

CLASS VII CHAPTER 4 AIR (NCERT)

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TOPICS:



➤ INTRODUCTION



➤ COMPOSITION OF THE ATMOSPHERE



➤ STRUCTURE OF THE ATMOSPHERE



➤ TROPOSPHERE



➤ STRATOSPHERE

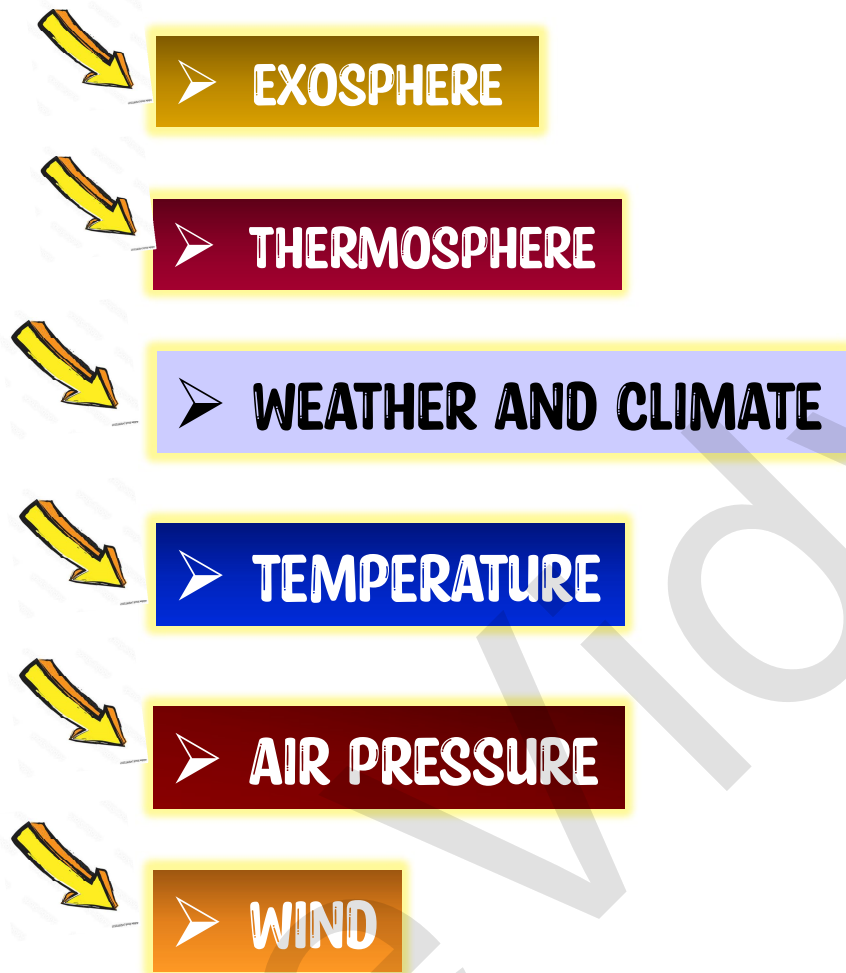


➤ MESOSPHERE



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INTRODUCTION

- ☐ EARTH IS SURROUNDED BY A HUGE BLANKET OF AIR IS CALLED ATMOSPHERE.
- ☐ ALL LIVING BEINGS ARE DEPENDED ON THE ATMOSPHERE.

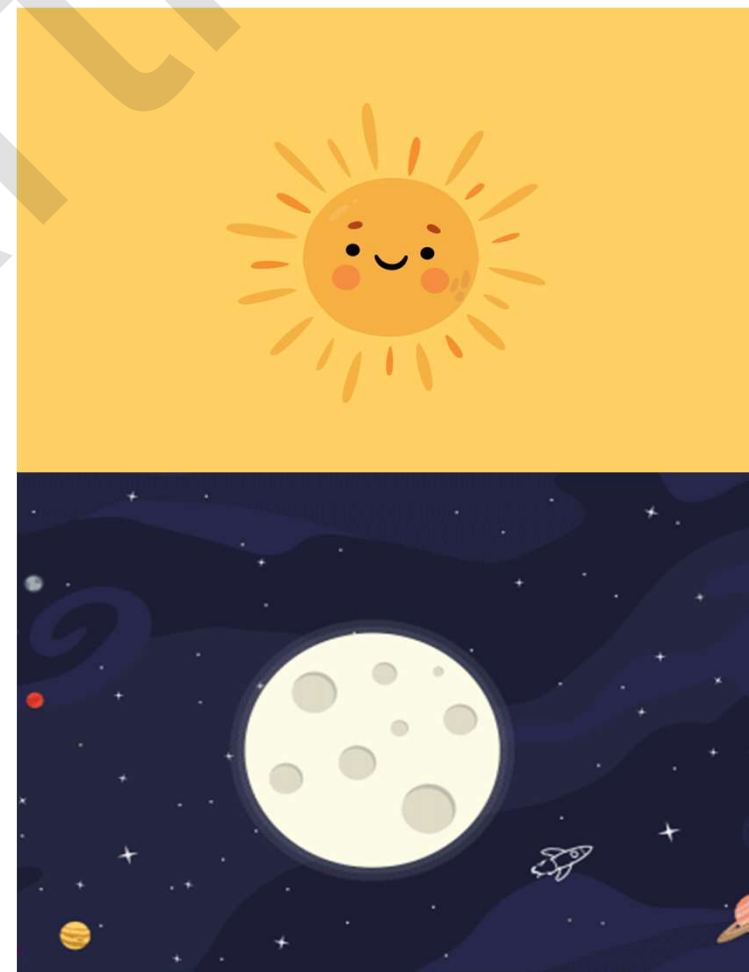


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MAIN POINTS:

- Protects us from harmful effects of the sun's rays.
 - Gives us oxygen to breathe
 - Protects us in the night from the cold.
- ❑ **GREEN HOUSE GASES** – Gases responsible for the green house effect include carbon dioxide, nitrogen oxide, methane, water vapors.



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- ❑ **GREEN HOUSE EFFECT** – it is a natural process that warms the earth's surface as we know that green house gases trap and hold the heat in the atmosphere.



