In the United States, summer officially begins when the sun reaches its farthest point north. That usually happens on or around June 21. This year, summer will begin on the June 20 at 10:45 p.m. (Arizona time). Of course, the very hot temperatures will have started many weeks prior.

At the end of a long, hot, summer day, the sun sets, and the beautiful summer sky appears. In this tapestry of stars, there are many constellations to view. The best known of these star pictures is the Big Dipper. The Big Dipper is not an official constellation;, but is instead an American constellation. Officially, the Big Dipper is part of Ursa Major, the Great Bear. If you follow the handle of the Big Dipper, you will find that it points to the star Arcturus, the brightest star in Bootes the Herdsman. An old astronomical saying is. "use the handle of the Big Dipper to arc to Arcturus". Bootes looks like a kite or an ice cream cone. To the east of Bootes lies the strongest man in the Universe, Hercules. He looks like a squashed spider plastered on the sky. If you have a telescope, look for M13 near his left leg. With nearly one million stars, M13 is the jewel of the globular clusters. To the east of Hercules is the Summer Triangle. This triangle is made up of three very bright stars: Vega, the brightest star in Lyra the Harp; Deneb, the tail of Cygnus the Swan; and Altair, the brightest in Aquilla the Eagle.

The most famous summer constellation is Scorpius the Scorpion. In ancient mythology, Scorpius, the smallest of creatures, killed Orion, the fearless hunter, with a well-placed sting. The jewel of Scorpius is Antares, the heart of the scorpion. Antares means rival of Mars. This star is a red supergiant that is many times brighter and bigger than our Sun.

The center of the Milky Way galaxy lies just to the east of Scorpius. The Sun is located on the inner edge of one of the spiral arms, about 25,000 light years away from the center of the galaxy. Located in the center of the Milky Way is a supermassive black hole, which is millions of times as massive as our Sun. Black holes are objects that have such strong gravity that once an object falls into it, there is no hope of escape. Not even light, the fastest thing in the Universe, can escape once it falls into a black hole. Contrary to myth, black holes are not cosmic vacuum cleaners. If our Sun were to implode and turn into a black hole (which it never will be able to do), our planet would still march around it at the same rate and distance. However, the lack of the Sun's warming rays would end life as we know it on Earth.

Toward the end of summer, Jupiter will be visible after sunset. This "King of the Planets" will be found in Capricorn, which is to the east of Sagittarius. Jupiter is a worthy target for anyone who owns a telescope. Even with a pair of binoculars, one can see four of Jupiter's 64 moons. These four are called the Galilean Moons and their names are Io, Callisto, Ganymede and Europa. Io has 80 volcanoes erupting at any given time. Europa has an ocean beneath a thin ice crust. Ganymede is larger than the planet Mercury. This miniature solar system is well worth exploring with your telescope.

Summer also brings the return of the Perseid meteor shower. The Perseids are one the best meteor showers of the year, producing up to sixty meteors per hour. The peak of this year's shower will be August 12-13. However, meteors associated with the Perseids can also be seen between July 23 and August 22. The viewing on the peak nights will be hampered by a waxing gibbous Moon (a bright phase between first quarter and full moon). After the Moon sets in the early morning hours, there should be some spectacular viewing opportunities. After midnight, sit back and look to the northeast for this amazing meteor shower.

Our International Year of Astronomy activities continue with Astronomy Days on June 13, July 18 and August 15. The topic for June is Archeo-Astronomy. Explore how the different cultures around the world impacted our understanding of the Universe. July returns us to those historic first steps on the Moon. Mars is our topic of discussion for August. What new discoveries have we made about the red planet? Visit azscience.org for more details about these fun and educational celebrations of astronomy.

The summer sky is beautiful! If you are new to the night sky or a seasoned veteran stargazer, we encourage you to come join us at the Dorrance Planetarium.