

Suffering from “Nature-Deficit Disorder?” Go outside and enjoy the night sky!

Robert Victor, Abrams Planetarium, Michigan State University

In these cooler and perhaps clearer nights after the arrival of autumn, take the opportunity to go outside and enjoy nature, particularly at dusk and dawn. Richard Louv, in his landmark bestselling book *Last Child in the Woods*, showed that direct exposure to nature is essential for a child’s healthy development, so bring the kids! In what follows, we will endeavor to help you enjoy the beauty of the evening and morning sky in October 2009.

What’s that brilliant “star” in the evening?

Jupiter appears as the brightest “star” as darkness falls, in the south-southeast in early October 2009; it reaches its highest position when it’s directly south later in the evening, about two to three hours after sunset in mid-October. Jupiter passes due south about half an hour earlier each week. **On many evenings, a small telescope will reveal up to four satellites of Jupiter**, those discovered by Galileo in January 1610, and two dark equatorial cloud belts. As you view these moons of Jupiter, you can celebrate the 400th anniversary of one of Galileo’s most important telescopic discoveries.

Find your way around the sky

You can use the evening sky map accompanying this article to identify several bright objects visible after nightfall. The map best shows the sky about three hours after sunset in mid-October, and half an hour earlier with each passing week, but it can be used up to an hour before or after its ideal time. After **Jupiter**, next in brilliance is blue-white **Vega** high in the sky to the west of overhead. Two bright stars not far from Vega complete the Summer Triangle with it: **Altair** in Aquila the Eagle, and **Deneb**, marking the tail of Cygnus, the Swan. High in the eastern sky, observe the Great Square of Pegasus. Look for a chain of stars trailing from the Square’s left corner star to its lower left. These comprise the brightest stars of Andromeda. They can help you locate a close neighbor galaxy, easily visible through binoculars as a hazy patch of light, over two million light years away! **Fomalhaut**, the mouth of the Southern Fish, is in the south-southeast, to the lower left of Jupiter and nearly in line with the west side of the Great Square. **Capella**, the “Mother Goat” star, is twinkling brightly, low in the northeast. To the right of Capella, in the east-northeast, is a compact little cluster of stars, the **Pleiades**, or **Seven Sisters**, very beautiful in binoculars. Below the cluster, watch for rising of reddish **Aldebaran**, the follower of the Pleiades and eye of Taurus the Bull.

The Harvest Moon

Moonrises are fun to watch, especially when you can share the experience with others. From middle latitudes around the Full Moons of late summer and early autumn, geometry involving the Earth's axis and the Moon's orbit cause the Moon to rise quite early in the evening for several nights in succession. As an example, here are moonrise times (in EDT) and locations along the horizon for East Lansing, Michigan for Oct. 3-10, 2009. For Sun and Moon data for other locations, go to the web site of the U.S. Naval Observatory Astronomical Applications Department, at <http://aa.usno.navy.mil/data/> Notice the Moon's very reddened color at rising, and its flattened appearance if you catch it just as it sits on the horizon, about 3 minutes after the times given here, if you have an unobstructed view; otherwise, with an obstructed horizon, several minutes later. Notice also the day by day northward shift in the Moon's rising place until Oct. 8, and the decrease in its phase, from Full on Oct. 3 to half full on Oct. 10. Get out and enjoy the view!

In East Lansing, Michigan:

Sat. October 3 at 6:40 p.m., Moon rises 10 degrees N of east.
Sun. October 4 at 7:04 p.m., Moon rises 17 degrees N of east.
Mon. October 5 at 7:31 p.m., Moon rises 24 degrees N of east.
Tue. October 6 at 8:05 p.m., Moon rises 30 degrees N of east.
Wed. October 7 at 8:47 p.m., Moon rises 34 degrees N of east.
Thu. October 8 at 9:38 p.m., Moon rises 36 degrees N of east.
Fri. October 9 at 10:40 p.m., Moon rises 36 degrees N of east.
Sat. October 10 at 11:51 p.m., Moon rises 33 degrees N of east.

