

JUNE 2011 ASTRONOMY  
*From the Trackman Planetarium at Joliet Junior College*

The Summer Solstice - beginning of summer - is at 12:15 pm on June 21st. At that time, the sun will have reached its highest point above the horizon for the year. It has moved higher in the sky every day since the Winter Solstice and when it crosses the meridian (directly south) on the solstice, it will be 48.5 degrees above the horizon. The higher the sun gets in the sky, the more heat and energy we receive here on Earth, so on June 21st, we receive the maximum amount of the sun's energy. (In December, the sun crosses the meridian at 72 degrees above the horizon.) It is because of this increase in radiation from the sun that we have summer. Our distance from the sun has no bearing on our seasons. We are closest to the sun on January 4th and farthest from the sun in July.

At the Summer Solstice we have the longest days in the year, with slightly over 15 hours of sunlight. For a period of about two weeks, the sunrise/sunset times remain about the same. The sun appears to stop moving higher in the sky and "hangs" there until the first of July, which is why we call it the solstice, which means "stopped". The sun actually is still changing positions, it is just crossing the top of its upward loop and that gives the optical illusion of standing still. (Very much like a high fly ball in baseball seems to hesitate at the top of its flight before it comes down.)

Because the sun doesn't set until 8:30 pm in mid-June, sky watching doesn't really get good until almost 9:15 pm. Late darkness and mosquitoes can make summer viewing more challenging, but the mild temperatures more than make up for the inconvenience. Saturn is the only visible planet in the sky during the June evenings. Look directly south at dark in mid-June and you will see a bright red star - Arcturus. Arcturus is the third brightest star in the sky and easy to find. Make a fist and hold it at arm's length towards Arcturus. Measure three fists down (each fist covers 10 degrees of the sky) and you will see a yellow "star" slightly to the right. That is the planet Saturn. If you have a small telescope, look at Saturn. Everyone who sees Saturn and its rings in a telescope for the first time has the same reaction - "Wow".

The Big Dipper is directly above us in the evening sky. It is very easy to find this asterism. An asterism is part of a constellation and the Big Dipper is a part of Ursa Major, the Big Bear. The handle of the dipper is the bear's tail. (I know, bears don't have long tails - except in mythology!) The center star in the handle is a multiple star. If you can see the two brightest - Alcor and Mizar - you have good eyesight. Leo is below the Big Dipper and is marked by another bright star, Regulus. High in the eastern sky is Vega, the 5th brightest star in the sky. Vega is one of the stars of the summer triangle (more about the triangle in July) and is in Lyra. If you were on Vega and had a telescope large enough to see the surface of Earth, you would see who was here 25 years ago! Light travels at 6 trillion miles per year, but Vega is so far from Earth, it will take the light reflecting from your face 25 years to get there. That bright star, Arcturus is 37 light years away. In late evening, the Milky Way will rise in the eastern sky.

The morning planets are Mars, Jupiter and Venus. Mercury begins the month in the morning sky and then crosses behind the sun on June 12th. It will not get high enough in the eastern sky to be seen after sunset during June. Venus is also moving toward the

sun and will pass behind the sun on August 16th. Venus will be in the evening sky in the fall. Mars and Jupiter are orbiting to the west. Jupiter will be in the evening skies in the fall and Mars will be in the evening skies next year.

The season for public shows at the planetarium is coming to a close, and public shows will resume next September. On June 2nd at 6:30 pm we will present *"What's in the Sky"* and on June 7th at 7:30 pm we will present *"The Solar System"*. We will continue to do request shows for summer camps, scout troops, summer schools, etc. during the summer.

The full moon is on June 15th. The June moon is "The full strawberry moon". The full moon is always opposite the sun. The full moon rises as the sun sets, and the full moon crosses the sky opposite to the sun. So, since the sun is at its highest in June, the June full moon is at its lowest as it crosses the sky. The June full moon crosses the sky at the same height above the horizon as the December sun.

NASA has given up on the Mars Rover named Spirit. Spirit and Opportunity are twin rovers that NASA landed on Mars in January, 2004. They were driven by radio commands from Earth and were supposed to last for six months. Last fall Spirit got stuck in soft Martian sand and couldn't move. As the Martian sun got lower in the sky for the Martian winter, Spirit couldn't change directions to aim its solar panels to the sun and so the batteries died. NASA sent one last message to the rover at the end of May. Spirit lasted six years longer than expected, and its twin - Opportunity - is still rolling across the Martian landscape.

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