

Offered Title: Life in the Red

We are a lucky bunch; our home planet is nestled in just the right place orbiting a friendly yellow dwarf star. OK friendly is an exaggeration, the Sun is a beast, a gigantic continuous fusion explosion controlled only by its own immense gravity. From our vantage point 93 million miles away though, it's just right.

What would it be like to switch places with someone living around a red star? Let's look at the differences.

I mentioned above that our Sun is a yellow dwarf. That's right, it's a little star when compared with all known star sizes. It's classified as a G2V main sequence star: G for its color, 2 for its temperature, V for its luminosity/size. Main sequence means these stars comprise the majority and guess what, they're dwarf stars! While the Sun is called yellow, it's really closer to white.

One thing about stars is you have to be in just the right place, a distance range where life can exist called the habitable zone. Where this zone exists depends on your home star's characteristics. All other things being equal if our Sun were larger or more luminous life on Earth would either be very different or non-existent.

What about moving to a red star? To live comfortably, we have to consider location, location, location. Habitable zone. There are red dwarf stars, big red sub-giants, mammoth red giants, and ginormous red super-giant stars. Each has a habitable zone, with qualifications. Red giant stars tend to be unpredictable and prone to outbursts that would be dangerous to life. Let's check out a red dwarf.

Red dwarf stars are very small, often less than half the mass of our Sun. Their habitable zone then is a lot closer because its energy output is so much less than the Sun's. Well, that's a problem. A planet in the habitable zone of a red dwarf is likely to become tidally locked with its star. Gravitational friction between the star and planet causes the planet's rotation to slow until eventually one side faces the star continually. One side in constant light and the other in dark. That's a prescription for constant extreme, chaotic climate swings. Not good for life. It appears Red dwarf stars are also prone to outbursts of radiation and mass ejections of plasma. Red stars are not good candidates for living.

So, let's make our visit a quick one. The star will still be so bright it looks whitish, but the sky is a warmer hue, and everything will have a warm, orangish glow. Star-sets will be deep red.

Turns out yellow dwarf stars are the most stable (white dwarfs are no longer stars – another topic).

We are a lucky bunch.

What's in the Sky?

February 17; evening; south: A bright Moon is close to M44, the beehive cluster in Cancer

February 18; pre-dawn; Venus and Saturn are close in the southeastern sky