

JUNE 2009 ASTRONOMY

From the Trackman Planetarium at Joliet Junior College.

The Summer Solstice is at 00:45 am (12:45 am) on June 21st. June 21st is therefore the day of the year with the most sunlight - slightly over 15 hours and 10 minutes. However, because of the earth's orbital speed around the sun, the earliest sunrise is on June 13th (5:16 am) and the latest sunset is on June 27th (8:28 pm). Sunrise and sunset time will vary slightly depending on your latitude and longitude and altitude.

The sun will be directly south (transits the meridian) at 12:52 pm on the 21st, and it will transit at 72 degrees above the horizon - the highest for the year. If you have a vertical pole in your yard, such as a flagpole or telephone pole, mark the tip of the pole's shadow at the time of transit. On the first day of fall (Vernal Equinox), I will give you the time of transit and you can mark the shadow again. And then on the Winter Solstice you will put in the final shadow marker. You can now give your children a visual indicator of how the sun crosses lower in the sky each day, and casts a longer shadow, until about Christmas - the winter solstice. After that, as the sun crosses higher, the shadow get shorter and passes through the equinox marker on its way back again to the shortest shadow in June. If you miss the shadow on the 21st, you can place the marker for two days either way of the solstice. If you don't have the patience to wait, multiply the length of the summer solstice shadow by 2.7 for the distance to the equinox marker and 6.6 to get the distance to the winter solstice marker. Be sure to extend the line directly north by extending the summer solstice shadow.

Saturn is still the only planet in the evening sky at sunset. It is the yellow "star" in the southwest sky after sunset. To Saturn's left is the bright star Regulus. Regulus and Saturn are below the bowl of the Big Dipper, which is overhead to the west at mid-month. By the end of June, Jupiter will be coming up at 11:00 pm. On June 23rd, Pluto will make its closest approach to the earth for the year, 2.8 billion miles away. The light from Pluto takes over four hours to reach us and you would need a telescope with a minimum 8-inch aperture to see it.

Mars, Venus and Mercury are in the morning sky. Venus is very bright and almost impossible to miss, rising at about 3:00 am. At mid-month, Mars is the red planet above Venus. On June 5th, Venus' orbit will make it appear to start back toward the sun and Venus crosses behind the sun in January. Mercury keeps moving away from the sun (as we see it) until the 13th and then it too will start to move back toward the sun. On June 19th, Mars and Venus will be two degrees apart.

In the western sky after sunset is the Summer Triangle of stars: Deneb, Vega, and Altair. Deneb is the farthest north and Vega is below it at the beginning of the evening. Altair is the farthest east. If you were on Deneb with a telescope powerful enough to see the surface of earth, you would see our planet as it appeared 3,200 years ago.

The full moon is on June 7th. Because the moon is opposite the sun as they cross the sky, the full moon crosses the sky as low as the winter sun.

The public shows at the planetarium are about to end for the season with "Summer Sky for Kids" at 6:30 pm on June 4th and the "Skies of Summer" for general audiences on June 9th at 7:30 pm.

The sun starts the month in the constellation of Taurus the Bull and on June 21st, it moves into Gemini the Twins.

People in astronomy do not take astrology seriously, and haven't since Galileo used his telescope to prove Copernicus' theory that the earth was not the center of the universe. That was 400 years ago. After Galileo's discovery, we discarded the concept that the stars and planets were on spheres rotating around the earth and began to realize the stars and planets were way too far away to influence our lives. Interestingly, astrologers haven't updated their "signs" to compensate for an earth wobble known as precession since the days of Galileo, and today the sun is rarely in the constellations on the dates astrologers use in their fortune readings. Here are the actual dates the sun is in the constellations of the zodiac:

(1/20 to 2/15 - Capricorn) - (2/16 to 3/11 - Aquarius) - (3/12 to 4/18 - Pisces)

(4/19 to 5/13 Aries) - (5/14 to 6/21 - Taurus) - (6/22 to 7/20 - Gemini)

(7/21 to 8/10 - Cancer) - (8/11 to 9/16 - Leo) - (9/17 to 10/30 - Virgo)

(10/31 to 11/22 - Libra) - (11/23 to 11/29 - Scorpio) - (11/30 to 12/17 - Ophiuchus)

(12/18 to 1/19 - Sagittarius).

The sun doesn't move through the zodiac, it is the earth's orbit around the sun that makes the sun appear to move through the background stars.

Enjoy your horoscopes - just don't take them seriously.

We are now eighteen months into the new sunspot cycle and there is still very little sunspot activity. There is no need for concern, but we might be headed toward another Maunder Minimum such as the one observed in 1645 to 1715 when there were very few sunspots.

Sunspot cycles run for 11 years - going from minimum sunspots to maximum and then back to minimum. In fact, the polarity of the sunspots changes with each cycle, so the cycle is actually twenty-two years.

The equipment on the Hubble Telescope is now updated, replaced or repaired. We can look forward to even more awe-inspiring glimpses of the universe. Well done, NASA

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