Richland Astronomical Society
The Warren Rupp Observatory

M111

June 2025

The newsletter of the Richland Astronomical Society and Warren Rupp Observatory

Astronomical League – 3-D Printer Tools

The Observing Program Division is pleased to announce a new feature on the Astronomical League website: A repository of helpful 3-D Printer Files (STL Files). If you have a 3-D printer available some of these aids might be helpful to you in your observations as well as outreach activities. They are located on this web page: https://www.astroleague.org/navigating-the-night-sky-guides/

If you have printed additional tools on your 3-D printer, please send them to Aaron Clevenson at aaron@clevenson.org for inclusion. Criteria are simple:

1. You must have printed the tool for your use.
2. They must be useful to other observers (not "one-offs").
3. Ideally, they should not require supports to print. A brim is not an issue.

At present there are only a few files there, but it will hopefully grow quickly.

Another resource for 3-D printer ideas and files is the "3D Printed Astronomy" topic in the ATM, Optics, and DIY Forum on Cloudy Nights. Which can be found here: https://www.cloudynights.com/topic/704315-3d-printed-astronomy/

NASA also maintains a catalog of printable 3D files at: https://nasa3d.arc.nasa.gov/models/printable

Big Blue Targets for June

M5

Messier 5 or M5 (also designated NGC 5904) is a globular cluster in the constellation Serpens. It was discovered by Gottfried Kirch in 1702. M5 is, under extremely good conditions, just visible to the naked eye as a faint "star" 0.37 of a degree (22' (arcmin)) north-west of star 5 Serpentis. Binoculars and/or small telescopes resolve the object as non-stellar; larger telescopes will show some individual stars, some of which are as bright as apparent magnitude 10.6. Charles Messier noted it in 1764 and—a studier of comets—cast it as one of his nebulae. William Herschel was the first to resolve individual stars in the cluster in 1791, counting roughly 200. Messier 5 is 24,500 light years distant and receding from the Solar System at a speed over 50 km/s.

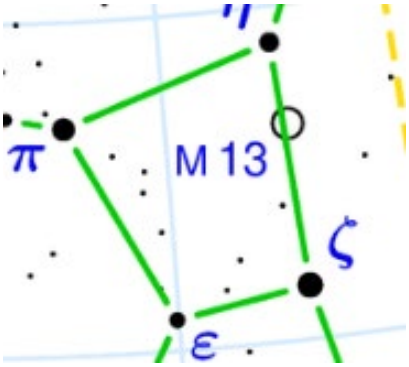
M12

Messier 12 or M 12 (also designated NGC 6218) is a globular cluster in the constellation of Ophiuchus. It was discovered by the French astronomer Charles Messier on May 30, 1764, who described it as a "nebula without stars". In dark conditions this cluster can be faintly seen with a pair of binoculars. Resolving the stellar components requires a telescope with an aperture of 8 in (20 cm) or greater.

In a 10 in (25 cm) scope, the granular core shows a diameter of 3′ (arcminutes) surrounded by a 10′ halo of stars. The cluster is roughly 16,400 light years away from Earth.

M13

Messier 13, or M13 (also designated NGC 6205 and sometimes called the Great Globular Cluster in Hercules, the Hercules Globular Cluster, or the Great Hercules Cluster), is a globular cluster of several hundred thousand stars in the constellation of Hercules. Messier 13 was discovered by Edmond Halley in 1714, and cataloged by Charles Messier on June 1, 1764. Messier 13 is often described by astronomers as the most magnificent globular cluster visible to northern observers.



About one third of the way from Vega to Arcturus, four bright stars in Hercules form the Keystone asterism, the broad torso of the hero. M13 can be seen in this asterism 2⁄3 of the way north (by west) from Zeta to Eta Herculis. With an apparent magnitude of 5.8, Messier 13 may be visible to the naked eye with averted vision on dark nights. Messier 13 is prominent in traditional binoculars as a bright, round patch of light.

About 145 light-years in diameter, M13 is composed of several hundred thousand stars, with estimates varying from around 300,000 to over half a million. The brightest star in the cluster is a red giant, the variable star V11, also known as V1554 Herculis, with an apparent visual magnitude of 11.95. M13 is 22,200 to 25,000 light-years away from Earth, and the globular cluster is one of over one hundred that orbit the center of the Milky Way.

