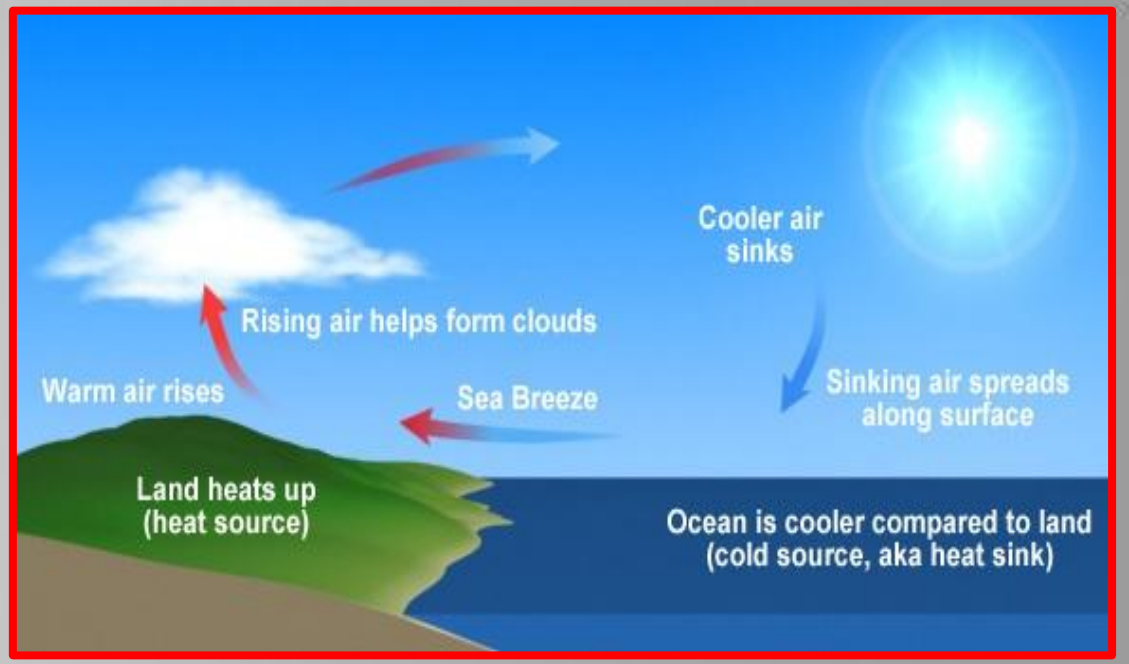
- When air gets heated, it rises up and produces low pressure and cool air moves in to take its place. The movement of air causes winds.
- These phenomena are the result of changes that take place in our atmosphere due to the heating of air and the formation of water vapour. Water vapour is formed due to the heating of water bodies and the activities of living organisms.
- The rise in temperature creates a low-pressure zone which attracts cool air from high pressure zone and pushes up the hot air.
- Thus, the atmosphere can be heated from below by the radiation that is reflected back or re-radiated by the land or water bodies.
- On being heated, convection currents are set up in the air

