GS FOUNDATION
BATCH FOR CSE 2024

Geography - 05

(DN Condensation, Clouds, Rain)

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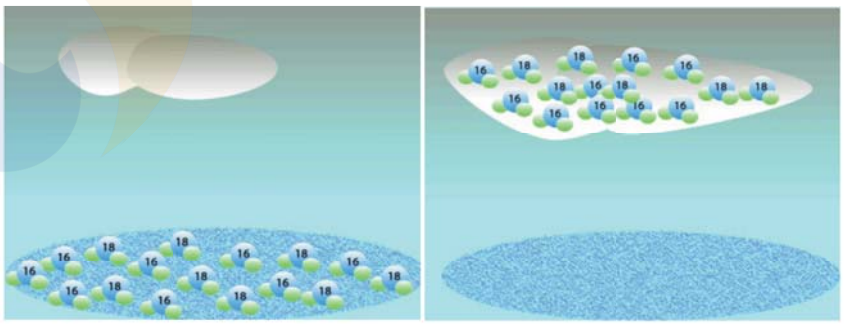
Condensation, Precipitation

- DIMPLE NANKANI

Forms and types of condensation

Cooling → Saturation of air →Leads to condensation and precipitation

Condensation=water vapour converts into tiny droplets



Forms of Condensation

- Condensation at/very near to ground surface = Dew, Frost, Fog, Mist

- Condensation at higher height = Cloud

DEW

- It refers to direct deposition of water vapour in form of water droplets on surface like grass, plants and soil

- Conditions= Air above the ground in winters becomes very cold and is not able to hold water vapour and deposits the water vapour on objects

- In Dew, Condensation occurs above the freezing point

- The ideal conditions for its formation are clear sky, calm air, high relative humidity, and cold and long nights.

FROST

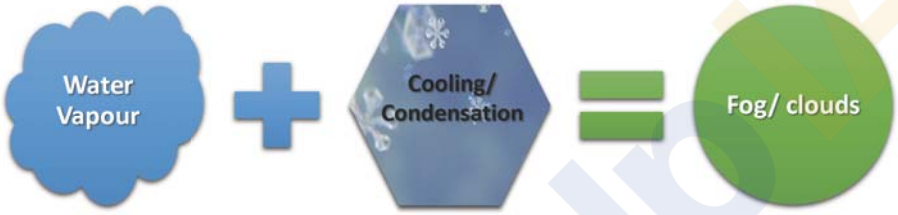
- Transformation of water vapour directly into solid form at ground surface

- The ideal conditions for the formation of white frost are the same as those for the formation of dew, except that the air temperature must be at or below the freezing point.

FOG AND MIST

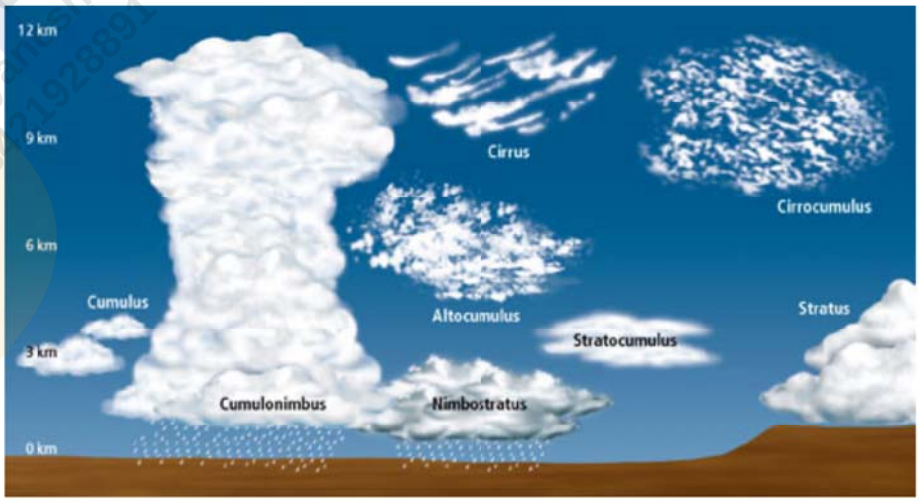
- Condensation of water vapor into water droplet on condensation nuclei like dust particles, smoke etc suspended in air. (Air has dust particles, smoke, soot and these acts as condensation nuclei and hygroscopic nuclei (attracts water). These suspended water droplets forms fig/mist.
- Fog and Mist are suspended water droplets in the air and so reduces visibility
- Difference between fog and mist is wrt size of water droplets. In mist water droplets are microscopic (v.v. small) as compared to fog. Mist has more moisture as compared to fog

