

Clouds play a vital role in weather prediction, aviation, and climate research. By observing cloud types and changes in cloud cover, meteorologists can gain insights into current and future weather patterns. Clouds are visible masses of water droplets or ice crystals suspended in the Earth's atmosphere. They are an integral part of Earth's weather and climate systems. Clouds can be classified into several main types based on their appearance and altitude in the atmosphere. The World Meteorological Organization (WMO) has established a cloud classification system, which includes the following major cloud types:

1. Cirrus Clouds (Ci):

- Cirrus clouds are high-altitude clouds that form above 20,000 feet (6,000 meters).
- They have a wispy or feathery appearance and consist of ice crystals.
- Cirrus clouds are often indicators of fair weather but can signal approaching changes in the weather.

2. Cumulus Clouds (Cu):

- Cumulus clouds are puffy, white clouds with a cotton-like appearance.
- They form at various altitudes and are typically associated with fair weather. However, they can develop into cumulonimbus clouds, which are associated with thunderstorms.

3. Stratus Clouds (St):

- Stratus clouds are low-altitude clouds that form in uniform layers or sheets, covering the sky like a gray or white blanket.
- They often bring overcast conditions and may result in drizzle or light rain.

4. Nimbostratus Clouds (Ns):

- Nimbostratus clouds are thick, dark, and featureless clouds that stretch across the sky.
- They bring continuous, steady rain or snow and can lead to prolonged periods of wet weather.

5. Cumulonimbus Clouds (Cb):

- Cumulonimbus clouds are large, towering clouds with a distinct anvil shape at the top.
- They are associated with severe weather, including thunderstorms, heavy rain, hail, and sometimes tornadoes.
- Lightning and thunder often occur within cumulonimbus clouds.

6. Altostratus Clouds (As):

- Altostratus clouds are mid-level clouds that form between 6,500 and 20,000 feet (2,000 to 6,000 meters).
- They appear as gray or blue-gray sheets and can partially obscure the Sun or Moon.
- Altostratus clouds may precede precipitation.

7. Altocumulus Clouds (Ac):

- Altocumulus clouds are mid-level clouds that appear as white or gray puffy patches or rows.

- They are typically seen in fair weather conditions but can indicate approaching weather changes.

8. Stratocumulus Clouds (Sc):

- Stratocumulus clouds are low to mid-level clouds that form in layers or patches.
- They appear as small, rounded, or elongated masses and are often associated with stable weather.

9. Cirrostratus Clouds (Cs):

- Cirrostratus clouds are high-altitude clouds that form above 20,000 feet.
- They are thin and often create a veil-like covering of the sky.
- Cirrostratus clouds may signal the approach of a warm front and precipitation.

10. Cirrocumulus Clouds (Cc): - Cirrocumulus clouds are high-altitude clouds composed of small, white, puffy masses. - They appear in a rippled or wavy pattern and are generally associated with fair weather.

11. Lenticular Clouds: - Lenticular clouds are distinctive lens-shaped clouds that form near mountains or hilly terrain. They are often stationary and can resemble flying saucers. - They indicate the presence of strong wind patterns and atmospheric instability.

Classification based on the altitude of Clouds formation

Classification of clouds	Types of clouds
High clouds	<ul style="list-style-type: none"> • Cirrus • Cirrostratus • Cirrocumulus
Middle clouds	<ul style="list-style-type: none"> • Altostratus • Altocumulus
Low clouds	<ul style="list-style-type: none"> • Stratocumulus • Nimbostratus
Clouds with extensive vertical development	<ul style="list-style-type: none"> • Cumulus • Cumulonimbus