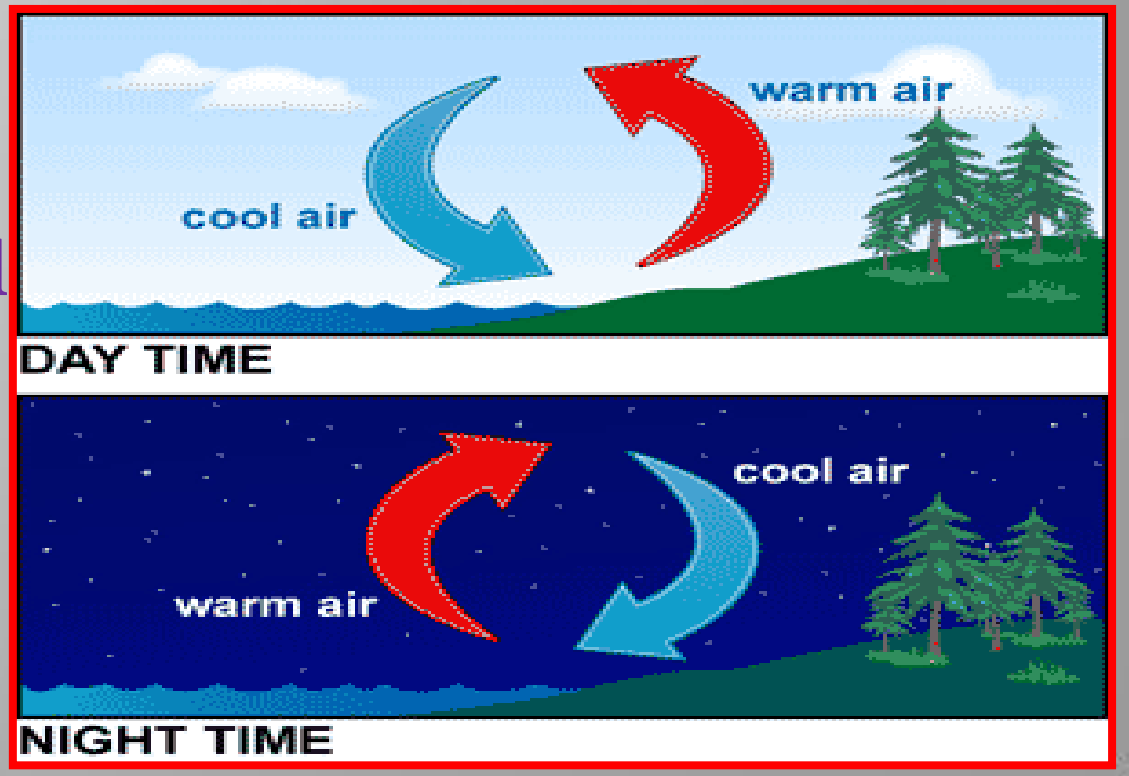
- Various other factors also influence these winds –
- The rotation of the Earth and
- The presence of mountain ranges in the paths of the wind.

SEA BREEZE AND LAND BREEZE

- During the day the land gets heated faster than the sea. So the hot air above the land rises up and cool air from the sea moves towards the land. (SEA BREEZE)

- During the night sea cools down slowly than the land. So the hot air above the sea rises up and cool air from the land moves towards the sea. (LAND BREEZE)





