

This article helps one to lucidly understand the thunderstorms, how it is formed due to updrafts and downdrafts. It also briefly shares the 3 different stages of thunderstorms namely the cumulus stage, mature stage and the dissipating stage.

What are Thunderstorms?

1. A lightning or electrical storm is known as a thunderstorm. It is characterized by lightning and thunder.
2. Thunderstorms produce strong winds, heavy rainfalls, and even produce snowfall and hail. Some of the thunderstorms don't produce any precipitation and in some cases thunderstorms produce very little precipitation.

How Thunderstorms are Formed?

1. Cumulonimbus Clouds produce Thunderstorms and it forms when there is rapid rise or movement of warm and moist air.
2. Cumulonimbus clouds sometimes form at even heights of over 20 kilometres and it is formed when there is upward movement of warm, moist air. This warm air and moist air cools and condenses when it moves upwards resulting in the formation of cumulonimbus clouds.
3. Condensation of Water vapor into water droplets or ice happens, when the rising air reaches its dew point temperature.
4. This results in reduction of pressure locally within the thunderstorm cell.
5. Any precipitation falls a long distance through the clouds on the way to the surface of the Earth. Larger droplets are formed when the smaller droplets that are falling down collide with other droplets.
6. Downdraft is created by the falling droplets as it pulls cold air with it, and this cold air spreads out at the surface of the Earth. This results in strong winds that are commonly produced during thunderstorms.

Are Thunderstorms Dangerous?

1. Thunderstorms, and the phenomena that occur along with them, can pose a lot of dangers to people and the environment. Flash floods, large hailstones are usually the result of thunderstorms.
2. Flash floods, kills more people each year than hurricanes, tornadoes or lightning.
3. Tornadoes and waterspouts are produced by thunderstorm cells that are stronger.
4. Lightning is responsible for many fires around the world each year, and causes fatalities.
5. Hails up to the size of softballs can cause lots of damage to vehicles and even kill livestock when it is not under any shelter.
6. Trees, power lines and lots of public properties get damaged by Strong winds associated with thunderstorms.

7. Tornadoes having speeds around 300 mph can destroy everything sparing just the best-built man-made structures.

Where do Thunderstorms Occur?

1. Thunderstorms can form and develop in any geographic location but
2. Usually it forms within the mid-latitude, since there is more possibility of warm moist air found in Tropical Latitudes colliding with cooler air coming from polar latitudes.

What are the 3 Stages of Thunderstorms?

Most Thunderstorms have three stages:

1. Cumulus stage
2. Mature stage
3. Dissipating stage.

Cumulus Stage

1. During day time the Earth's surface gets heated up by the Sun.
2. This results in Updraft, a phenomenon where warm air rises upwards. This happens due to the surface of the Earth getting heated up due to the Sun and the warm air is lighter than cool air, which results in its upwards movement.
3. The warm air condenses into a cumulus cloud in the presence of moist air.
4. As long as warm air below the clouds continues to rise, it will help in continuous growth of clouds.

Mature Stage

1. The water in Cumulus Clouds becomes large and heavy as the cumulus cloud grows in size.
2. Raindrops start to fall through the cloud when the rising air can no longer hold them up.
3. Cool dry air starts to enter the cloud as the raindrops start falling through the clouds.
4. Phenomenon of downdraft takes place. It is a phenomenon that happens when warm air is lighter than the cool air, which makes the cool air to descend in the cloud.
5. Heavy water is pulled downward by the downdraft resulting in rains.
6. Due to updraft, downdraft, and rain; this cloud has become a cumulonimbus cloud.
7. The cumulonimbus is now a thunderstorm cell.

Dissipating Stage

1. Dissipation of thunderstorms happens after a time duration of 30 minutes.
2. This dissipation occurs when the updraft gets dominated by downdrafts in the cloud. Due to this domination of downdraft cloud droplets will cease to form since the warm moist air can no longer rise. As the cloud disappears from top to bottom, the storm will dissipate.
3. For ordinary thunderstorms, the above-mentioned complete process will take approximately 1 hour, whereas for much larger and powerful Supercell thunderstorms the above mentioned dissipation process may take several hours.

How Many Thunderstorms are there?

1. Worldwide, there are an estimated 16 million thunderstorms each year, and at any given moment, there are roughly 2,000 thunderstorms in progress.

Consider the following statements:

- 1) Thunderstorms are also called convective storms.
- 2) Thunderstorms are caused due to excessive heat.

Which of the following statements are correct:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) None of the above

Answer: C