

# Zain Africa Challenge 2010

## Ask Mwalimu

### Why are tyres black and the sky blue?

Viewers in Uganda, Mmagumba and Okuda, have asked us, "Why are tyres black?" and "Why is the sky blue?"

Let's look at tyres first. In order to make rubber durable enough to do a tyre's work, it must be vulcanised, a process that involves curing or "cooking" the rubber. Because of its high carbon content, the cooked rubber turns black, just as wood turns black when made into charcoal. Carbon tends to absorb light of all colours very well, reflecting little back. So to our eyes, it appears black.

And why is the sky blue? Consider the rainbow of colours in the spectrum of sunlight. Light toward the red end of the spectrum is of longer wavelength than light at the blue end. And it's a property of shorter waves that they are more easily scattered as they "bounce off" the molecules of gas in our atmosphere. All of those blue and violet rays scattered around give the sky its light blue tint.

So, why then is the sky so red at sunset? Well, when you look at a sunset, the light that reaches your eyes has had to travel a much longer distance through our atmosphere than when the Sun was overhead. By the time the light from a sunset reaches you, many of those easily scattered light waves in the blue part of the spectrum are gone, so the sky has a rosy-orange hue.

And if we didn't have an atmosphere, what colour might our skies be then? Black. Black as night, even during the day, just as it is on the moon.

Remember, if you have an idea for a future show you can "Ask Mwalimu" at: [mwalimu@zainafrichallenge.com](mailto:mwalimu@zainafrichallenge.com). or submit your query on our website at [www.ZainAfricaChallenge.com](http://www.ZainAfricaChallenge.com),