Especially for rural stargazers

If you are located at a very dark site after nightfall, especially in summer or early autumn, you can enjoy the **Milky Way**. Beginning Oct. 7, four days after it passes Full, the Moon comes up late enough to allow an interval of very dark skies from nightfall until just before moonrise. Follow the Milky Way's stream of light through the Summer Triangle southward toward the Teapot of Sagittarius. Indeed, the star clouds of the Milky Way resemble clouds of steam billowing out of the spout of the Teapot, and up toward the Summer Triangle. Notice the bright patch of Milky Way within the Triangle, right along the axis of the Northern Cross or neck of Cygnus, the Swan. Examine this cloud with binoculars, and you will see that it is readily resolved into stars. They are within the same spiral arm in which we are located. If you aim toward the Sagittarius Star Cloud, you will not see stars in such large numbers, because the inner arm and central bulge of the Milky Way are farther away and the stars appear fainter.

For early risers, October 2009

In the second and third weeks of October 2009, **Venus, Mercury, and Saturn will gather to form an attractive cluster of planets low in the east an hour before sunrise**, while **Mars** will stand high in the southeast. An hour before sunrise would be a good time to get outside to look during the peak mornings of the planetary display, October 8-13. Thanks to daylight saving time, the time is not outrageously early! The monthly ***Sky Calendar*** from Abrams Planetarium includes illustrations making it easy to follow the progress of such gatherings. For subscription information with a sample calendar and evening sky map for October 2009, visit www.pa.msu.edu/abrams/SkyCalendar/Index.html

Another benefit of getting outdoors an hour or so before sunrise in October is that you'll be getting a preview of the stars you will see during evenings in February, including the Pleiades and Hyades star clusters in Taurus the Bull; Orion the Hunter; Gemini the Twins; Canis Major and Canis Minor, the dogs following Orion; Auriga the Charioteer; and Leo, the Lion. The bright stars you can catch in the morning include **Aldebaran** the eye of Taurus; **Rigel and Betelgeuse**, foot and shoulder of Orion; **Pollux and Castor** in Gemini; the "dog stars" **Sirius and Procyon**; the "Mother goat" star **Capella** in Auriga; and **Regulus**, the heart of Leo, the Lion.

At dusk in school year 2009-2010

During the school year 2009-2010, the **Moon will appear near Jupiter in the evening sky** on Sept. 2, 29, Oct. 26, Nov. 23, Dec. 20 and 21, and Jan. 17. By late January at dusk, Jupiter will be sinking low in the west-southwest, while **Mars**, brighter than it will be again until the spring of 2014, will be rising in the east-northeast. As Jupiter sinks into bright evening twilight in mid-February, **Venus** will be just emerging from the solar glare and pass very close to Jupiter on Feb. 16. **Evening pairings of the crescent Moon with Venus in 2010** will occur on Feb. 14 (very low, with Jupiter nearby), Mar. 16 and 17, Apr. 15 and 16, May 15 and 16, June 14, July 14, Aug. 12 and 13 (with Saturn and Mars nearby), Sept. 10 and 11, and Oct. 9 (very low). By mid-March, **Saturn** appears above the eastern horizon at dusk, and so **three planets, Venus-Mars-Saturn, will span nearly 180 degrees** from horizon to horizon. In late March and early April, the elusive innermost planet **Mercury** will be very easy to locate as it lingers quite close to Venus for several evenings, and **four naked-eye planets will be visible simultaneously**. Mercury falls back into the solar glare in mid-April and makes another evening appearance in July-August, while the **span of the remaining evening planets Venus-Mars-Saturn continues to shorten**, from 120 degrees on April 23, through 90 degrees on May 17, to 60 degrees on June 11 and 12, and 30 degrees on July 9, before **all three fit within a 5-degree field on August 7**. Coming issues of ***Sky Calendar*** will preview all these events.

The pleasure of stargazing

As you begin your new school year, consider the thoughts of Rachel Carson from ***The Sense of Wonder***, a wonderful little book about sharing nature with children:

"Those who dwell, as scientists or laymen, among the beauties and mysteries of the earth are never alone or weary of life. Whatever the vexations or concerns of their personal lives, their thoughts can find paths that lead to inner contentment and to renewed excitement in living. Those who contemplate the beauty of the earth find reserves of strength that will endure as long as life lasts."

"The lasting pleasures of contact with the natural world are not reserved for scientists but are available to anyone who will place himself under the influence of earth, sea and sky, and their amazing life."

When and where can I go to a star party?

Sky gazing in the company of others can be great fun! To obtain a listing of astronomy clubs, observatories, and planetariums near you, visit <http://www.skyandtelescope.com/community/organizations/>