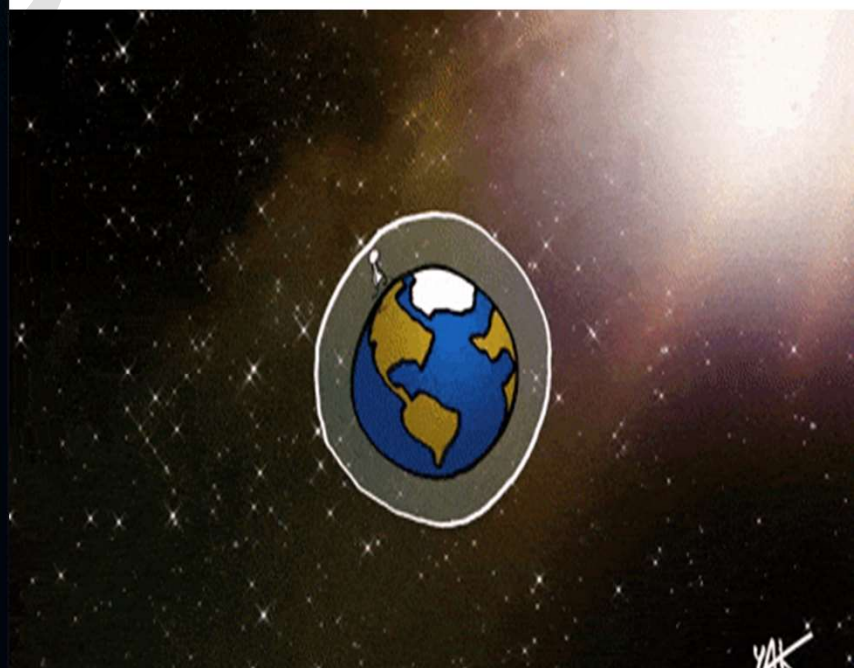
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TRAPPED HEAT

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The Greenhouse Effect

GLOBAL WARMING

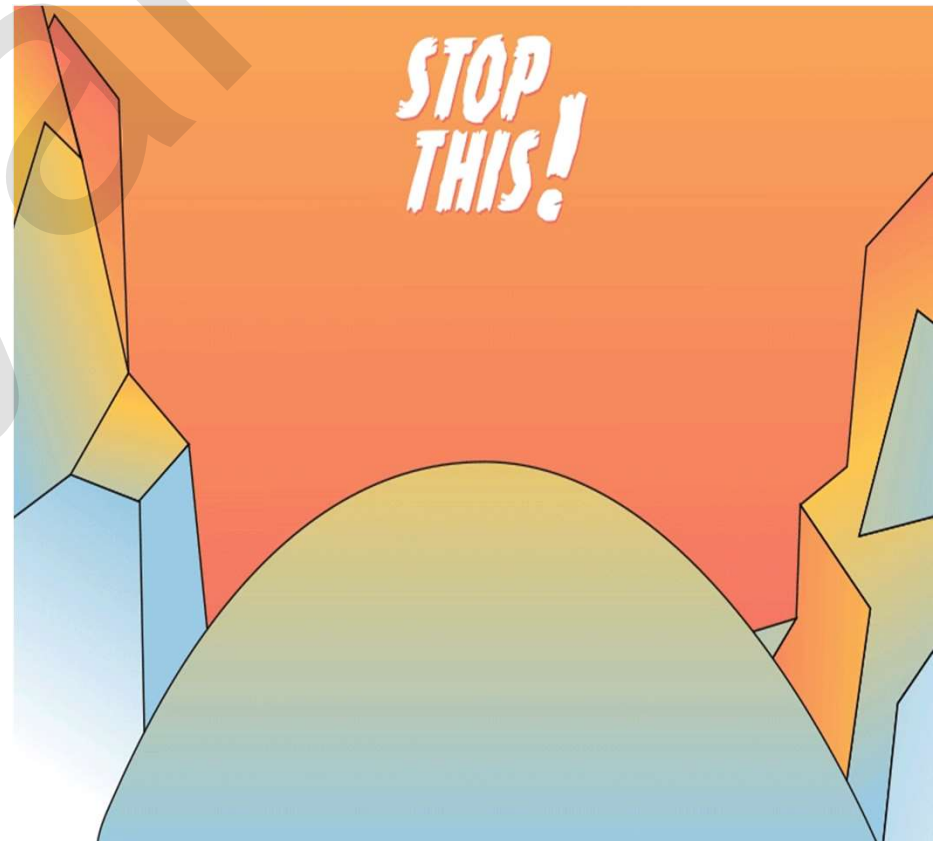


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- ❑ **GLOBAL WARMING** – rise in temperature causes;
 - The snow to melt.
 - Plants and animal extinction ex- snow bunting, snowy owl.
 - Rise in sea level causing flood.
 - Green turtles, dolphins, sharks, whales are sensitive to temperature.



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COMPOSITION OF THE ATMOSPHERE

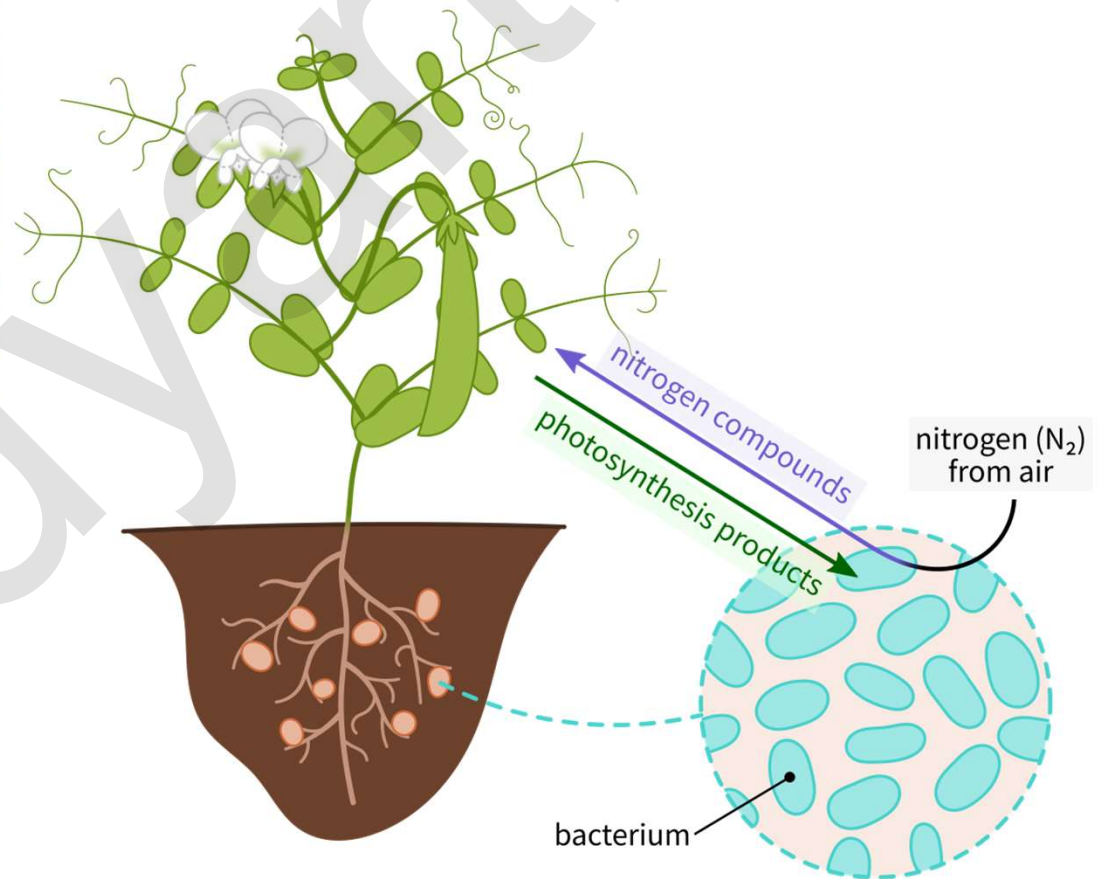
- ❑ AIR WE BREATHE IS A MIXTURE OF MANY GASES – NITROGEN, OXYGEN IN BULKY AMOUNT AND OTHER GASES LIKE – HELIUM, HYDROGEN IN A LESSER AMOUNT.

