

The scary phenomenon that happens above our heads: THE STORM - WHY? - Cyrielle -1S

We already know that storms can be really dangerous because of the **lightning***, the **heavy rain**, the **gusty winds*** and also the **tornadoes** (although they are a bit more unusual).

Storms are created from a cloud called the **cumulonimbus**. It is easily recognized from its height and particular shape. The cumulonimbus is the biggest cloud: it spreads over **10 000 metres high** and several metres width.

What is there inside a cloud?

First of all, there are all forms of **water**: gaseous, liquid, and solid.

We know that **air contains water in vapour form**. How much?

- It depends on the temperature and the pressure: **the hotter is it, the more it contains**

water vapour (we can also say steam).

When an air mass becomes colder, it may contain much less steam than before, the air is then "**saturated**". The excess steam will condense on tiny dust particles* called a condensation nucleus*. That is how droplets* are formed.

But there are other types of dust: the crystallization nucleus*, which forms ice crystals.



How are storms created?

Heat and moist air are required for the storm formation and air must rise into the atmosphere too:

With altitude, the temperature decreases and vapours are condensing. It forms the cumulus clouds.

Between 0 and -20°C, **droplets** come in contact with **crystals, freeze** and get together to form **ice pellets***.

Gradually, **ice pellets volume increases** and, as they get too heavy, **they fall down**.

In their fall, they hit other **ice pellets** or **single crystals**. Ice pellets snatch negative charges of crystals electrons.

This results finally in **ice pellets having negative charge** and **crystals becoming positive**.

As the ice pellets fall and crystals are driven upwards by current, **the base of the cumulonimbus will be negatively charged** and the **top will be positively charged**.

But...with an excess of negative charges and a deficit of positive charges on the other hand, when the potential difference becomes too important, **the electric current makes its way**: it creates **sparks***.

When two different sparks meet each other, the current then passes abruptly between the two bounds of the cloud:

This is how a **flash of lightning** is formed.

The same phenomenon occurs for a **flash of lightning between the earth and the cloud**. The negative charges of the cloud attract the positive charges of the earth.

Most of the time, the lightning is crashing down on **the bell tower of a church** or on **a tree** because it is the shortest way for the meeting.

Glossary:

The lightning = la foudre;

Gusty winds=rafales de vent ;

Dust = poussière;

Condensation nucleus = noyau de condensation ;

Droplets = gouttelettes ;

Crystallization nucleus = noyau de cristallisation ;

Ice pellets: grains de grésil

Sparks = étincelles

