

WHEN WEATHER GETS WILD!

You've probably seen news stories about huge hurricanes, whirling tornadoes, floods and other extreme weather. But what causes them?

Usually, the answer is extra heat – from the Sun!

When there's a lot of sunshine or hot weather, there's more heat energy. This means the air moves more and contains more water, leading to powerful storms.

Thunderstorms

Have you ever wondered why thunderstorms happen more in summer? Hot sunny weather makes lots of water evaporate quickly. It piles up into a tall, towering cumulonimbus (say kyoo-myoo-low-nim-bus) cloud, with warm and cold air swirling around inside it.

1. The top of the cloud is so high that it's very cold and ice crystals form

2. As ice crystals rub together, a static electric charge builds up

3. The static charge is attracted to the opposite charge on the ground, creating a giant spark – lightning!

4. The lightning heats up the air suddenly, making the booming sound of thunder

5. The water and ice in the cloud fall as heavy rain and hail



Make lightning!

This homemade lightning works just like the real thing.

You will need:

- A balloon
- A woollen jumper or blanket
- A dark room with a metal fitting, such as a tap or door handle

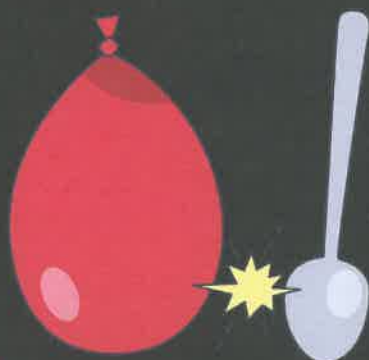
What you do:

1. Blow up the balloon and tie it.
2. Go into the dark room (be careful not to trip!) and rub the balloon on the jumper or blanket for about 30 seconds.
3. Hold the balloon near the metal object and move it slowly closer.

You should find:

A little spark should jump between the balloon and the metal, just like tiny lightning! Rubbing the balloon builds up a static electric charge. The electrons are attracted to the metal and jump across to it.

Don't worry, it's harmless!



Where's the thunderstorm?

When you see lightning, you often hear thunder slightly later. That's because light travels much faster than sound. The light from the lightning reaches your eyes almost straight away, but the sound takes longer to reach you. Next time there's a thunderstorm outside, try this:

- After a lightning flash, measure how many seconds go by until you hear the thunder.
- Divide the number by 3 (sound travels 1 km in about 3 seconds).
- The answer will tell you how far away (in kilometres) the storm is. (To work out the distance in miles, divide by 5 instead of 3.)

Flash... 1... 2... 3... 4... 5... 6... **BOOM!**

6 divided by 3 is 2.

The storm is 2 km away!



How far away are these thunderstorms?

Flash... 9 seconds... **BOOM!** km

Flash... 3 seconds... **BOOM!** km

Flash... 15 seconds... **BOOM!** km

Check your answers on page 34.

If thunder roars, go indoors!

Then you'll avoid getting soaked or hit by hail – or lightning!



Twisty tornadoes

A tornado is a powerful, whirling funnel of wind. It can form below a big thunderstorm or storm cloud when hot and cold air spiral around each other. Tornado winds are so strong, they can sometimes blow away houses or lift cars into the air.



Tornado in a bottle

You will need:

- 2 empty clear drinks bottles the same size
- A sports bottle cap that fits the bottles (in open position!)
- Strong, waterproof tape (like duct tape)
- Water (with food colouring in, if you like)

What you do:

1. Stick the open cap upside down in one of the bottles and secure it with tape.
2. Fill the other bottle with the water.
3. Screw the empty bottle onto the full one.
4. Over a sink, turn the bottles upside down and move them in a circle to make the water inside swirl around.

You should find:

A tornado forms in the water! This is a vortex, when gases (like air) or liquids (like water) move in a spiral around a central point. You might have seen a vortex forming in the bath when the plug's pulled out!

