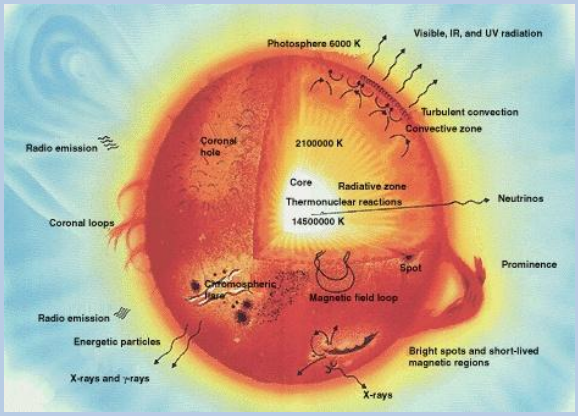
The Sun Factsheet

Inside our star



The Sun (Image Credit: NASA)

The Sun has a diameter of around 1.4 million kilometres – around 110 times that of the Earth and makes up more than 99% of the mass of the solar system. It has 3 main layers: the core, where nuclear fusion takes place; the radiative zone, where energy is transferred only through radiation; and the convective zone, where energy is transferred mainly through convection currents. At the outer edge of the convective zone is the photosphere, and this is what we can observe with our eyes. There is a region outside the photosphere, called the corona, which is gas heated to very high temperatures by the intense and chaotic magnetic field of the Sun.

Sun spots and the solar cycle

The surface of the Sun is ever changing. We see darks spots on the Sun, called sunspots, which are areas of intense magnetic activity. The number of sunspots is not constant and tends to vary from solar maximum to minimum over an 11 year cycle. The sunspots will move across the face of the Sun as it rotates. It takes about 25 days for the Sun to rotate at the Sun's equator but 36 days at the poles – this is possible because the Sun is not solid like a planet. During a solar maximum, we also observe more solar flares and coronal mass ejections – huge plumes of material leaving the surface of the Sun, and travelling out into space.

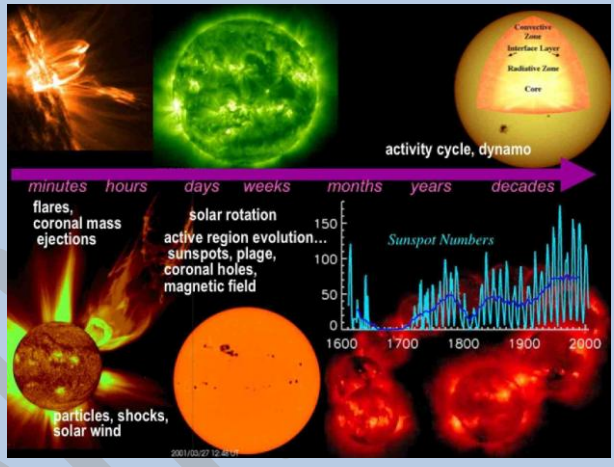


Image Credit: NASA ISAS earthzine.org

ACTIVITY – Observing sunspots

SAFETY: Never observe the Sun with the naked eye.

We can observe the number of sunspots by projecting an image of the Sun on to paper or card. This can either be done using a cheap telescope, or even more simply with a pinhole camera.

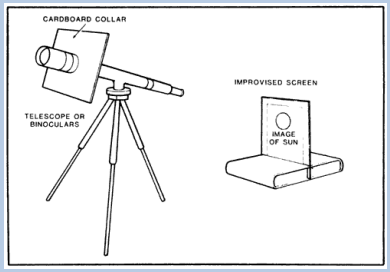
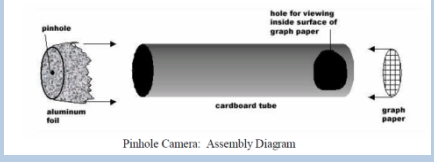


Image Credit: astrosociety.org



Pinhole Camera: Assembly Diagram