

Sunsets

Sunsets and sunrises can be spectacular but have you ever thought about why they happen and what is causing all those amazing colours?

The sky goes red and orange because of our planet's atmosphere and the angle of the sun.

To understand what is happening we have to know a little more about both our atmosphere and how light travels.

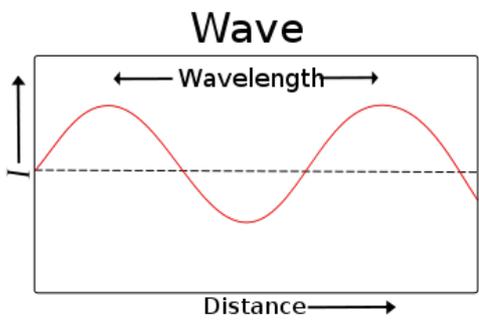


The atmosphere

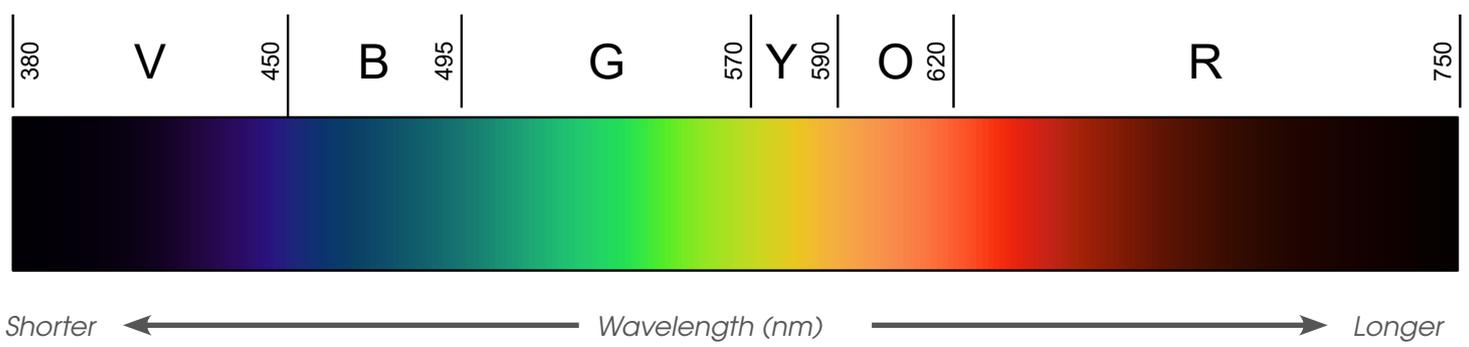
The atmosphere is the bubble of air around our planet and is made up of lots of different gasses, mostly nitrogen and oxygen. These gasses are made up of tiny particles called molecules.

Light

Light travels in a wave and different colours of light are caused by light having different wavelengths. The wavelength is how far the wave has to travel to make one full wave from one height to the same place again as you can see in the picture to the left.

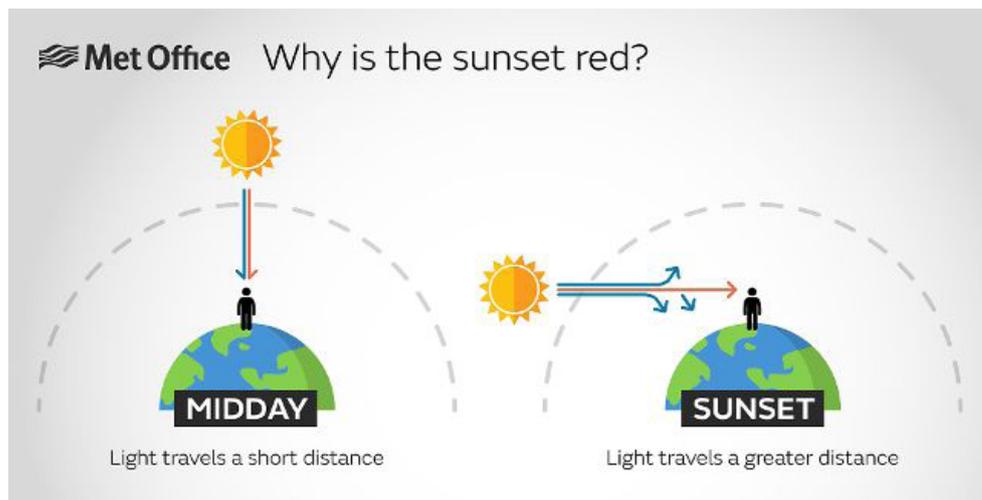


Blue light has the shortest wavelength, getting longer all the way through the rainbow to red light which has the longest wavelength.



What is happening in a sunset?

When light travels through the air it bounces off the particles of gas and gets bounced away and scattered. Short wavelengths scatter more easily than long ones so blue light is scattered and lost more easily than red light.



In the middle of the day when the sun is above our heads you don't really see this effect because the sunlight is only travelling through a small part of the atmosphere. But, as the sun sets the light has to travel through more and more atmosphere to reach our eyes. This means more are more light is scattered and the blue light is scattered more than the red so by the time the light reaches you all you can see is the red light.

Make your own sunset

You can do an experiment at home to see this in action- follow the instructions below to make your very own sunset.

Equipment

- Glass of water
- Milk (non-dairy works too!)
- Torch

Method

1. Fill the glass almost to the top with water
2. Add a splash of milk, depending on what kind of milk you are using and the size of your glass of water, you may need less or more so you will need to experiment but start with a small amount and add more if you need to.
3. Switch off all the lights and close the curtains (this works best in the dark so maybe wait until after sunset)



4. Shine the torch over the top of the glass. The milk and the light will look bright and white
5. Slowly move the torch so the light is now shining towards you through the milk. It should have changed to an orangy-yellow colour
6. Try adding more milk, how does it change the colour?



The milk is acting like the particles in the air and scattering the light so when you look at the torch light through the milk it looks red because the blue light has been scattered just like in a sunset!