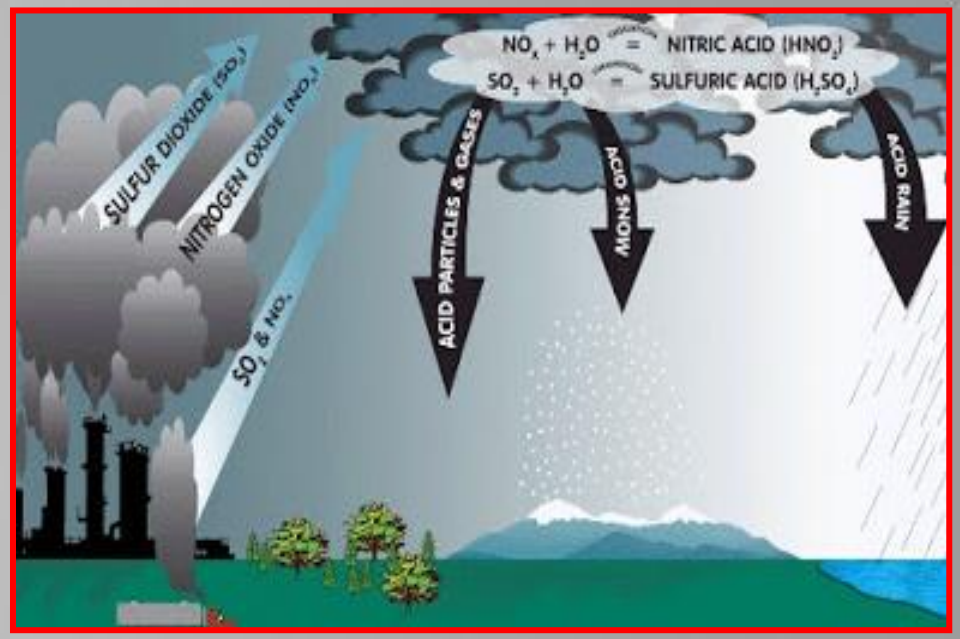
AIR POLLUTION

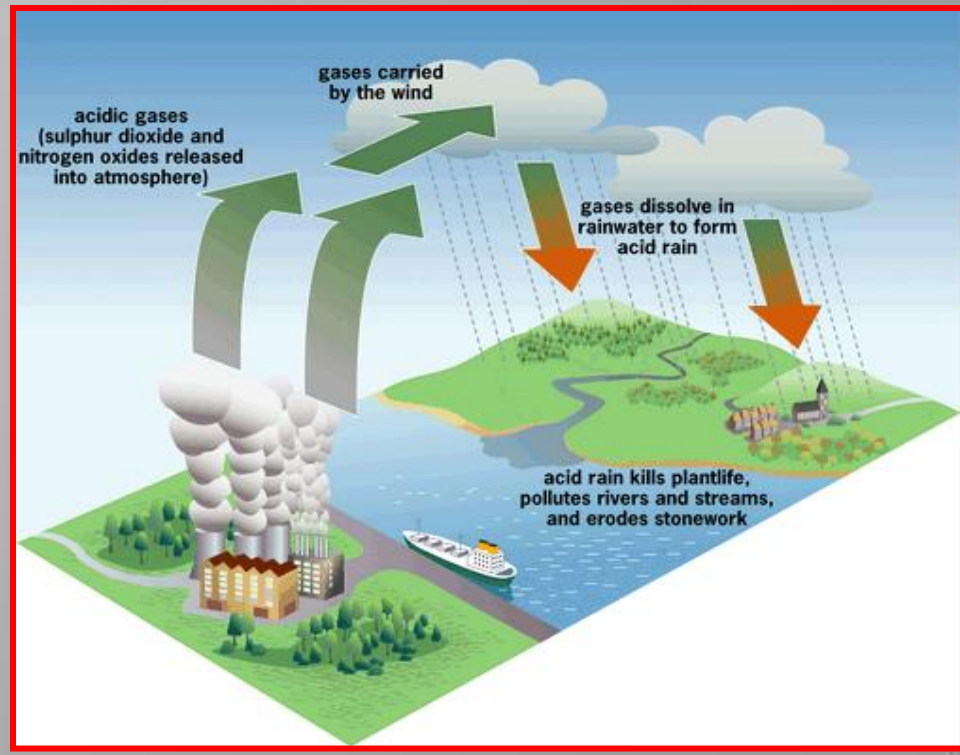
The increase in the content of harmful substances in the air is called air pollution.

Fossil fuels like coal and petroleum contain small amounts of nitrogen and sulphur. When these fuels are burnt, it releases oxides of sulphur and nitrogen. These oxides dissolve in rain and causes **acid rain.**

Burning of fossil fuels also release unburnt carbon particles which reduces visibility. During cold weather along with condensed water it forms **smog.**

Regular breathing air containing these harmful substances causes allergies, cancer, heart diseases etc.





CAUSES OF AIR POLLUTION

- The Burning of Fossil Fuels

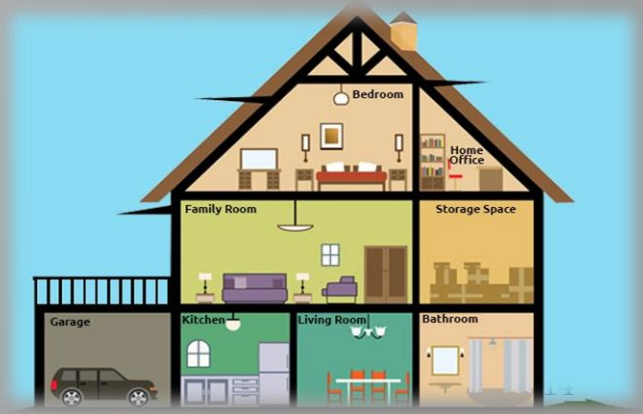
- Agricultural Activities

- Waste in Landfills

- Exhaust From Factories and Industries

- Mining Operations.