NITROGEN

- Nitrogen is important for plants (a vital product for chlorophyll), the compound by which plant use sunlight to make food.

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- Not directly but with the help of bacteria that change nitrogen's form.

OXYGEN

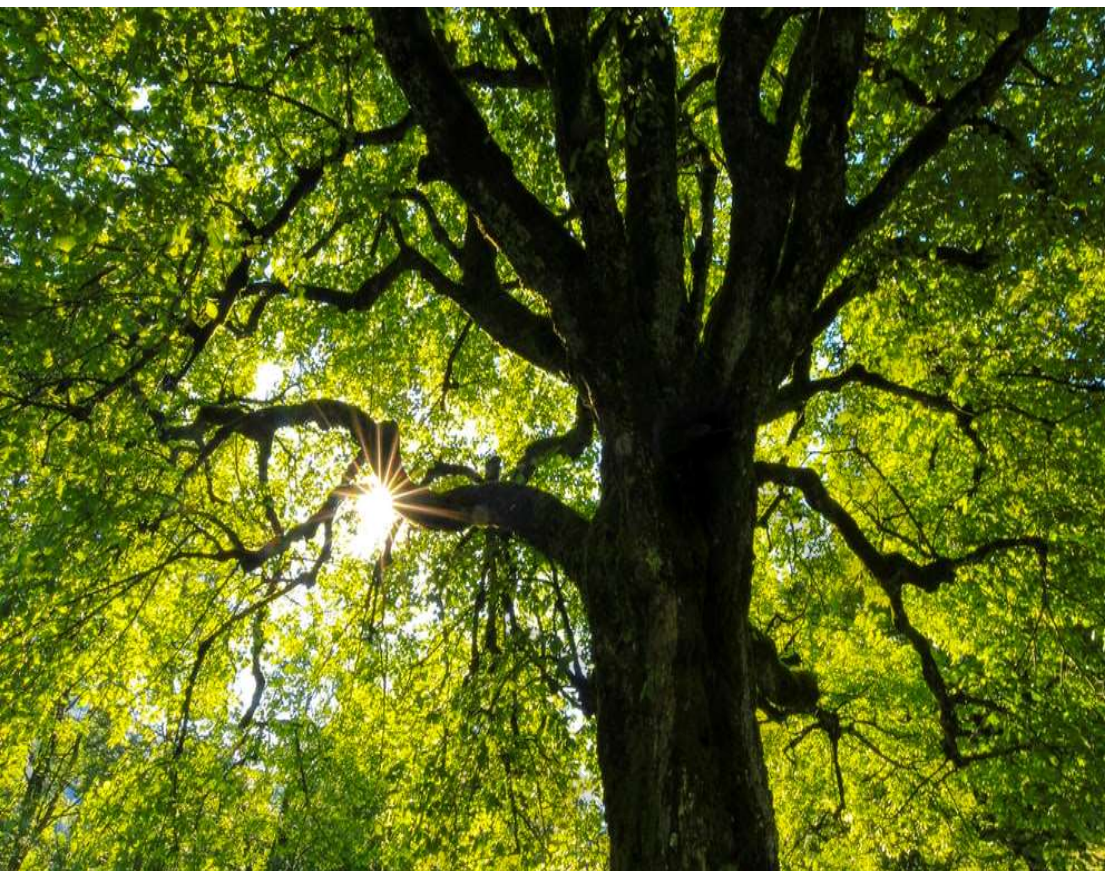
- Oxygen comes as the second abundant gas on earth.
- The abundance remains constant as plants also make oxygen.
- Cutting of trees can disturb the balance.



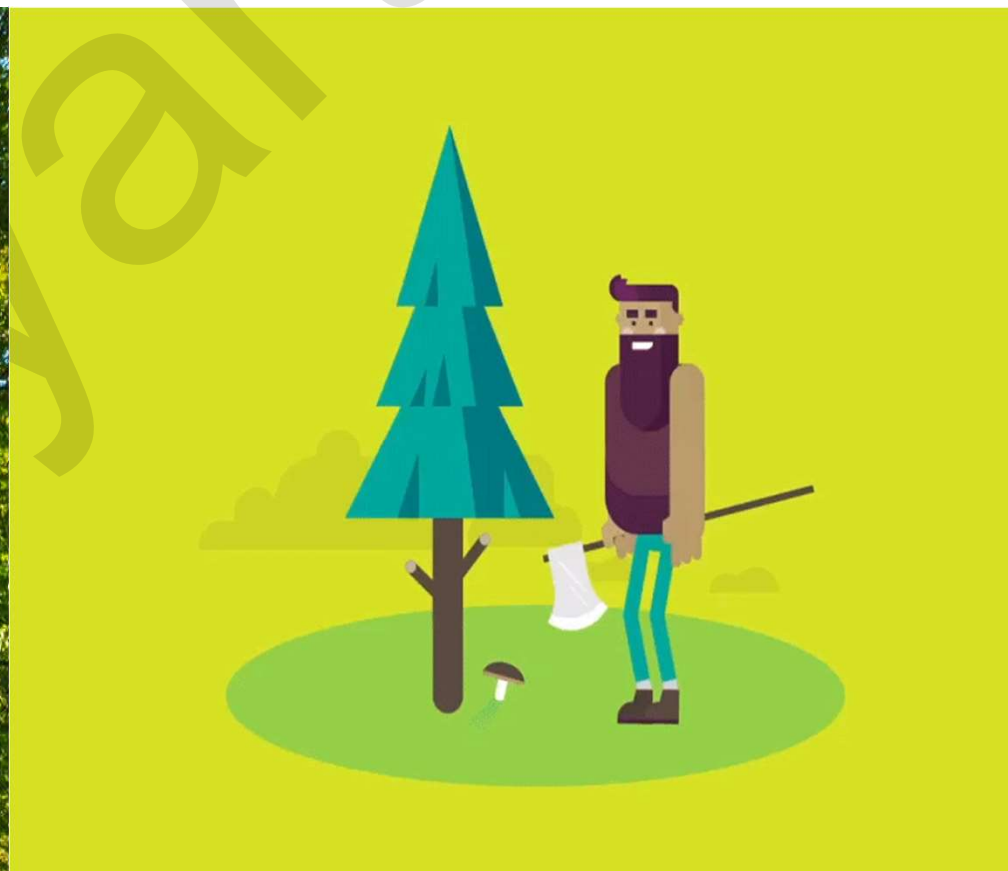
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EMIT OXYGEN



OBSERVES CO₂



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CARBON DIOXIDE

- Used by plants to make food.
- It is released by humans and animals and in exchange plants create oxygen(perfect balance).
- Everything extra is bad (burning of fuels - (coal and oil) adds billions of CO_2 that effects the environment.