Formation of fog



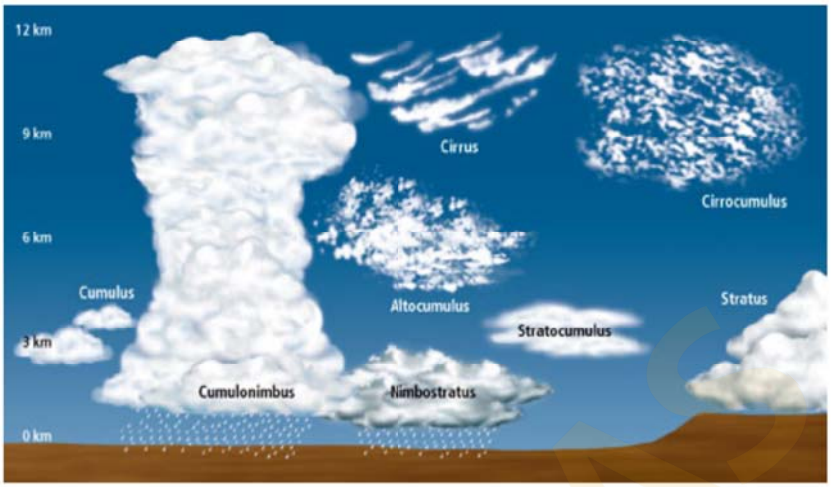
CLOUDS = Aggregate mixture of minute water droplet, ice particle or both in air at considerable elevations

- Condensation refers to conversion of water vapour to water droplet
- Precipitation= Falling down to water droplets/ ice when the air is unable to hold them



Types of Clouds

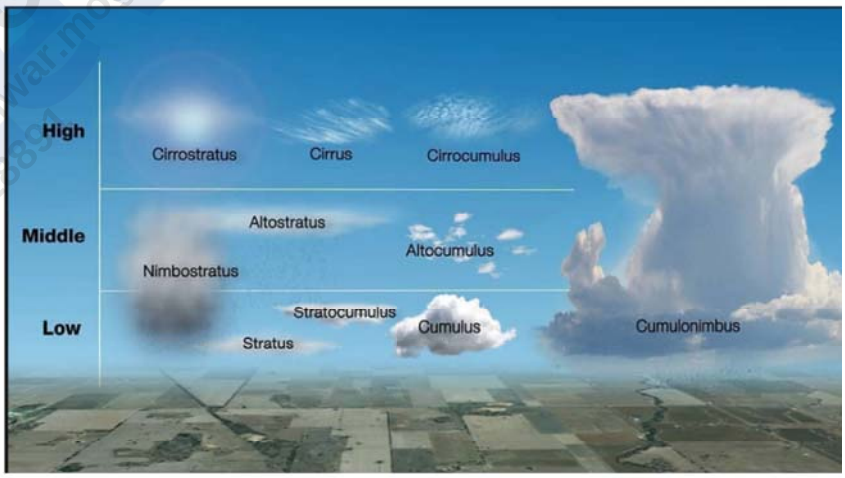
- **Cirrus** = High Altitude cloud around 6 - 10 km. Thin cloud. White Colored
- **Alto** = Medium Level Cloud. It is around 5 km
- **Cumulus** = Wooly/ Bumpy
- **Stratus**= Thin sheet
- **Nimbus** = Rain bearing



- **Low clouds** are mainly stratus/ Sheet clouds.
- **Cloud with great vertical Extent**= Cumulonimbus, Cumulus.

Types of clouds

- **High Clouds**: Cirrus, Cirrostratus, Cirrocumulus
- **Middle clouds:** Altostratus and Altocumulus
- **Low clouds:** Stratocumulus and Nimbostratus and
- **Clouds with extensive vertical development** – Cumulus and Cumulonimbus.



High Clouds: Cirrus, Cirrostratus, Cirrocumulus

- **Cirrus:** White Coloured and indicate fair wather
- **Cirrocumulus:** White, woolly cloud
- **Cirrostratus:** Resembles thin white sheet in the sky. Sun and moon shines with a halo

CIRROSTRATUS

Medium Clouds: Altostratus and Altocumulus

- **Altostratus:** Medium cloud. They are dense clouds

- **Altocumulus:** White, woolly and bumpy cloud

ALTOCUMULUS

Low Clouds: Stratus, StratoCumulus, Nimbostratus

- **Stratus:** Very Low cloud. It brings drizzle, Grey Coloured
- **Stratocumulus:** Low level Bumpy cloud.
- **Nimbo Stratus:** Dark Cloud. It is also known as Rain Cloud. Brings continuous Rain