- Indoor Air pollution



PREVENTION OF AIR POLLUTION

a) Avoid Using Vehicles

People should avoid using vehicles for shorter distances. Rather, they should prefer public modes of transport to travel from one place to another. This not only prevents pollution, but also conserves energy.

a) Energy Conservation

A large number of fossil fuels are burnt to generate electricity. Therefore, do not forget to switch off the electrical appliances when not in use. Thus, you can save the environment at the individual level. Use of energy-efficient devices such CFLs also controls pollution to a greater level.

a) Use of Clean Energy Resources

The use of solar, wind and geothermal energies reduce air pollution at a larger level. Various countries, including India, have implemented the use of these resources as a step towards a cleaner environment.

Other air pollution control measures include:

1. By minimizing and reducing the use of fire and fire products.
2. Since industrial emissions are one of the major causes of air pollution, the pollutants can be controlled or treated at the source itself to reduce its effects. For example, if the reactions of a certain raw material yield a pollutant, then the raw materials can be substituted with other less polluting materials.
3. Fuel substitution is another way of controlling air pollution. In many parts of India, petrol and diesel are being replaced by CNG – Compressed Natural Gas fueled vehicles. These are mostly adopted by vehicles that aren't fully operating with ideal emission engines.
4. Although there are many practices in India, which focus on repairing the quality of air, most of them are either forgotten or not being enforced properly. There are still a lot of vehicles on roads which haven't been tested for vehicle emissions.
5. Another way of controlling air pollution caused by industries is to modify and maintain existing pieces of equipment so that the emission of pollutants is minimized.
6. Sometimes controlling pollutants at the source is not possible. In that case, we can have process control equipment to control the pollution.
7. A very effective way of controlling air pollution is by diluting the air pollutants.
8. Tree plantation. Plants and trees reduce a large number of pollutants in the air. Ideally, planting trees in areas of high pollution levels will be extremely effective.

PREVENTION OF AIR POLLUTION

1.Walk or Use bicycle for short distances

2.Reduce or eliminate fireplace and wood stove use

3.Avoid burning leaves, trash, and other materials

4. Use CNG vehicles instead of petrol or diesel one

Air Pollution can be reduced by

Planting more trees

Using Electric Vehicles

Using Environment Friendly vehicles

Using alternate sources of energy

Using public transport

SOLUTIONS

CLEAN AIR FOR HEALTH #AirPollution World Health Organization

RAIN

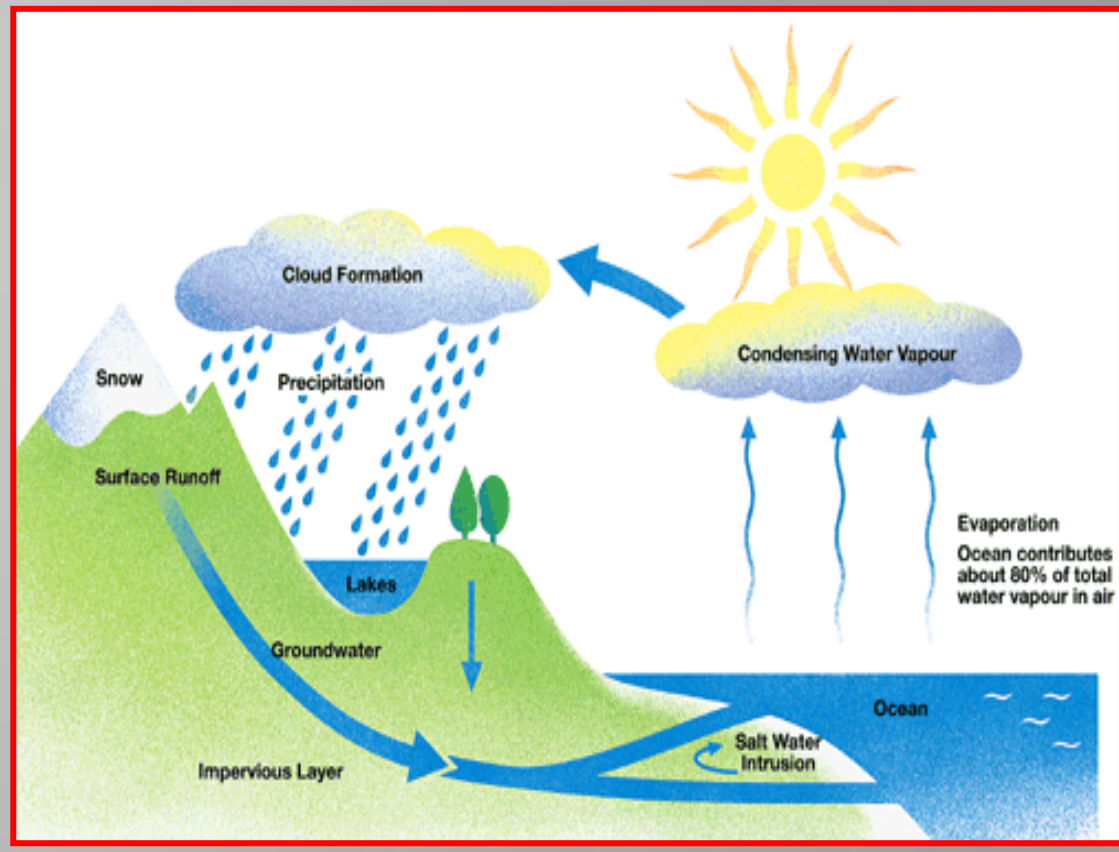
When water bodies are heated during the day, a large amount of water evaporates and rises up.

