

## Questions in science

*Why does it snow in winter?*

### **Narrator:**

In some parts of the world, the presence of snow is a constant. In others, it is a welcome or unwelcome seasonal occurrence; but why does it snow in Winter?

When you look up at the sky, particularly if you live at mid-latitudes, it's unusual not to spot clouds. What we see as white or grey fluffy cloud, is in fact a collection of tiny water droplets, or at very high altitude, ice crystals suspended in the air.

Water vapour in the atmosphere can become supercooled – reaching temperatures well below 0 degrees Celsius ... but it may not turn to ice. To begin to form ice crystals, this water vapour needs solid particles to attach -or nucleate - to. Once attached to these particles, the water will freeze and begin to form the stunningly symmetrical ice crystals that we are familiar with. Once the crystals are large enough, they will start to fall and as they fall they may collide with and stick to one another to form snowflakes.

Snowfall happens in winter due to colder temperatures, because in summer, the temperatures are typically too warm for widespread snow formation. If the snowflakes melt in the lower, warmer parts of the cloud they will instead emerge from the cloud as rain.

If the ice crystals move around the cloud, melting and refreezing, they can become harder pellets of ice, known as hail. At slightly higher temperatures, a mixture of rain and melting snow may fall. This is what we call sleet.

So, rain, snow, sleet and hail all form by the same overall process of water vapour building up in clouds and it only snows when a specific set of circumstances are met and it is significantly more likely for these to occur in Winter over the other seasons.

To discover more about what drives our weather, explore our introductory science module Questions in Science.

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