

JANUARY 2012 ASTRONOMY

From the Trackman Planetarium at Joliet Junior College

We are just beginning astronomical winter but you might have noticed that the sun is already setting later each day. In fact, we've already added 8 minutes of sunlight to our afternoons. At the end of January, the sun sets at 5 pm. Bad news - the sun is still rising later each morning and will do so through the first week of January. On January 4th, we are at our closest approach to the sun for the year - 91,406,000 miles. We are farthest from the sun - 94,510,000 miles - in July.

The winter constellations are in the early evening sky during January. Orion is high in the eastern sky - easy to find by using the three stars that make up his belt (from left to right they are: Alnitak, Alnilam, and Mintaka). Under those three stars is the Orion Nebula, a cloud of gasses that is the birth place for new solar systems. Follow the three stars in the belt to the east and you come to Sirius, the brightest star visible from Earth. Sirius' magnitude is -1.76 and it is 8.6 light years from Earth. The red star that marks the shoulder on Orion's left is Betelgeuse. Betelgeuse is a giant red star and is cooling down and about to go supernova. If Betelgeuse were to replace our sun, it is so large it would cover the solar system to the orbit of Jupiter. Above and to the east of Jupiter are the two bright stars (Castor and Pollux) that mark the heads of the Gemini Twins. Above and to the west of Orion is Taurus with the red star Aldebaran marking the bull's eye. Taurus' shoulder is marked by the Pleiades, a group of new stars still held close by gravity. Very high in the sky in mid-January are the stars that form the "W" of Cassiopeia. Below Cassiopeia is the Andromeda galaxy. The Andromeda galaxy is visible in very dark skies, but in this area you will need binoculars to find the elongated fuzz patch that is the nearest regular galaxy to the Milky Way galaxy.

The two visible planets in the sky after sunset are Jupiter and Venus. Venus is very bright in the western sky. Venus' orbit will bring it further east every night until March 27th when it will start orbiting back toward the sun. Jupiter is high in the sky in early evening. Earth's faster orbit is moving us away from Jupiter, but Jupiter is so large and reflective that it will remain bright in the evening sky until spring. On March 15th, Jupiter and Venus will meet in the evening sky with only a three degree separation. Mars is moving into the evening sky and by the end of January, Mars will be rising at 8:20 pm. And, by the end of January, Saturn will be rising at 11:30 pm. Saturn rises four minutes earlier each night and by late spring, the ringed planet will be in the evening sky. Mercury starts January to the east of the sun and is orbiting toward the sun to cross below it on February 7th. And if you're wondering where Pluto is, look toward the sun. Pluto passed behind the sun at the end of December. Pluto is slightly over 3 billion miles from Earth.

One of the most active meteor showers of the year is in the early morning of January 4th. The Quadrantids meteors seem to come from the area of the Big Dipper. The Quadrantids are named for a constellation that is no longer recognized, the Quadrans Muralis - or the wall quadrant. The moon sets at 3 am, just when the meteor shower is at its most active.

There are two major solar events in the spring. On May 20th, the sun will be setting during a partial eclipse, and on June 5th the planet Venus will cross (transit) the face of the sun. (The next time Venus transits the sun is in 2117.) Do not directly view the sun with binoculars or a telescope without professional protective filters. During the spring, we will e-mail instructions on how to use your small telescope or binoculars to project an image of the sun on a piece of paper. This is a good and safe method to use a telescope or binoculars to look at the sun to see these special events and to view sunspots.

On November 9th the Russian Space Agency launched a spacecraft toward the Martian moon, Phobos. The spacecraft made it into Earth orbit (sometimes called the “parking orbit”) but then could not receive the commands to start the rocket burn to send it toward Mars. The spacecraft - called Phobos-Grunt - remains in the low Earth orbit. Our upper atmosphere can expand into the low Earth Orbit and it will slow Phobos-Grunt down until the spacecraft re-enters the atmosphere and falls to Earth. As of the end of December, the Russian Space Agency was predicting that Phobos-Grunt will fall to Earth on January 14th near the city of Mirabad, in southwestern Afghanistan. USSTRATCOM, which is our satellite tracking center, is currently not making any predictions for re-entry time or location since it is not our spacecraft.

The January shows at the Trackman Planetarium are:

January 3rd at 7:30 pm (December 21st 2012 - Not the end of the world); January 12th at 6:30 pm (The Solar System); January 17th at 7:30 pm (Asteroids, Meteors and Comets); January 26th at 6:30 pm (Humans and Robots in Space); January 31st at 7:30 pm (The Solar System). All the shows at the Trackman Planetarium start with a tour of the night sky using the Spitz Planetarium Projector and are offered free of charge by Joliet Junior College.

Over the winter break, the Natural Sciences Department at JJC moved into the new Science Building which is the modern building to the east of the planetarium. Thanks to everyone who made this move possible.

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