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STRUCTURE OF THE ATMOSPHERE

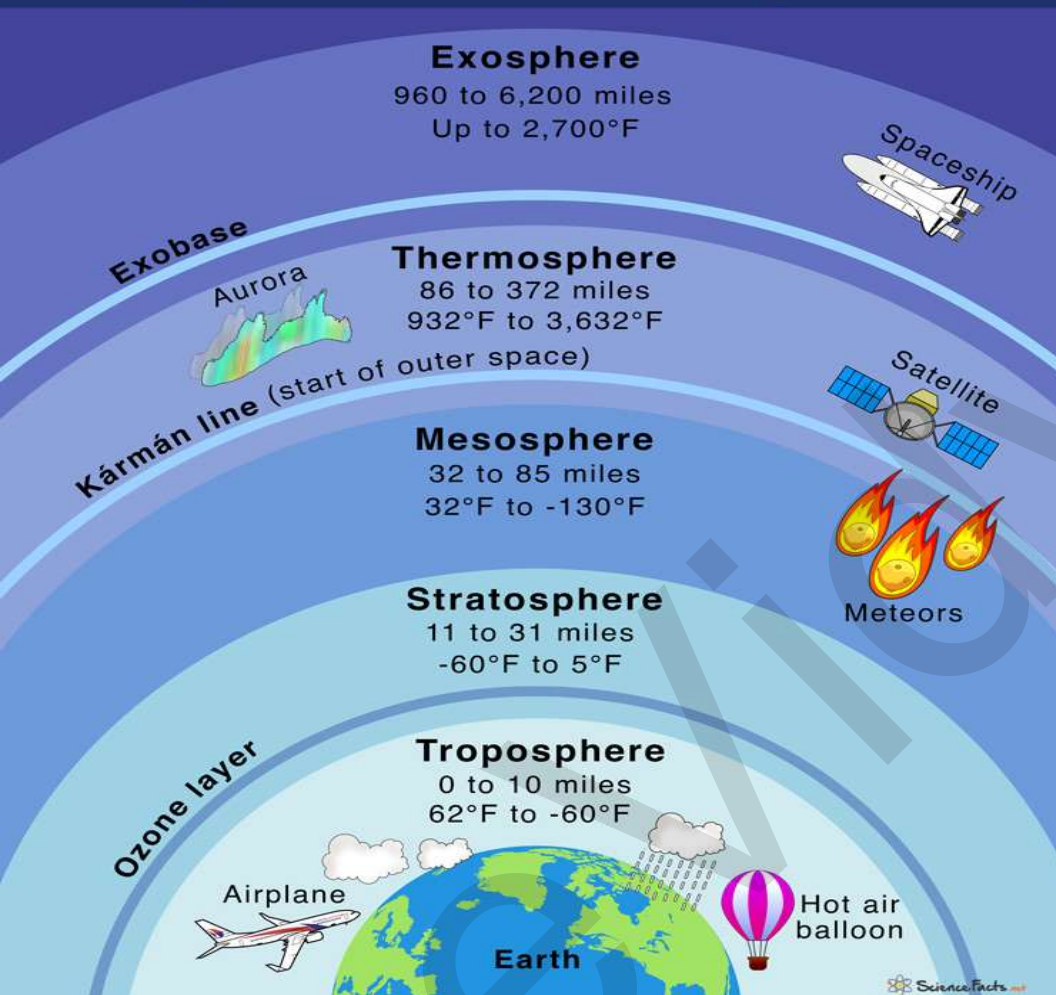
❑ **ATMOSPHERE IS DIVIDED INTO 5 LAYERS:**

TROPOSPHERE

- 13 km height.
- The air we breath exists here.
- Most important layer.
- Fog, hailstorm, rainfall(weather phenomena)occurs here.

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Layers of the Atmosphere



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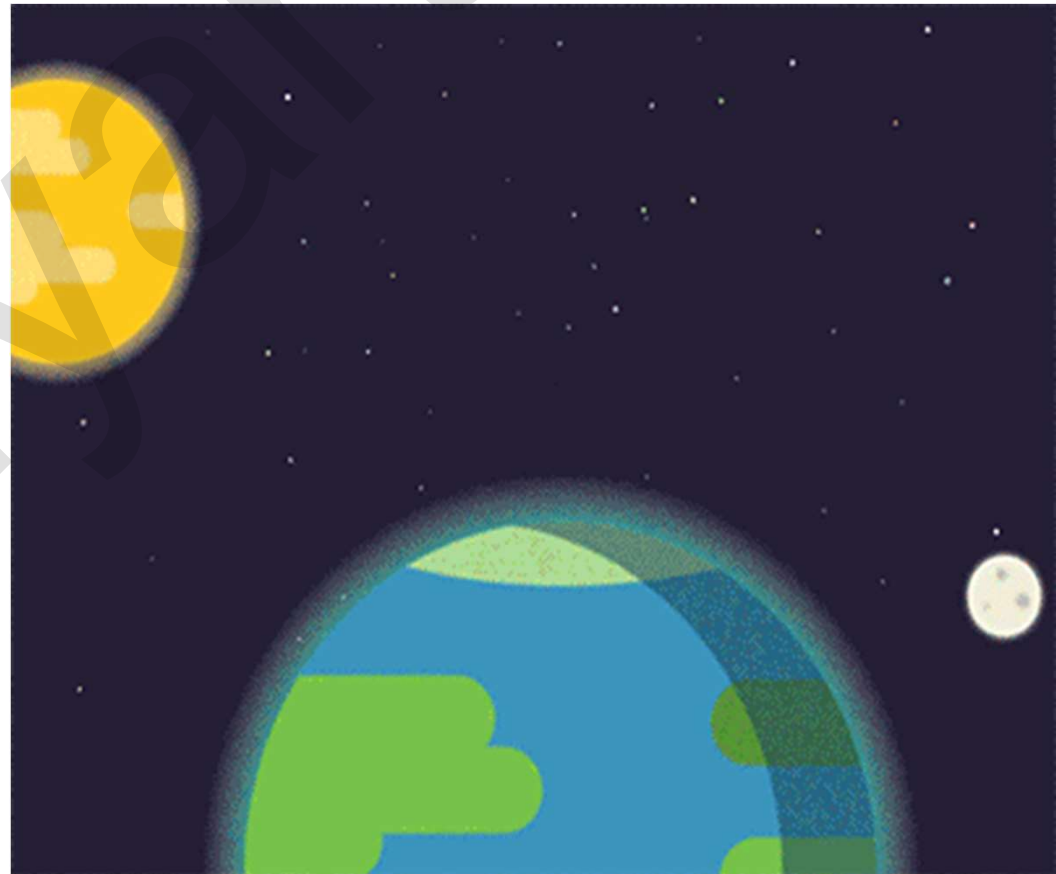


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STRATOSPHERE

- Height up to 50km.
- Free from clouds which is ideal for flying aero plane.
- Contains a layer of ozone gas which helps to protect us from sun rays.



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MESOSPHERE

- 3rd layer of atmosphere.
- 80km height.
- Burns the meteorites (lumps or particles of rocks) from space.

