

Why Does Heat Lightning Happen? - Find Out

Now

A common question people asked on online fora is **why does heat lightning happen?** You might be wondering why it happens out of curiosity or even for academic purposes. Unlike other well-known types of lightning with generally understood mechanisms, many myths surround heat lightning.

Heat lightning happens because the thunder that is supposed to accompany some cloud-to-ground or cloud-to-cloud lightning from a far distance dies before reaching you. Cloud-to-ground lightning is lightning that discharges between the ground and the thundercloud.

This article will explain what heat lightning is, why it happens and other types of lightning a learned person should know.

How Does Heat Lightning Work?

A common observation is that thunderclaps follow lightning because light waves travel faster than sound waves.

However, you might have noticed some clouds on the horizon, where the cloud appears to meet the ground. Or you might have noticed lightning from thunderstorms that are not followed by actual sounds of thunder.

Basically, it is lightning that is neither accompanied by thunder nor rain mostly occurring on warm and muggy nights in the summer. It is called heat lightning because some people think the heat creates lightning, but there is no such thing.

It's just lightning that originates from a thunderstorm that is so far away that you can't hear the thunderclaps. The name is a misnomer and does not reflect what actually happens during heat lightning.

You get to hear a clap of thunder when the storm is about 7 miles away from where you are. Anything beyond this and you can only see the flashing but won't hear the bang.

Note: once the thunderstorms that cause heat lightning get going they can be as tall as up to 15,000 feet(about 2 miles) in the atmosphere.

In What Period Does Heat Lightning Happen?

Heat lightning tends to be seen during the summer and spring months. It mostly occurs in the evenings, or probably by night hours when it is warm.

Even though it can be seen all through the year, it is more common in summer when you see a flash of distant lightning but hear no thunder.

Note: The term 'heat lightning' came to be because most of them occur on a hot humid sticky day.

Why Does Heat Lightning Have No Thunder?

This can be easily explained by the basic Physics of how sound waves are propagated through the atmosphere and the intensity wanes and eventually fades with distance.

Several things can happen to sound waves as they meet obstacles on their path. Some will be turned back and some will change direction. Some might even be absorbed by these media and a fraction of it will continue on the same path.

If enough of these waves are derailed or absorbed, the entire sound eventually dies off. This is why you don't hear thunderclaps during heat lightning.

In case you're asking the question '**does heat lightning have thunder?**', the answer is no because you can hear no sound at your location. However, thunder is technically generated at the origin of the storm, but you are too far away to hear it.

Note: Heat lightning is also known as summer lightning, silent lightning, or dry lightning.

Is Heat Lightning Dangerous?

Heat lightning is not dangerous. The fact that you could see the flashes of lightning but cannot hear the thunderclaps shows that it is at least ten miles away. This does not mean that you should not take shelter when you see one, it might precede other types of dangerous lightning.

It is a tip-off that the atmosphere is ripe for storms. It's a warning that alerts you to prepare for an impending storm in a few hours.

While the [National Weather Service](#) estimated that lightning injures people and causes deaths, none of it is due to heat lightning. As we already explained, the strikes are too far away to kill or injure someone.

Other Types Of Lightning You Should Know About

- Cloud to Ground Lightning- Negative Charge
- Cloud to Ground Lightning- Positive Charge
- Cloud to Cloud Lightning
- Cloud to Air Lightning

Myths About Heat Lightning

There are several myths people have made up about heat lightning, including the belief that it is a distinct type of lightning, different from ordinary lightning. We have outlined below other ones you should not believe.

Myth #1: Extreme Temperatures Are Responsible For Heat Lightning

It is a common myth that it is caused by very high temperatures in the atmosphere because of the “heat” in its name. This is false, as the name “heat lightning” only alludes to the fact that this type of lightning is often found on hot and humid summer nights.

Just like other types of lightning, heat lightning is also formed from the accumulation of both negative and positive electric charges. These charges are formed within and outside a cloud or thunderstorm.

