



Thundersnow

Thundersnow is a very special kind of thunderstorm we get in the winter- but why do we get thunderstorms in the first place?

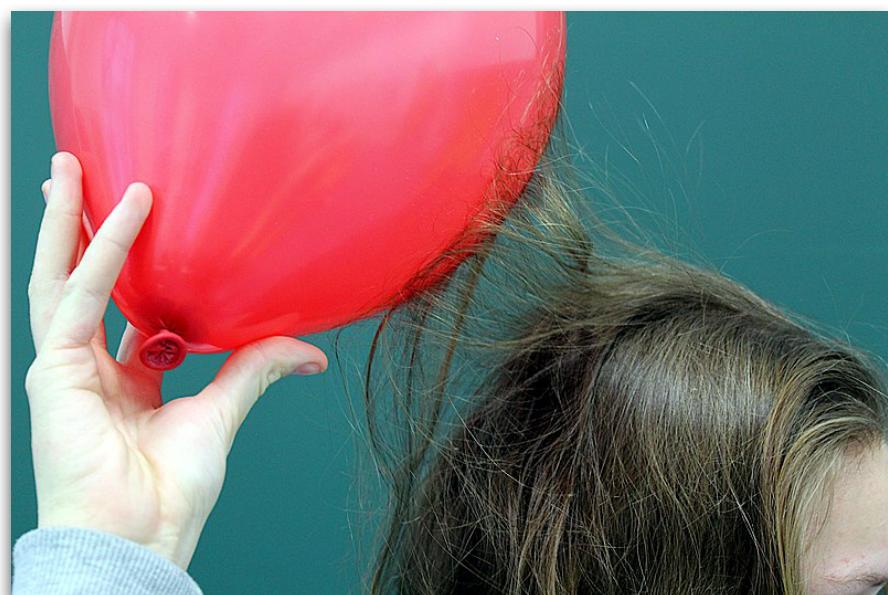


How to make a thunder and lightning

Thunder and lightning is made inside big storm clouds called cumulonimbus clouds.

Clouds are made of tiny drops of water and as these large storm clouds build up, their tops ends get higher and colder until they start to freeze. This means that the cloud is full of ice crystals, hailstones and supercooled water which are all moving around and bumping into each other. As they bump into each other they build up static electricity.

Static electricity is the build-up of an electric charge on something. You can make static electricity yourself, the easiest way is to rub your hair with a balloon. As you rub your head, a negative charge builds up on the balloon and a positive one on your hair. These positive and negative charges are attracted to each other and that's why your hair sticks up.



*Static electricity from a balloon holding up a person's hair.
Photo by MikeRun via Wikimedia Commons*



This is what is happening inside the cumulonimbus clouds except between ice crystals. The bigger crystals get negative charges and the smaller ones get positive charges. As the crystals move around, the lighter, smaller ones rise to the top of the cloud while the bigger, heavier ones sink to the bottom. This means that a storm cloud has a positively charged top and a negatively charged bottom.

This is important because the ground is also positively charged. So like with the balloon and your hair, the positive and negative charges are attracted to each other. However, unlike your hair the ground can't move towards the cloud so instead the electricity jumps from the cloud to the ground.



Lightning flashes hitting the ground from a charged cloud
Photo by Brandon Morgan via Unsplash

The electricity jumping from the cloud to the ground is what makes the flash of lightning. Lightning moves so quickly through the air that it heats it up, and when you heat things up they expand (get bigger). This quick and sudden expansion makes a shock wave in the air and this shockwave is the sound of thunder.



What's different in Thundersnow?

The big difference between thundersnow and normal thunderstorms is that instead of rain we get snow falling. This happens because the air temperature is so cold all the water in the cloud is frozen and forms ice crystals. See our post on snow to learn more about how snow is formed. <https://www.flipsnack.com/dynamicearth/snowflakes/full-view.html> This is very rare because thunder storms are much more common in hot summer months than in the winter so it is unusual for the air to be cold enough for snow.

The snow has two strange effects on thunder and lighting. Firstly, it makes the lighting flash much brighter. This is because all the white snow reflects the flash from the lightning making it super bright. Secondly, it makes the thunder quieter. This might seem strange because anyone who has been lucky enough to experience a thundersnow storm will have found it very loud. The reason for that is that you only hear the thunder if you are very close to it- the snow absorbs the sound so it can't travel very far. This means that you never hear thundersnow in the distance but only when it's almost on top of you, but your friends who live only a few miles away might not hear it at all. This makes thundersnow even more exciting because you can't hear them coming.



Arthur's Seat and Salisbury Crags in Edinburgh in the Snow.
Photo by PURE · VIRTUAL on Unsplash

Check the Met Office page on thundersnow storms to see [a video](#) of a storm in action!