Some water vapour also get into the atmosphere due to biological activities like transpiration.

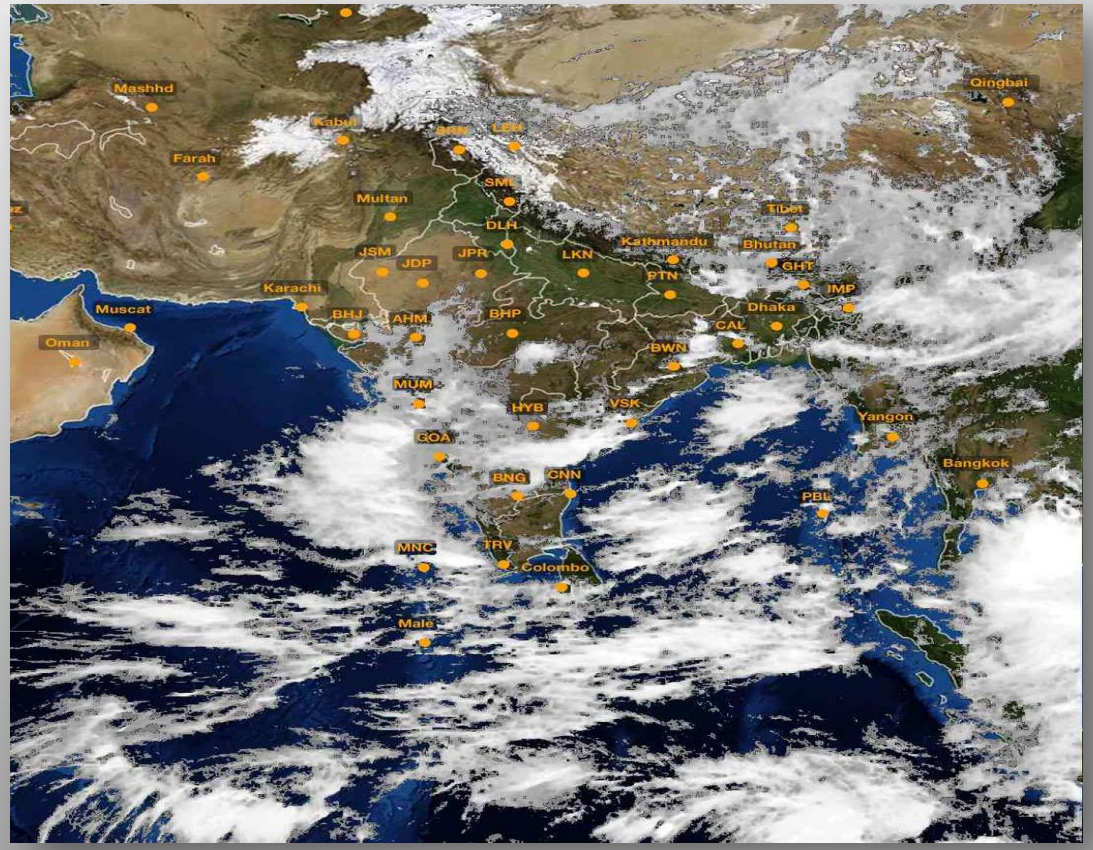
As the water vapour rises, it cools and condenses to form tiny droplets of water.

