

Our Sun and its cycle of change

The Sun has an 11-year cycle of activity. When it's very active, cooler areas on its surface, known as 'sunspots', are seen. Particles emitted into space, with tremendous energy, are known as 'coronal mass ejections'. These can strike Earth and cause problems with radio communications. The particles also interact with the atmosphere producing the colours of the auroras.



Watch out:

You should never, ever - under any circumstances - look directly at the Sun, as this can cause permanent damage to your eyes.



Time:
10 minutes

observing. One hour of research.



Kit List:
Access to a

solar telescope. Tealight. Salt.



Instructions:

1. A special solar telescope is used to see the changing face of the Sun as it rotates and is quite safe to use to observe the Sun.

Sketch the surface of the Sun and location of sunspots. If you observe it again a few days later, you will see that they have moved as the Sun spins. You might see prominences which are like flames, where hot gases swirl out from the Sun's surface.

2. To understand why we get the colours of the aurora, we can show that each element of the Periodic Table has a characteristic colour when the atoms get so much energy that they give out light. Set up a tealight. Sprinkle some table salt on the flame, taking care not to get too close to the flame. You should see a yellow colour, which is coming from the excited sodium atoms in the salt.



Think and talk about

Auroras are caused by the excited atoms of oxygen and nitrogen as the particles from the Sun collide with them. Research which element gives pink light, and which gives green.

Is there a theory for the 11-year cycle of the Sun? See what you can find out.



At home

The aurora is a radio mirror for amateur radio communications. Radio operators use the aurora to reflect radio waves. Find out about auroral propagation by contacting your local amateur radio club.



Next steps:

Want to become a licensed radio amateur? This web page tells you how you can gain your Foundation licence and get your own amateur radio call sign:

rsgb.org/foundation