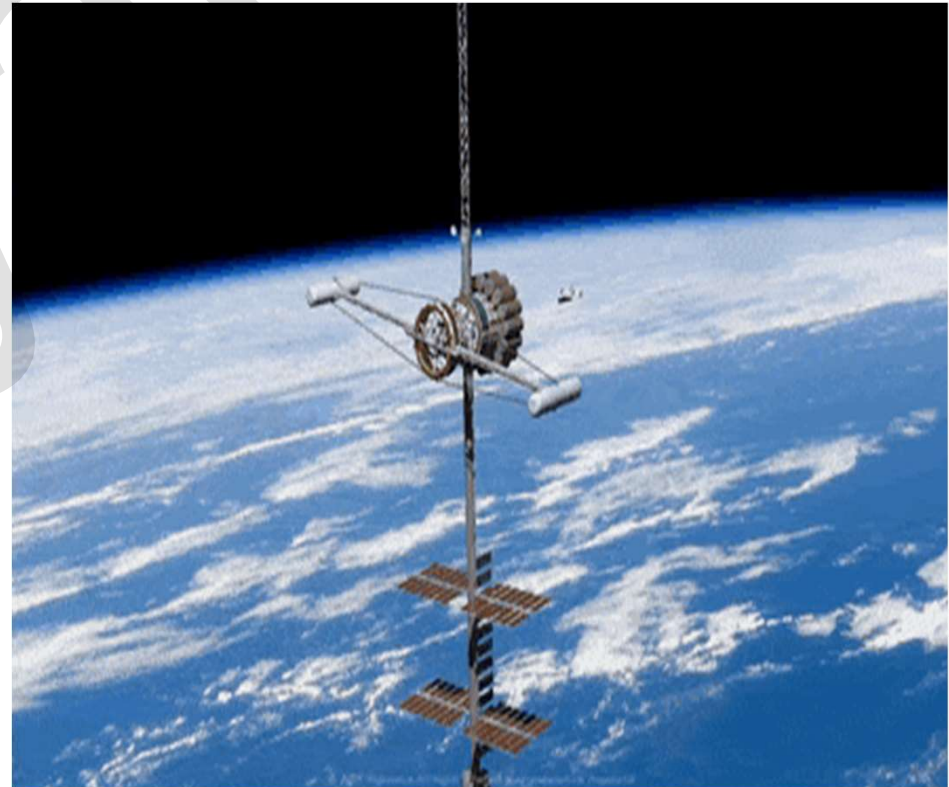


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THERMOSPHERE

- Have a rising temperature with height.
- Ionosphere is a part of this layer.
- 80-400 km height.
- The transmission reflects back to the earth by this layer.



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EXOSPHERE

- Upper most layer.
- This layer has very thin air.
- Helium and hydrogen from space floats in this layer.

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WEATHER AND CLIMATE

- Weather is the hour to hour, day to day condition of atmosphere.
- It can remain constant or can change suddenly.
- Breezy weather makes cheerful mood and plan for outing.
- Hot and humid weather makes us irritable.



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Deborah



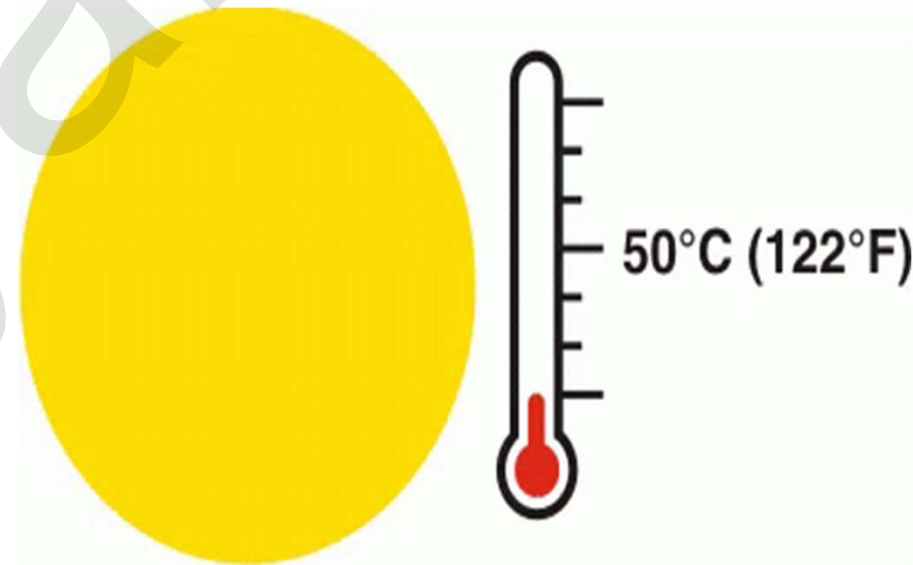
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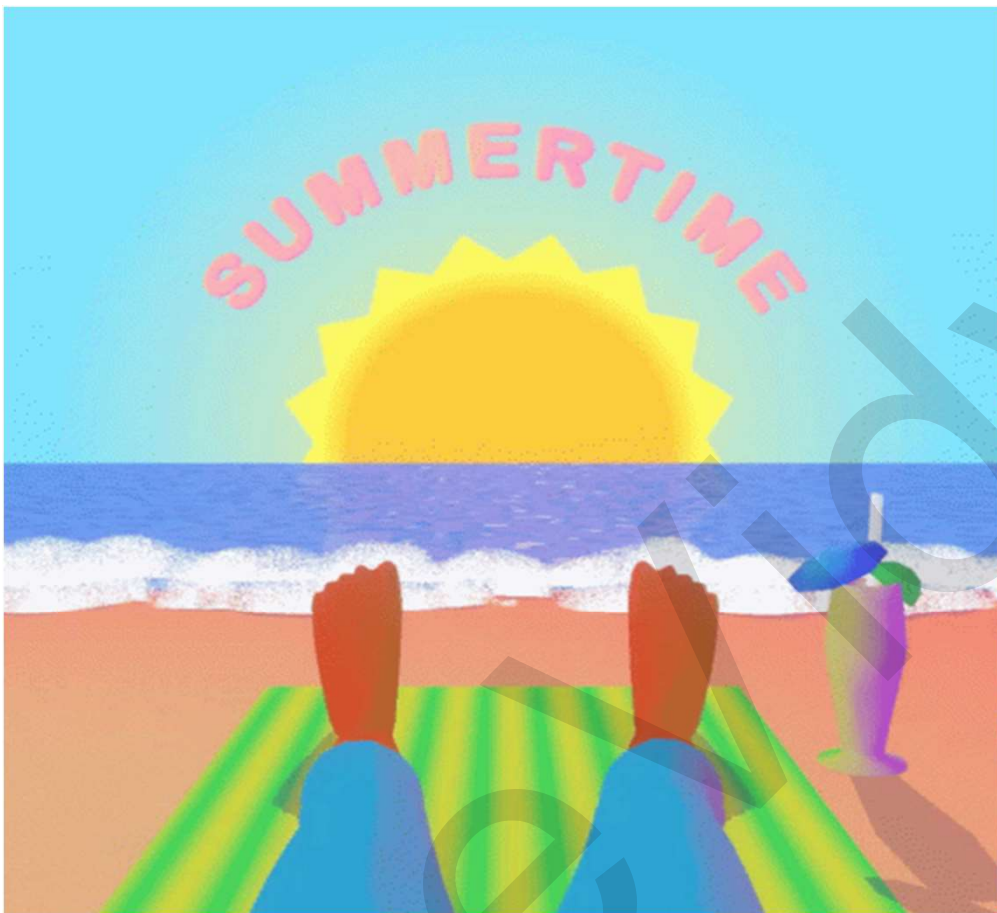
TEMPERATURE

- The temperature you feel is the temperature of the atmosphere.
- The degree of hotness and coldness of the air is known as temperature.
- It changes not only in day and night but in seasons also.
- Ex- summers are hotter and winters are cold.