This condensation of water is facilitated by dust and other suspended particles in the air could act as the 'nucleus' for these drops to form around.

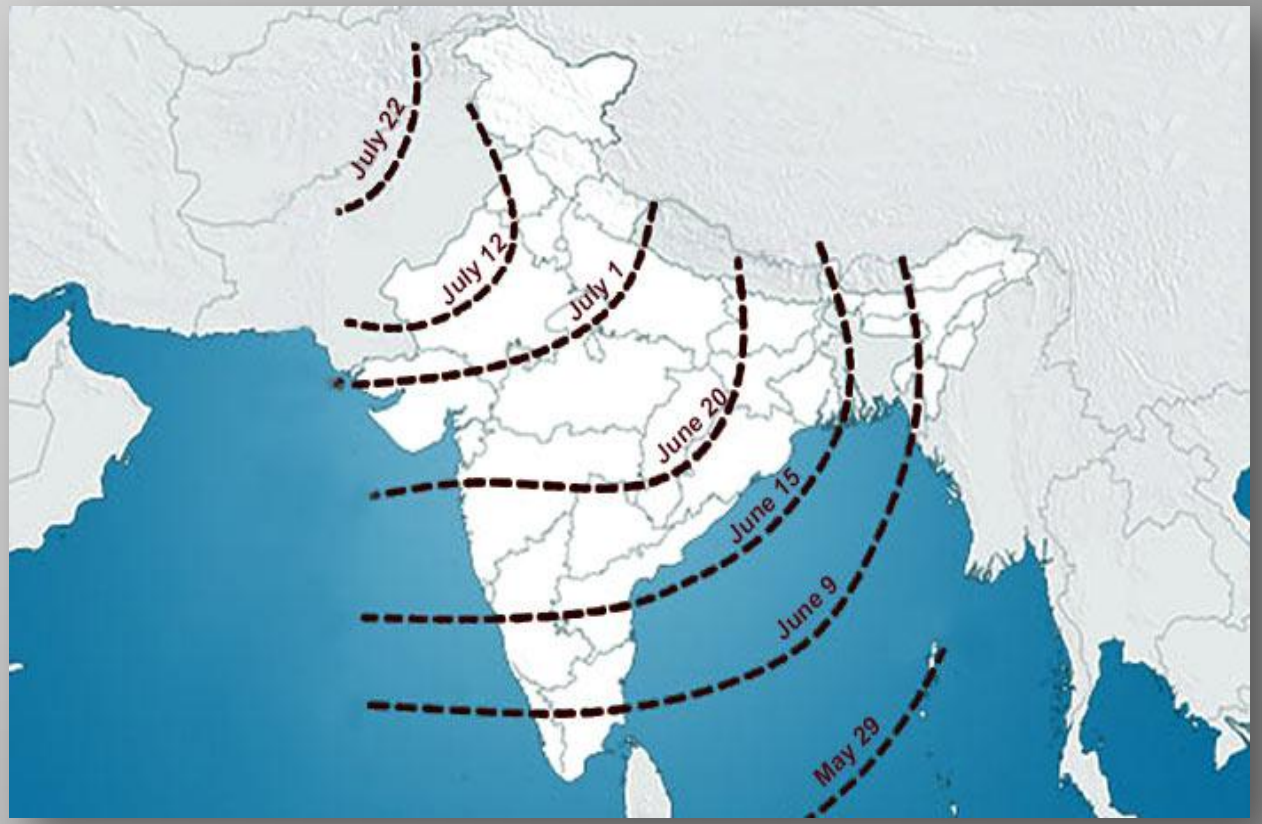
This appears as clouds. When the tiny droplets of water join together to form bigger drops of water, they fall down as rain, snow or hail.



