

NCERT Notes: Types Of Clouds [Geography Notes For UPSC]

Clouds are an important part of the earth's weather and climate. Clouds form when water condenses in the sky. Clouds are visible accumulations of tiny water droplets or ice crystals in the Earth's atmosphere.

How do Clouds form?

Clouds form from water in the sky. The water may evaporate from the ground or move from other areas. Water vapour may be invisible but it is always in the sky in some amount. Clouds form when an area of air becomes cooler until the water vapour there condenses to liquid form. The water will condense around dust, ice or sea salt.

Why are Clouds Important?

1. They are needed for rains or snow.
2. During the nights, clouds reflect heat back to the earth and keep the temperature warm.
3. During the day, clouds help in keeping the temperature cooler by shielding the sunlight.
4. Researching and studying clouds helps in understanding weather and climate.

What are the 2 main factors that will determine the type of clouds formed?

1. Temperature
2. Wind

How are Clouds Classified?

Clouds are classified on the basis of 2 major factors.

1. Physical Form
2. Height at which Clouds are formed

What are the 4 major classifications of clouds on the basis of their physical forms?

According to their altitude, stretch, density, and transparency or opaqueness clouds are classified into four types which are given below.

1. Cirrus

2. Cumulus
3. Stratus
4. Nimbus

What are Cirrus Clouds?

1. Cirrus clouds are formed at high altitudes of 8,000 – 12,000m.
2. They are detached thin clouds.
3. They have a feathery appearance.
4. They are always white in colour.

What are Cumulus Clouds?

1. Cumulus clouds are generally formed at a height of 4,000 m – 7,000 m.
2. They look like cotton wool.
3. They exist in patches and can be seen dispersed here and there.
4. They have a flat base.

What are Stratus Clouds?

1. Stratus clouds are horizontal.
2. Stratus clouds are stratified or layered clouds cover big portions of the sky.
3. These clouds are usually formed due to the mixing of air masses with various temperatures or due to loss of heat.
4. The presence of stratus clouds means chilly, overcast day.

What are the Nimbus Clouds?

1. Nimbus clouds are usually formed at lower altitudes.
2. The colour of Nimbus clouds is usually black or dark grey.
3. Nimbus clouds block the sunlight
4. These types of clouds usually cause heavy rainfall and thunderstorms.

Which is the type of clouds that bring rainfall or snowfall?

Clouds with the prefix “nimbo” or the suffix “nimbus” bring rainfall and snowfall. Nimbostratus clouds bring continuous rainfall or snowfall that may continue for a very duration.

Cumulonimbus clouds are also called thunderheads. Thunderheads produce rain, thunder and lightning.

Classification based on the altitude of Clouds formation

Clouds are classified on the basis of their formation at different heights. The altitude at which certain category of clouds form varies on the basis of the polar region, tropical region etc.

Below table gives the classification of clouds and the associated types of clouds

Classification of clouds	Types of clouds
High clouds	<ol style="list-style-type: none">1. Cirrus2. Cirrostratus3. Cirrocumulus
Middle clouds	<ol style="list-style-type: none">1. Altostratus2. Altocumulus
Low clouds	<ol style="list-style-type: none">1. Stratocumulus2. Nimbostratus
Clouds with extensive vertical development	<ol style="list-style-type: none">1. Cumulus2. Cumulonimbus

High-Level Clouds

1. Polar Regions - they form at altitudes of 3000 m (10,000 ft) to 7600 m (25,000 ft).
2. Temperate Regions - they form at altitudes of 5000 m (16,500 ft) to 12,200 m (40,000 ft).
3. Tropical Regions - they form at altitudes of 6,100 m (20,000 ft) to 18,300 m (60,000 ft).

Mid-Level Clouds

1. Non-vertical clouds in the middle level are prefixed by the alto.
2. At any latitude, these clouds are formed as low as 2000 m (6500 ft) above the surface.
3. These clouds can be formed as high as 4,000 m (13,000 ft) near the poles
4. These clouds are formed at an altitude of 7,600 m (25,000 ft) in the tropical region.

Low-level Clouds

1. These clouds are formed near the surface up to 2000 m (6500 ft).
2. These types of clouds have no prefix.

What is Nephology?

Nephology is the science of clouds, which is undertaken in the cloud physics branch of meteorology.

How do meteorologists measure cloud cover?

1. Oktas is the measurement unit that is used to measure the amount of visible sky that is covered by clouds.
2. An okta estimates how many eighths of the sky (octo-) is covered in clouds.
3. Clear sky is measured as 0 oktas.
4. An overcast or grey sky is measured as 8 oktas.