THE WATER CYCLE · PART 3 OF 8 · AGES 11–16

How Clouds Form

Six steps that turn invisible water vapour into a cloud you can see, and then into rain or snow.

1

Warm, moist air rises

Air near the surface carries water vapour, an invisible gas. When something lifts this air, such as the Sun heating the ground or wind meeting a mountain, it starts to rise.

2

It expands and cools

Air pressure is lower higher up, so the rising air spreads out. Expanding air cools, by about 9.8 °C for every kilometre it climbs.

3

It reaches the dew point

The dew point is the temperature at which air becomes saturated: it holds all the water vapour it can. If the air cools any further, some vapour has to condense.

4

Vapour condenses on tiny specks

Vapour needs a surface to condense on. Microscopic specks of dust, sea salt and smoke, called condensation nuclei, give it one. Each speck becomes the core of a droplet.

5

Countless droplets make a cloud

Each droplet is only about a hundredth of a millimetre across, so light that it stays up. Together they make a visible cloud. In very cold air, clouds are made of ice crystals.

6

Droplets grow until they fall

Droplets collide and merge, or ice crystals grow by taking vapour from droplets. When they are too heavy for the rising air to hold up, they fall as rain or snow.

What makes air rise?

The Sun heats the ground and warm air rises (convection). Wind blowing into hills or mountains is forced up (relief). At weather fronts, warm air slides up over cold air. Where winds from different directions meet, air is pushed upwards.

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4. Types of Precipitation

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