STRATUS

STRATOCUMULUS

NIMBOSTRATUS

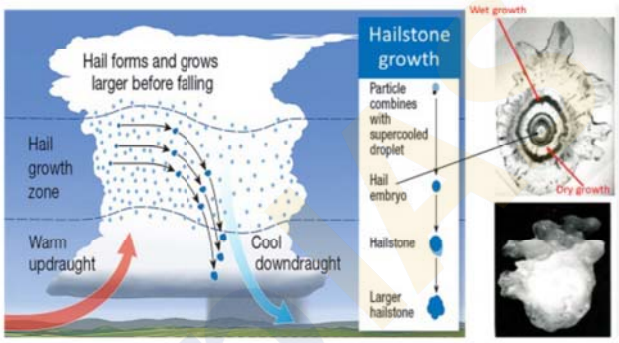
Clouds with great vertical extent: Cumulus, Cumulonimbus

- **Cumulus** = Vertical cloud, Rounded Top and Horizontal Base. Fair Weather Cloud. It is associated with rising convection current.

- **Cumulonimbus Cloud** = Overgrown cumulus cloud, Looks like an anvil. Brings Convectional Rain accompanied by lightening and thunder

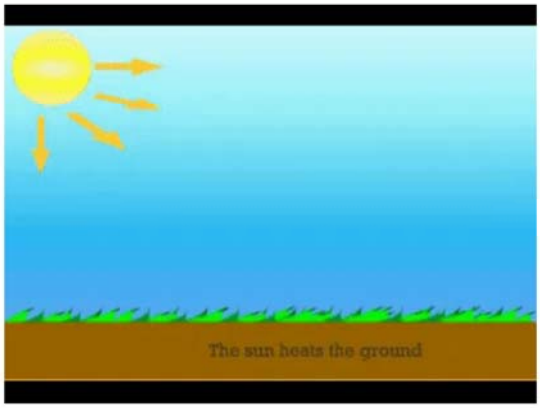
Types of Precipitation

- Condensed particles to grow in size and fal on Earth as precipitation. This may take place in liquid or solid form.
- Precipitation in the form of water is called **rainfall**
- **Snowfall:** When the temperature is lower than zero degree Celsius, precipitation takes place in the form of fine flakes of snow.
- **Sleet** is frozen raindrops and refrozen melted snow-water.
- **Hailstone** = Hailstones have several concentric layers of ice one over the other These are formed by the rainwater passing through the colder layers.



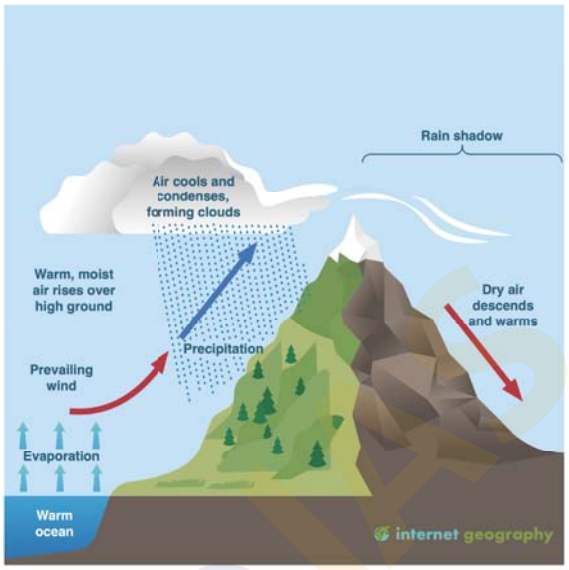
Types of rainfall

- **Convectional Rain:** The air on being heated, becomes light and rises up in convection currents. As it rises, it expands and loses heat and consequently, condensation takes place and cumulous clouds are formed. With thunder and lightening, heavy rainfall takes place but this does not last long. Such rain is common in the summer or in the hotter part of the day. It is very common in the equatorial regions



Types of rainfall

- **Orographic Rain/ Relief Rain:** Air comes across a mountain, is forced to ascend and as it rises, it expands; the temperature falls, and the moisture is condensed. Windward slopes receive greater rainfall. After giving rain on the windward side, winds on the leeward slope descends, their temperature rises and its capacity to take in moisture increases and hence, these leeward slopes remain rainless and dry. The area situated on the leeward side, which gets less rainfall is known as the rain-shadow area.
- **Cyclonic Rain:** Tropical Cyclone and Temperate Cyclone



World Distribution of Rainfall

- In general, as we proceed from the equator towards the poles, rainfall goes on decreasing steadily.
- In general, the coastal areas of the world receive greater amounts of rainfall than the interior of the continents.
- The rainfall is more over the oceans than on the landmasses of the world because of being great sources of water.
- Between the latitudes 25 degree and 35 degree N and S of the equator, the rain is heavier on the eastern coasts and goes on decreasing towards the west.
- Between 45 degree and 65 degree N and S of equator, due to the westerlies, the rainfall is first received on the western margins of the continents and it goes on decreasing towards the east. Wherever mountains run parallel to the coast, the rain is greater on windward side and it decreases towards the leeward side.