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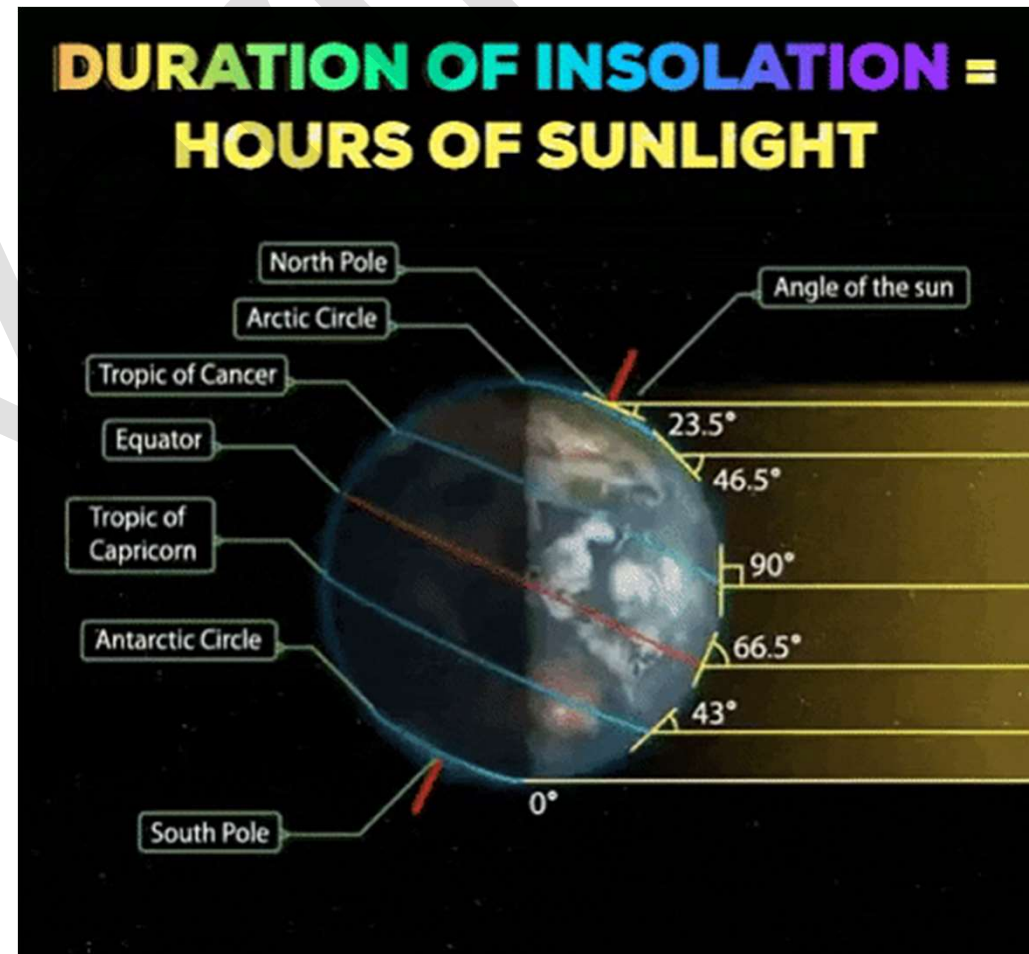
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☐ INSOLATION

- Solar energy received by the earth in a amount of time is called insolation.
- It is a measurer.
- It decreases the solar radiation in the poles.



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VILLAGE VS CITY

- Temperature In cities is much higher than that of the villages.
- Concrete and metals in buildings
- Asphalts in roads.
- Crowded high rise buildings trapped with warm air.
- All helps in increasing temperature.
- We use degree Celsius for temperature

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CROWDED CITIES

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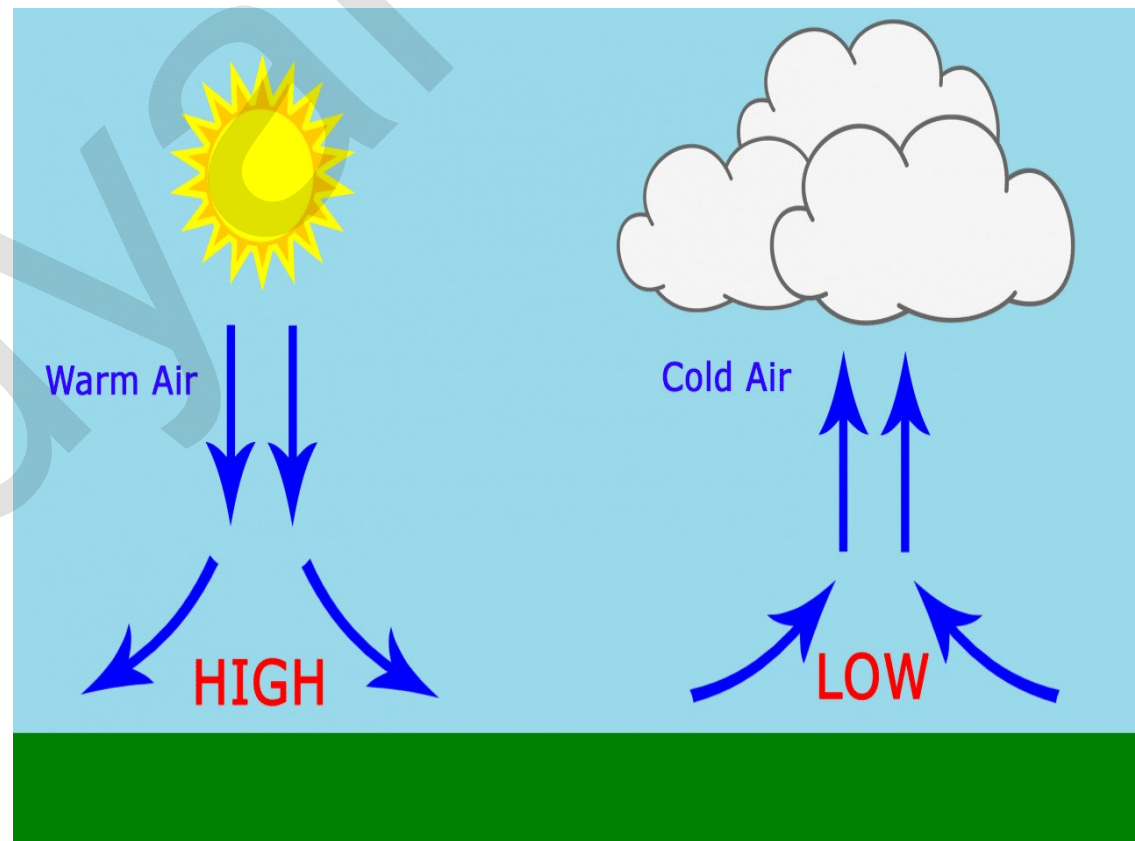
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AIR PRESSURE

- Air moves from high pressure to low pressure areas i.e. hot to cold.
- Warm air is lighter and cold air is denser.
- This phenomena creates wind.



