

Planets are visible before the sun rises

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Popular Astronomy Club

At our monthly public observing sessions at Niabi Zoo and during other observing programs, one of the most asked questions is, “What planets can we see tonight in the sky?” During this spring, the answer to that question has been, “None.” That’s because there is a somewhat unusual occurrence this year, during which no planets are visible in the sky until after midnight.

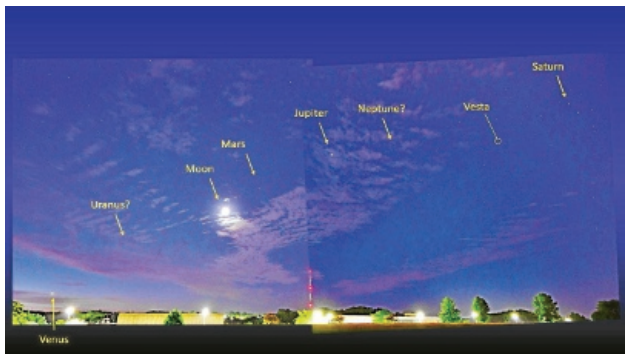
The planets are, of course, still there in the solar system in orbit around the sun. In early July, most are on the same side of the sun.

It just so happens that now they are on the side of the sun that we see from Earth in the morning before sunrise. As the Earth also travels in its orbit around the sun, by October, most of the planets will be visible in the evening sky.

In early July, four planets can be seen in a row in the morning sky: Venus, Mars, Jupiter and Saturn. In the morning before sunrise, you can see Jupiter as the brightest object in the southeast sky, with Mars to the left (east) and Saturn approximately twice as far to the right (south-southwest). Venus may be visible only if you have a clear view of the east-northeast horizon, and can watch the planet rise in the morning glow just before the sun rises.

A few weeks ago, Mercury, the closest planet to the sun, was visible in this row but is now too close to the sun to be seen from Earth. The photo accompanying this article, taken shortly before sunrise on June 23, shows where all the planets were on that morning, with the visible planets (Venus, Mars, Jupiter, and Saturn) in their actual order of distance from the sun.

The Earth, which of course is the large planet shown in part across the bottom of



CONTRIBUTED

This composite photo was taken at about 4 a.m. on June 23 by PAC member Alan Sheidler, who shot the images from the running track at Black Hawk College. Mercury had not yet risen when the photos were taken.

the picture, is between Venus and Mars in distance from the sun. On June 23, the moon was also in this line with the planets.

The locations of other some astronomical objects in the solar system, although not visible without a telescope, are also indicated on the picture. Planets Uranus and Neptune, and Vesta, one of the largest asteroids, were also along this line of planets.

The Earth orbits the sun on a plane called the ecliptic. All the other planets orbit the sun on a plane that is slightly tilted from the ecliptic. The moon is also orbiting Earth on a plane slightly tilted from the ecliptic.

Because their orbits are on nearly parallel planes, it is possible for the planets to arrange themselves along a line as seen from Earth. Because the planes are slightly tilted with respect to the ecliptic, the line is not perfectly straight.

The planets all travel around the sun at different speeds, resulting in the view from the Earth making it appear that the planets all move along that line. We have just observed a rare time when the planets, other than Earth, are all on the same side of the sun. As we progress through the coming months and years, we will see the planets move in their apparent

spacing from each other as seen from Earth, but they will always appear near that line that represents the ecliptic plane.

It is this observation of the motion of the planets — named from the Greek work for “wanderer” — that led the early astronomers to determine that the planets revolve around the sun in the solar system. If you keep looking up and observe the motions of the planets, you realize that, although the distant stars in the background of the sky seem to never change, the planets and other solar system objects are in constant motion.

We will never see this exact alignment of the planets again in our lifetime. This is just another reason to keep looking up.

About PAC

The Popular Astronomy Club hosts a public observing program on the third Saturday of every month from March through November at the Niabi Zoo parking lot at sundown. The next one is scheduled for July 16.

Check our website or Facebook page if cloudy weather threatens to cancel the event. Visit popularastronomyclub.org for more information on public observing programs, monthly meetings and other events.