The only difference is that in heat lightning, no thunder is heard.

Myth #2: Summer Is The Only Season When Heat Lightning Occurs

Granted that heat lightning frequently occurs in summer, it is only because that is the season when the formation of thunderstorms generally peaks. And it is not only specific to heat lightning.

Summer has warm air temperatures and longer days (with shorter nights). This allows a larger fraction of the heat energy released from the sun to trigger adverse weather.

Just like thunderstorms, heat lightning can occur in any season of the year, as long as the conditions required for its formation are met.

Myth #3: Dry Thunderstorms And Heat Lightning Are The Same

That heat lightning is also referred to as dry lightning should not make one mistake it for dry thunderstorms. They are two different phenomena with different mechanisms.

Dry lightning is actually associated with rainstorms, they are just so far away that you cannot see them. The 'dry' in dry lightning is only because it seems to occur *sans* thunderstorms or *sans* rainstorms.

In contrast to its name, dry lightning produces precipitation, lightning, and thunder. They are only called "dry" because the associated rainfall evaporates before even reaching the ground.

How To Stay Safe During Heat Lightning

- Avoid water because electric charges from lightning can travel through the plumbing system.
- Do not touch or use electronics like laptops, dryers, or stoves.
- Stay off doors, windows, or concrete
- Go indoors, if you are outside.
- Seek shelter immediately, even if you were outdoors when it started.
- Get out of any water body immediately.
- Separate from others, if you were in a group.
- Do not stay in open vehicles.

Why Does Heat Lightning Happen?

There are some facts we need to keep in mind before we can understand the **cause of heat lightning**. One of them is that thunder sounds do not travel for up to 10 miles before dissipating, so if you are that far away from the site of the thunderstorm, you will not hear it.

This is unlike lightning which you can see from up to a hundred miles away when it is reflected by the summer haze.

Step #1: Formation Of A Thunderstorm

A thunderstorm is first formed when moist, warm air ascends into a layer of cold air. The warm air loses its heat to the cold air and becomes cooler. This makes moisture or water vapor undergo condensation to form small water droplets.

The cooled air falls into lower layers of the atmosphere, becomes warm (gains kinetic energy), and ascends again. The cycle continues and is referred to as a convection cell.

If this process occurs on a small scale, a cloud is formed. If this involves a huge amount of moisture and air, a thunderstorm can be formed.

Step #2: Propagation And Fizzling Of Sound Waves

A major feature of heat lightning is that there is no audible thunderclap emitted. Thunder can only be heard if the observer is within 10 miles of the origin of the storm.

If the distance increases further, the distinctive sound of thunderclaps is reduced to a barely audible rumbling sound.

If the distance gets farther, the thunder becomes completely inaudible.

Thunder sounds, just like other sound waves can either be reflected, refracted, or become absorbed by the medium it travels in. These are the phenomena that can muffle up any sound generated by a thunderstorm before it can reach you.

Step #3: Travelling Of Lightning Flashes

Even though heat lightning is not different from other types of lightning, its lightning bolt is obscured by different media between it and the observer. An average light-to-ground lightning strike can be seen from as far as 100 miles away.

The problem with this is that at such a distance, tall buildings, the curvature of the surface of the earth, mountains,, and even trees. Due to this, you can only see a fraction of the light from the flash that is reflected you from storms in nearby clouds and not the full lightning strike.

Conclusion

This article titled "**why does heat lightning happen?**" has explored the subject extensively. It has explained in simple terms what heat lightning is, the process of its formation and why thunderclaps are not heard.

Heat lightning is not a special category of lightning; It is merely a flash of ordinary lightning without accompanying thunder or rainfall and majorly occurs in the warm, humid winter months.

We now know that the **heat lightning cause** is because the thunder sound emitted at the source of the thunderstorm is muzzled and dies off due to reflection. Other factors are the refraction, and absorption from obstacles between it and the observer. Thus the observer only sees a flash of lightning but hears nothing.