

Clouds

Week 2 Day 2

Read the met office information on 'What are clouds and how do they form?'

You can also find this online at <https://www.metoffice.gov.uk/weather/learn-about/weather/types-of-weather/clouds/what-are-clouds-and-how-do-they-form> or by typing met office clouds into google and clicking on What are clouds and how they ...

Answer these questions in your books.

1. Find two synonyms in the first paragraph.
2. Look at the section 'What is a cloud?' How does the author explain to the reader what water vapour is?
3. Which of these words are synonyms of 'visible'?

clear

variable

noticeable

unseen

4. True or false?

	True	False
It feels fresh when there is lots of water vapour in the air.		
Water vapour cannot be seen.		
Clouds are formed from liquid.		
Low clouds contain ice crystals.		

5. Summarise the first paragraph of 'How do clouds form?' Use no more than 2-3 sentences.
6. Why do you think the author mentions that the water droplets are 'about a hundredth of a millimetre in diameter'?
7. Explain two ways in which cumulus clouds could form.



What are clouds and how do they form?

The range of ways in which clouds can be formed and the variable nature of the atmosphere results in an enormous variety of shapes, sizes and textures of clouds.

What is a cloud?

Many people believe that clouds are just made of water vapour (a gas). However, this is not strictly true. Water vapour is invisible, and it is around us all the time in the air. Sometimes there is more water vapour in the air and it feels humid or muggy. Other times, the air has less water vapour and it feels drier and fresher.

Clouds appear when there is too much water vapour for the air to hold. The water vapour (gas) then condenses to form tiny water droplets (liquid), and it is the water that makes the cloud visible. These droplets are so small that they stay suspended in the air.

How do clouds form?

As a simple explanation, when air rises, it cools, much like when you are going up a mountain and the air tends to get colder. Cold air can't hold as much water vapour than warm air can, so as the air cools, it becomes saturated and the water vapour in it condenses. This means it turns from a gas to a liquid, much like when you get condensation on a cold window. When the water vapour turns to a liquid in the sky, it forms lots of tiny little water droplets which cling to little bits of dust; it is this group of little water droplets suspended in the air that becomes visible as the cloud we see.

These droplets of water are only about a hundredth of a millimetre in diameter, but the cloud is made up of a large collection of these. If the cloud is high up enough in the sky and the air is cold enough, the cloud is made of lots of tiny ice crystals instead and gives a thin, wispy appearance.

There is also the fact that a cloud can form when more water vapour has been added to the air, for example if it has passed over a lake, it can pick up moisture. There is then more water vapour in that air and it condenses to form the cloud.

What causes the air to rise?

1. **The sun** – The sun heats the ground, which then heats the air just above it, causing it to rise upwards in the sky (warm air rises). This tends to produce cumulus clouds.
2. **Hills and mountains** - When air is travelling towards a mountain or hill, it cannot go into the hill and so it rises upwards along the terrain. Stratus clouds are often produced this way.
3. **Weather fronts** - A weather 'front' is where warm air meets cold air. The warm air rises up and over the cold air (warm air rises). This produces nimbostratus clouds, amongst others.
4. **Convergence** - Streams of air flowing towards each other from different directions are forced to rise when they meet, or converge. This can cause cumulus cloud and showery conditions.
5. **Turbulence** - A sudden change in wind speed high up can create circulations in the air which can bring the air at the surface high up into the sky.