World Distribution of Rainfall

- **Equatorial Belt:** Convectional Rainfall, Very Heavy Rainfall. Average rainfall of 300 cm/year.
- **Tropical Monsoon:** 75-225 cm rainfall, Not a dry climate, Rainfall in monsoon month.
- **Tropical Grassland:** Summer rainfall, less than 75 cm, Savannah region
- **Desert:** Offshore trade winds, Rainfall less than 25 cm
- **(Warm Temperate) Mediterranean Climate:** Winter rainfall, <75 cm rainfall, semi arid region
- **Mid Latitude Desert:** dry condition and rainfall < 25 cm
- **Temperate Grassland:** Less than 50 cm/ year.
- **Cool Temperate:** Rainfall around 90 cm
- **Taiga Belt:** Rainfall throughout year, Rainfall well distributed. Coniferous forest. 70 cm
- **Tundra Belt:** Rainfall less than 20 cm.

2013

"Climate is extreme, rainfall is scanty and the people used to be nomadic herders." The above statement best describes which of the following regions?

(a) African Savannah

(b) Central Asian Steppe

(c) North American Prairie

(d) Siberian Tundra

2015

"Each day is more or less the same, the morning is clear and bright with a sea breeze; as the Sun climbs high in the sky, heat mounts up, dark clouds form, then rain comes with thunder and lightning. But rain is soon over.

"Which of the following regions is described in the above passage?

(a) Savannah

(b) Equatorial

(c) Monsoon

(d) Mediterraneana

2018

Which of the following leaf modifications occur (s) in the desert areas to inhibit water loss?

1. Hard and waxy leaves
2. Tiny leaves
3. Thorns instead of leaves

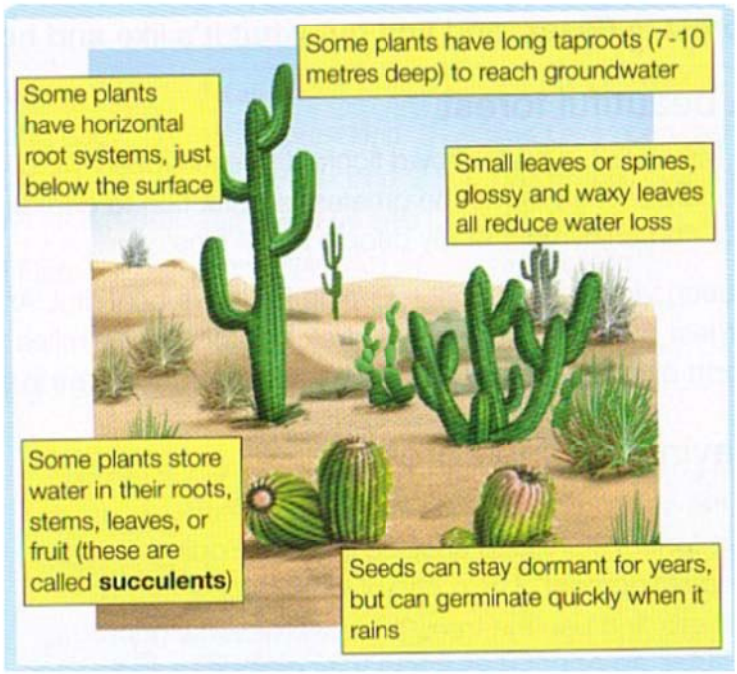
Select the correct answer using the code given below:

(a) 2 and 3 only

(b) 2 only

(c) 3 only

(d) 1, 2 and 3



2013

Which of the following is/are unique characteristic/characteristics of equatorial forests?

1. Presence of tall, closely set trees with crowns forming a continuous canopy
2. Coexistence of a large number of species
3. Presence of numerous varieties of epiphytes

Select the correct answer using the code given below:

(a) 1 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1, 2 and 3

2021

Leaf litter decomposes faster than in any other biome and as a result, the soil surface is often almost bare. Apart from trees, the vegetation is largely composed of plant forms that reach up into the canopy vicariously, by climbing the trees or growing as epiphytes, rooted on the upper branches of trees." This is the most likely description of

(a) Coniferous forest
(b) Dry deciduous forest
(c) Mangrove forest
(d) Tropical rain forest