Rainfall patterns **are decided by the prevailing wind patterns. In large parts of India, rains are mostly brought by the south- west or north-east monsoons.**

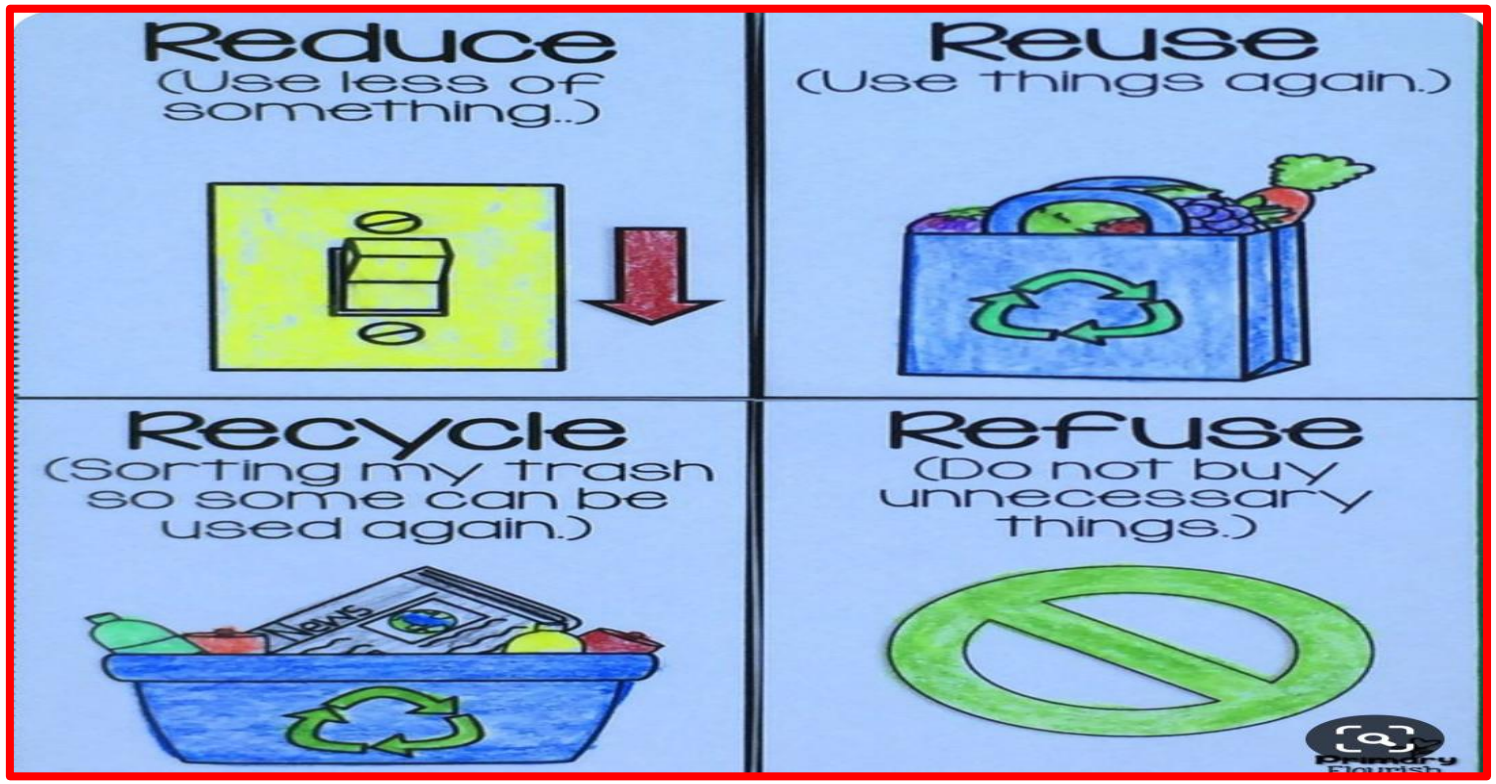


SATELLITE PICTURE SHOWING CLOUDS OVER INDIA



ONSET OF MONSOON IN INDIA

Pattern of southwest monsoon winds bringing rainfall across the nation


Reduce
(Use less of something..)
Reuse
(Use things again.)
Recycle
(Sorting my trash so some can be used again.)
Refuse
(Do not buy unnecessary things.)

Thank You!!!