Why Is the Sky Blue?

Sunlight looks white but it is really a mixture of every color of the rainbow — red, orange, yellow, green, blue, and violet. Each color travels as a wave, and blue and violet waves are shorter and faster than red or yellow.

When sunlight enters the Earth's atmosphere it hits tiny molecules of nitrogen and oxygen. These molecules scatter short-wavelength light much more strongly than long-wavelength light. This effect is called Rayleigh scattering.

Because blue light is scattered in every direction across the sky, no matter where you look away from the Sun you see scattered blue light. That is why the sky appears blue on a clear day.

Violet light is scattered even more strongly than blue, but your eyes are less sensitive to violet and some of it is absorbed higher in the atmosphere, so the sky looks blue rather than purple.

At sunrise and sunset the Sun's light travels through a much thicker slice of atmosphere. Most of the blue is scattered away before it reaches you, and what remains is the warm red and orange light — which is why sunsets look the way they do.