

The Sun

By Patti Hutchison

¹ The sun. We couldn't live without it. All life on earth depends on the energy that comes from the sun. It controls our climate and weather. How much do you know about this giant ball of energy in the sky?

² The sun is really a star. It is the closest one to earth. It is about 93 million miles away. The sun is the center of our solar system. All the planets revolve around it.

³ Although it has a diameter of about 1.3 million kilometers, the sun is only a medium star. It is known as a yellow dwarf. The sun is part of the Milky Way galaxy. Scientists believe it is just a bit older than earth, about 4.6 billion years.

⁴ The Sun is made up of several layers. It has a core. Next is the radiation zone. Above that is the convection zone. The "surface" of the sun is called the photosphere. Above the surface are two layers of gas. They are called the chromosphere and the corona.

⁵ There is no real surface on the sun. It is made of gas, much the same way a cloud is made of water vapor. Although a cloud looks solid against the sky, it really isn't. You can't touch it or rest on it. The sun is much the same way. It only looks solid against the sky as we view it from so far away.

⁶ The core of the sun is about 15 million degrees Celsius. Here, hydrogen is formed into helium by a process known as nuclear fusion. This process creates energy. This energy is radiated into space in the forms of light and heat. The sun also gives off other kinds of waves such as UV rays and X-rays.

⁷ Scientists predict that the sun will keep burning for about 4 billion years. The reactions at the core cause the sun to expand if they happen too fast. Then the reactions slow down, and the sun contracts. Again, the reactions speed up. This cycle keeps the sun at a fairly constant temperature.

⁸ There are some pretty spectacular events that take place on the sun. Have you heard of sunspots? These are regions on the photosphere that are cooler than the surrounding areas. Sunspots are caused by interactions with the sun's magnetic field.

⁹ Sunspots have two parts. The dark region on the inside is called the umbra. The surrounding region that is not as dark is called the penumbra. Some sunspots are very small. Others are over 50 thousand kilometers wide. They can last a few hours to a few months. Sunspots come in cycles. They occur every eleven years.

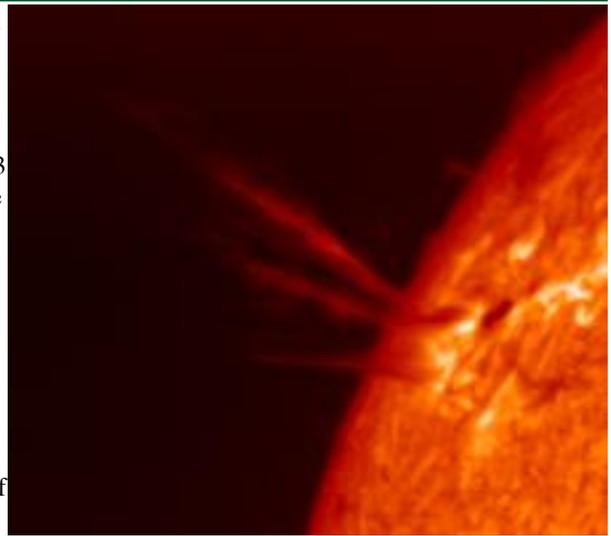
¹⁰ Solar flares take place in the corona. They are enormous discharges of magnetic energy. Huge streams of protons and electrons are sent into space. They can interrupt communications networks on earth.

¹¹ Did you know that there are solar winds? They result from the expansion of gas in the corona. The ions formed by this process are thrown out into space at a speed of about 500 kilometers per second.

¹² The sun makes up almost 99 percent of the mass of our solar system. It is so large; about a million earths would fit inside it. The sun has a mass of almost 333 thousand times the Earth's.

¹³ By observing sunspots, scientists have learned that the sun rotates. Sunspots appear to move across the face of the sun. This is because the sun rotates on its axis. But it rotates faster at its equator than it does at the poles. This is called differential rotation. It rotates once every 27 days at the equator. But it takes about 31 days to rotate at the poles.

¹⁴ We could not live on the sun. But we couldn't live without the sun. It is a giant nuclear furnace that warms our planet. We depend on it to rise every morning and set every night- for four billion more years, at least!



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1. The sun is a: <input type="radio"/> A Galaxy <input type="radio"/> B Planet <input type="radio"/> C Star	2. How old do scientists believe the sun is? <input type="radio"/> A 27 years <input type="radio"/> B 4.6 billion years <input type="radio"/> C 93 million years
3. Name the layers of the sun. _____ _____	4. Nuclear fusion on the sun changes hydrogen into: <input type="radio"/> A Helium <input type="radio"/> B X- rays <input type="radio"/> C Sunspots
5. What are sunspots? _____ _____	6. How do we know the sun rotates? _____ _____