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COLD

LOWER TEMPERATURE AREA



AIR IS COLD



HEAVY AIR



**CREATES CLOUDY SKY
AND WET WEATHER.**



**CREATES LOW PRESSURE AS IT
SINKS AND DOES NOT FLOW.**

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WARM

HIGH TEMPERATURE AREA



LOW PRESSURE AREAS.



**HIGH PRESSURE IS ASSOCIATED
WITH SUNNY SKIES.**

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WIND

□ THE MOVEMENT OF AIR FROM HIGH PRESSURE. TO LOW PRESSURE AREA IS CALLED WIND.

- It makes difficult to hold an umbrella.
- It blows away smoke or fine dust.
- Makes difficult to walk in a windy storm.



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❖ **THREE TYPES:**

❑ **PERMANENT WINDS** – a wind that constantly blows in a particular direction.

➤ **EX– EAST TO WEST**

❑ **SEASONAL WINDS** – changes direction in different seasons.

➤ **EX MONSOON IN INDIA.**

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- ❑ **LOCAL WINDS** – blows only in a particular area for a period of day or year.
- **EX – LOO OF NORTHERN PLANES. I.E. HARYANA, BIHAR, U.P**

❑ **MOISTURE** – MOISTURE IN AIR IS CALLED HUMIDITY.

- When the air is full of water we call it humid day.

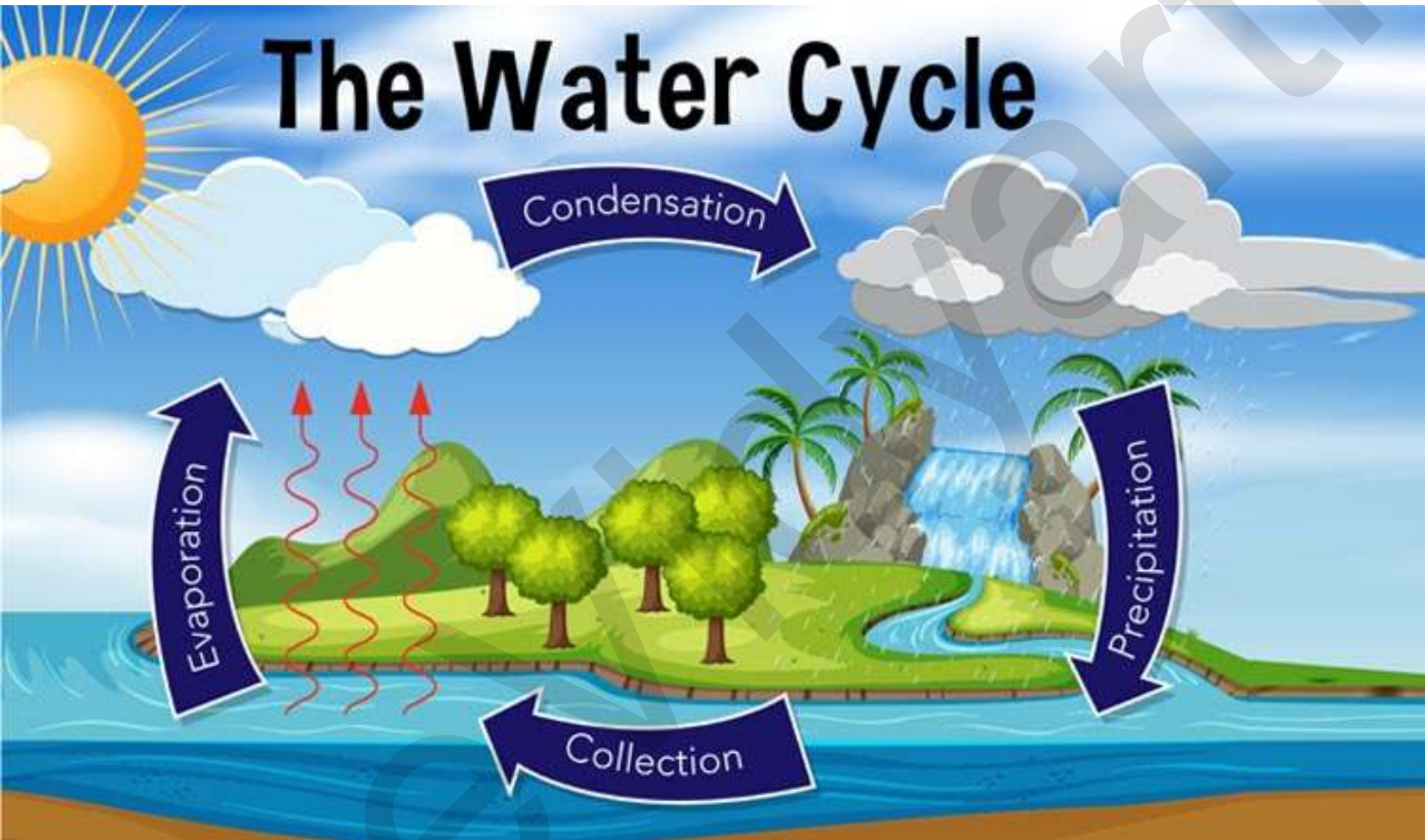
too...
hot...



chibird

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- Water evaporates from land and water bodies and it becomes water vapor and get mixed with air.
- When the air gets warmer, water holding capacity also increases.
- **EX – CLOTHS TAKE TIME TO GET DRY FROM SWEAT.**



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- When water vapor rises it starts cooling, water vapor condenses causing water droplets that get collected into masses of large clouds
- When they are heavy to float in air they came down as precipitation in a liquid form i.e. rain.
- Ground water comes from rain water.



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❑ 3 TYPES OF RAINFALL:

- **OROGRAPHIC, CONVECTIONAL AND CYCLONIC RAINFALL.**
- It is essential for the survival of plants and animals.
- If it is more, flood take place.
- If it is less, draught and scarcity takes place
- It brings fresh water on the earth surface.



