Skywatch June 2013

Though many celebrate the beginning of summer on Memorial Day or the last day of school, Friday, June 21 marks the first day of summer according to the astronomical calendar. Our seasons are the result of the Earth's axis being tilted 23.5 degrees relative to its orbit. This tilt causes different amounts of sunlight to reach different parts of the earth throughout the course of the year. It is now the Northern Hemisphere's turn to experience more sunlight (spring and summer), while the Southern Hemisphere is experiencing less sunlight (fall and winter).

June 21 also is known as the summer solstice. The sun will rise farther to the northeast (peaking at 70 degrees altitude at 1:05 p.m.) on this special date than on any other, making it the longest day of the year. In New York State, that means over 15 hours of daylight! Anyone who has solar panels, including the Kopernik Observatory & Science Center (KOSC), will have the opportunity to collect lots of solar energy that day.

One might ask, if the longest day is June 21, why is it not the hottest day of the year? That is a great question. It is not as hot at the beginning of summer because there it takes time for the Northern Hemisphere to heat up after it has been cold all winter. The oceans, land, and atmosphere need time to absorb solar radiation in order to increase their temperature. It takes several weeks of solar heating to cause the high temperatures that typically occur in late July or early August.

The word solstice is derived from the Latin words sol (sun) and sistere (to stand still). At the solstices, the Sun appears to stands still in declination; the seasonal movement of the Sun's path (as seen from Earth) comes to a stop before reversing direction. Stargazers celebrate the summer solstice because after this date each night gets longer. In addition, the warmer weather allows for more comfortable nighttime observing. Longer and warmer nights are perfect for stargazing!

This summer, Saturn is stealing the show in the Southern sky at sunset. The ringed-planet is currently seen in Virgo, a dim constellation with only one bright star: Spica. After sunset, look to the South and you will see two bright objects. Spica is on the right and Saturn is on the left. Due to Earth's and Saturn's positions, the rings are becoming more visible. In 2009, we saw the planet from a side view and the rings appeared as a thin line. Now, we are looking down from the top. This makes Saturn a spectacular sight to see through a telescope.

On June 23, the Moon not only will be full but also will be closest to the Earth (perigee). This is called a Super Moon! At perigee, the moon lies only 221,824 miles away but two weeks later on July 7, the moon will reach apogee – its farthest point from the Earth at 252,581 miles. The visual difference between a regular full moon and a Super Moon is minimal – only about a 10% change in apparent size. However, it is an interesting challenge to photograph the Moon at its two extremes in its orbit to make the comparison.

The summer sky also is filled with some majestic constellations including Cygnus, Lyra, and Hercules. These contain summer deep-sky jewels, such as nebula, star clusters, and galaxies.

Images of these and other objects taking by members of the Kopernik Astronomical Society can be seen at our new Space Image gallery at www.kopernik.org.

Summer Celestial Events

June 21: Summer Solstice
June 22-23: Super Moon
July 22: Full Moon
July 5: Great Telescope Dust-off
July 27 & 28 Delta Aquarids Meteor Shower
August 10-13: Perseids Meteor Shower
August 27: Neptune closest to Earth

Plan to visit the KOSC on a Friday evening this summer for informative presentations and telescope viewing. On Friday, July 5, KOSC will be offering a special program called the Great Telescope Dust-off. If you have a telescope collecting dust in a corner of your basement, garage, or attic, dig it out and bring it up to Kopernik! KOSC experts will assess its condition and show you how to set it up and use it.

To learn more about KOSC's summer camps, Friday programs, and other special events, please visit www.kopernik.org or call (607) 748-3685 ext 315.

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Kopernik Observatory & Science Center