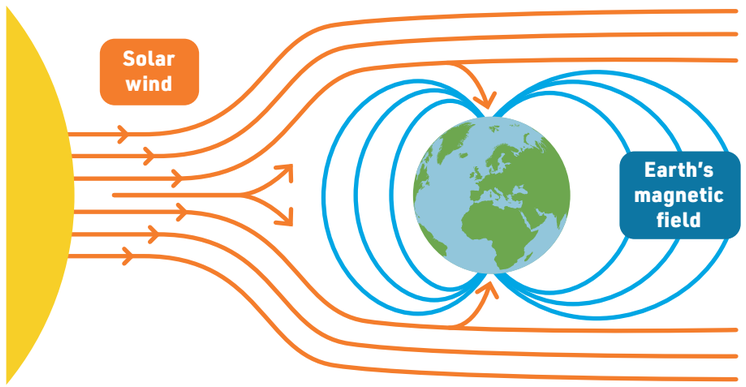
What causes the colours of the aurora?

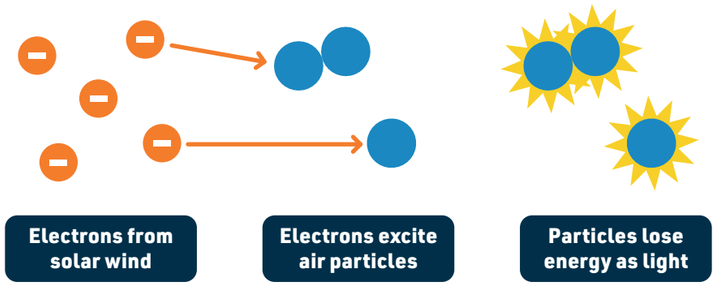
COMPOUND INTEREST

What causes the aurora?

Auroras result from charged particles from the sun hitting the Earth's magnetic field. The particles follow Earth's magnetic field lines. At the poles, where the magnetic field lines intersect Earth's atmosphere, they cause auroras.



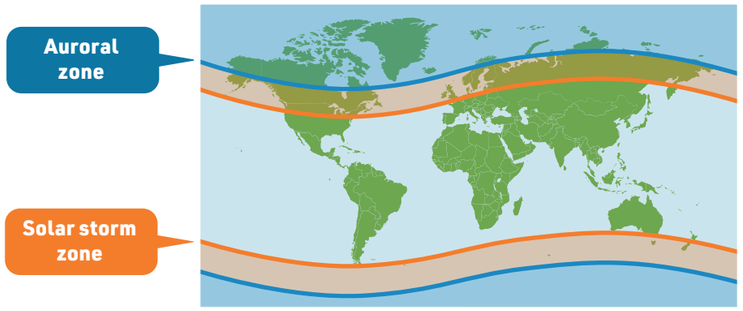
When they enter the atmosphere, the charged particles collide with atoms and molecules in the air. The collision results in the excitation of atoms and molecules, which give off varying colours of light as they lose the additional energy.



In the Northern Hemisphere the effect is known as the northern lights or aurora borealis. In the Southern Hemisphere, it is the southern lights or aurora australis.

Where can you see the aurora?

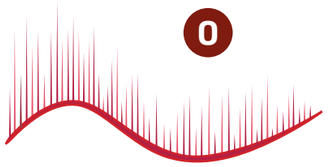
Usually, the aurora are only visible at high northern or southern latitudes. However, during periods of high solar activity they can be viewed outside of the usual auroral zone.



What causes the different colours?

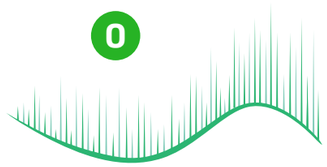
The different colours of the aurora are caused by the collision of charged particles, usually electrons, with different gases at varying altitudes in the atmosphere.

>150 miles — Red



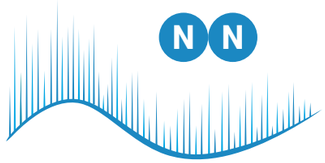
Caused by the excitation of oxygen atoms at high altitudes. Rare and only seen during intense solar activity.

60-150 miles — Green



Caused by excitation of oxygen atoms at lower altitudes where their concentration is higher and more energy is lost to collisions.

<60 miles — Blue and purple



Caused by the excitation of nitrogen molecules. Like red, usually only seen during intense solar activity.

You might see shades of yellow and pink in the aurora as the other colours of the aurora combine, usually during higher periods of solar activity. Oxygen and nitrogen in the atmosphere can also emit ultraviolet light which is not visible to our eyes.