What is the solar wind?

KS2 KS3 Ages 7-14 ⏰ 2 min read

The Sun isn't just sitting there quietly shining—it's actually blowing an invisible wind made of tiny particles called the **solar wind**. This cosmic breeze streams out from the Sun in all directions at incredible speeds, reaching about a million miles per hour. That's fast enough to circle the Earth in about 90 seconds!

What Makes This Space Wind?

The solar wind is made up of electrically charged particles, mostly protons and electrons, that escape from the Sun's scorching hot outer atmosphere. The Sun's surface temperature is already a toasty 5,500°C, but its outer atmosphere, called the corona, gets even hotter—reaching over a million degrees Celsius. At these extreme temperatures, particles move so fast they can break free from the Sun's gravity and zoom off into space.

Think of the solar wind like steam escaping from a boiling kettle. Just as hot water creates steam that rises and spreads out, the Sun's incredible heat creates charged particles that stream outward in all directions.

Racing Through the Solar System

This solar wind doesn't just disappear after leaving the Sun—it travels right through our solar system and beyond. It takes about four days for solar wind particles to reach Earth, travelling the 93 million miles between us and our star. The wind is so thin that if you could somehow stand in space, you wouldn't feel it at all. In fact, in every cubic centimetre of space near Earth, there are only about five solar wind particles—that's incredibly sparse compared to our thick atmosphere.

Earth's Invisible Shield

Fortunately, Earth has a protective magnetic field called the **magnetosphere** that deflects most of the solar wind around our planet. However, some particles do sneak through, especially near the poles. When these charged particles collide with gases in our upper atmosphere, they create the beautiful dancing lights we call the aurora—the Northern and Southern Lights. Without our magnetic shield, the solar wind would

gradually strip away our atmosphere, making Earth much less hospitable for life. The solar wind continues its journey far beyond our planet, eventually reaching the edge of the solar system where it finally meets the space between stars.