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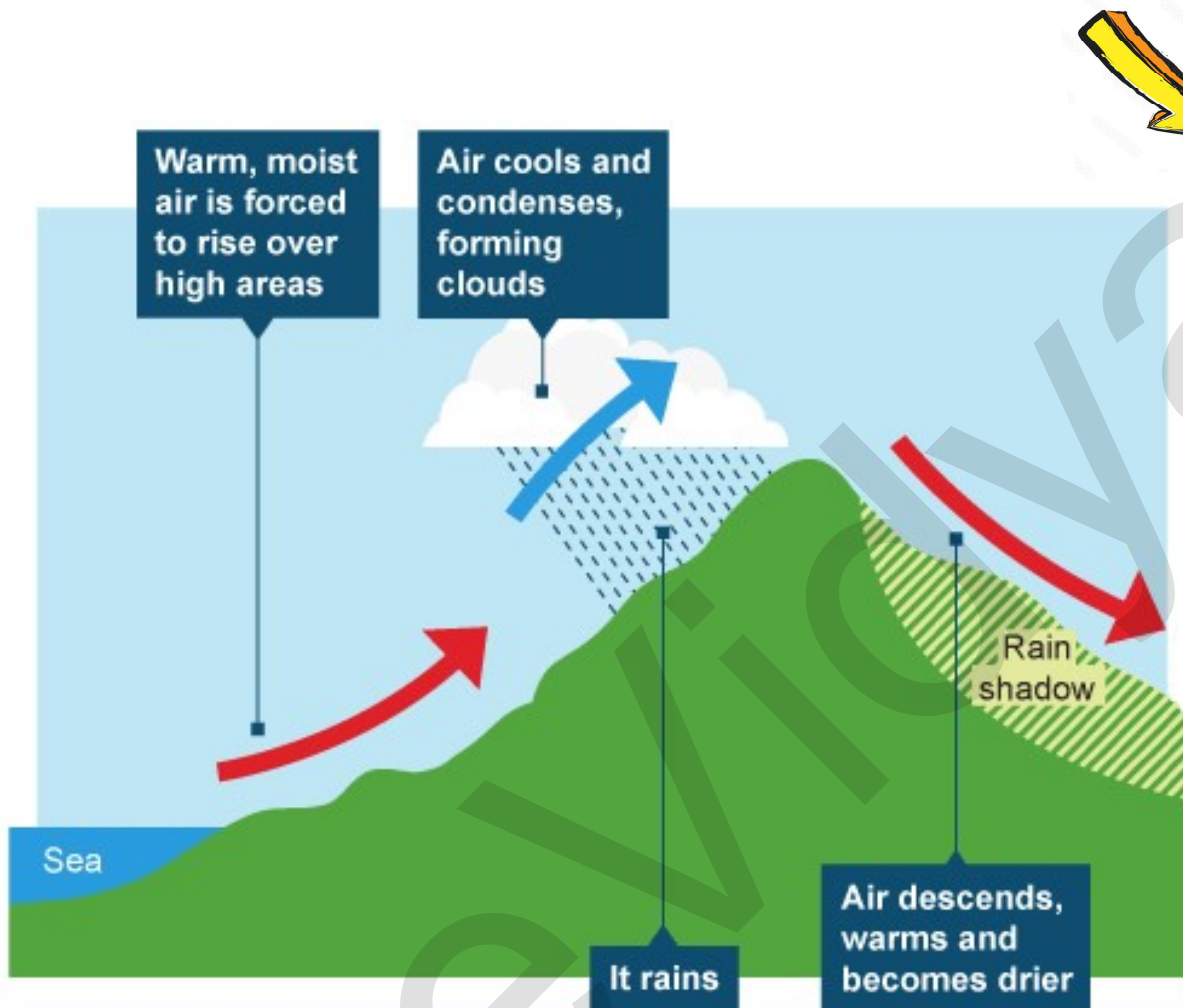
CYCLONIC RAIN



- THIS TYPE OF RAINFALL OCCURS WHEN WARM AND COLD AIR MEETS EACH OTHER.

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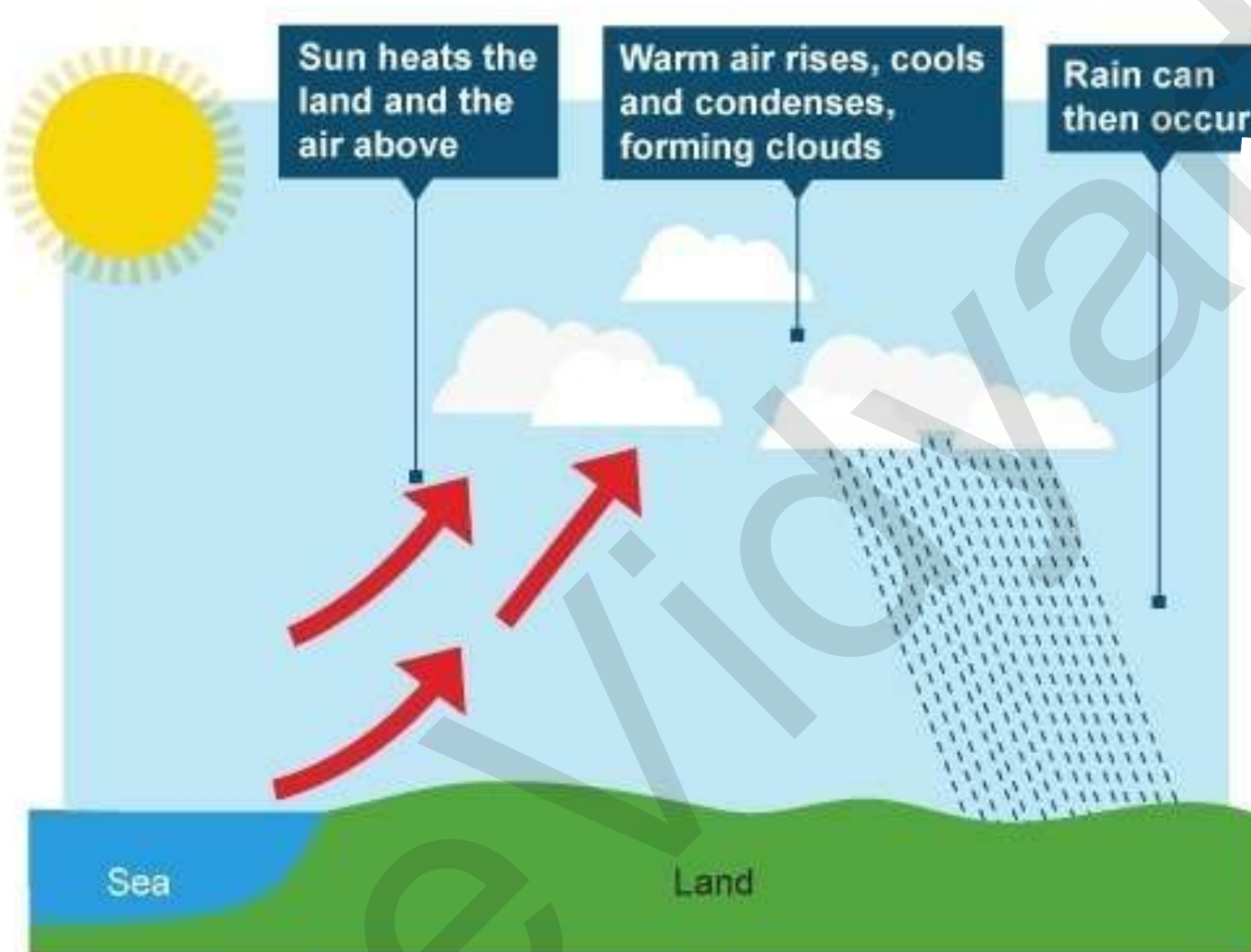


OROGRAPHIC RAIN

- ❑ **OROGRAPHIC PRECIPITATION, RAIN, SNOW, OR OTHER PRECIPITATION PRODUCED WHEN MOIST AIR IS LIFTED AS IT MOVES OVER A MOUNTAIN RANGE.**

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CONVECTIONAL RAIN

- THIS RAINFALL OCCURS WHEN THE TEMPERATURE GETS HIGH AND THE WARMER AIR RISES UP IN THE ATMOSPHERE