IRAS 18059-3211 PK 359-6.2 as seen by Hubble

Who Named That? -By Mitch Luman

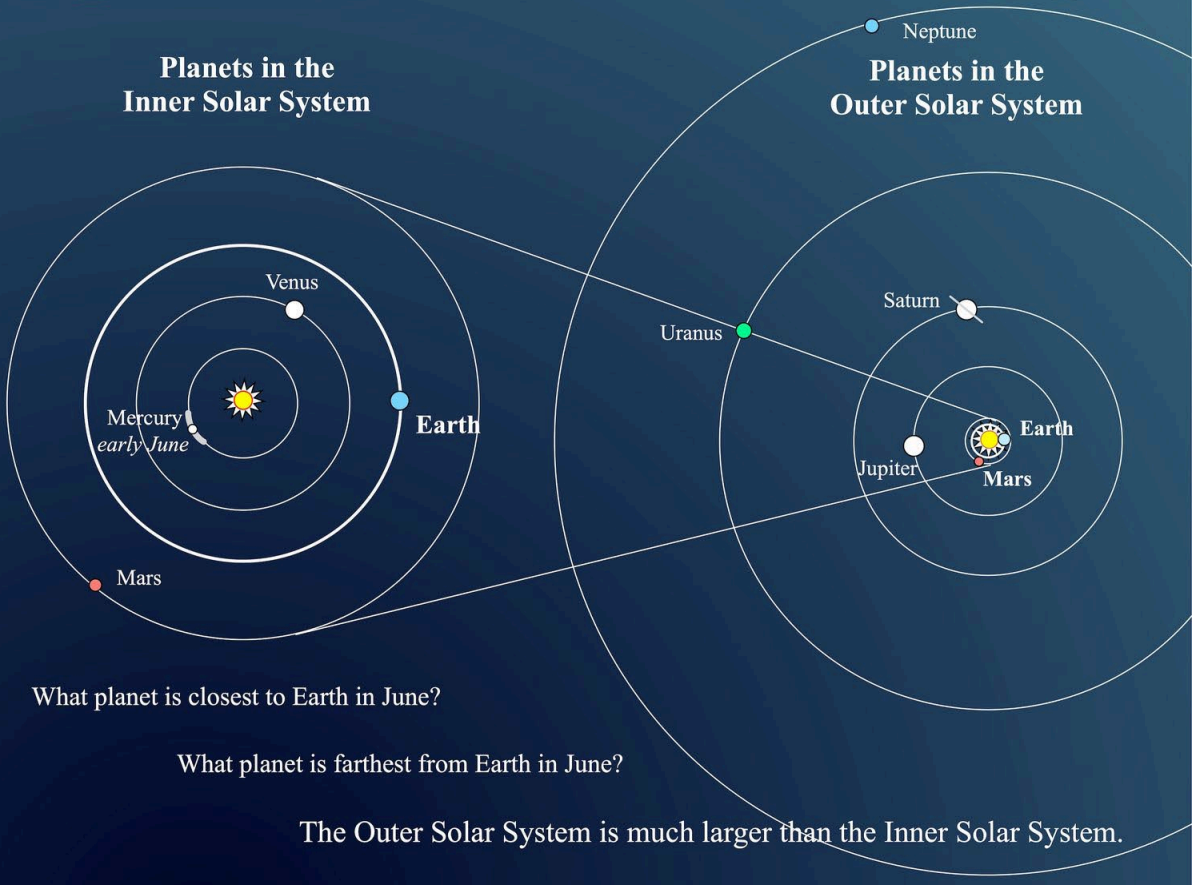
Gomez's Hamburger (IRAS 18059-3211) was for many years wrongly identified as a planetary nebula. Given its misidentification its distance was also incorrectly estimated to be 6,500 light-years away. Gomez's Hamburger is today recognized as a young star surrounded by a protoplanetary disk with a revised distance of about 900 light-years.The central star has a surface temperature of approximately 10,000 °C (18,000 °F).

This strange object was discovered in 1985 using images obtained by Arturo Gomez at Cerro Tololo in Chile. Initial observations obtained shortly after its discovery revealed the dark band across the object, but its exact nature was difficult to pin down.

As a protoplanetary nebula the "hamburger buns" make sense. The buns are likely light being scattered off dust surrounding the star and the "patty" is a dark band of dust in the middle seen edge on. I've viewed this object faint,14th magnitude object through my 20-inch under the dark skies of southern Illinois. It's low declination in Sagittarius means it's not well placed for observation here in northern Ohio. Based on my observations you'll need a clear horizon and at least a 14-inch telescope to see Gomez's Hamburger.

Relative planet positions this June

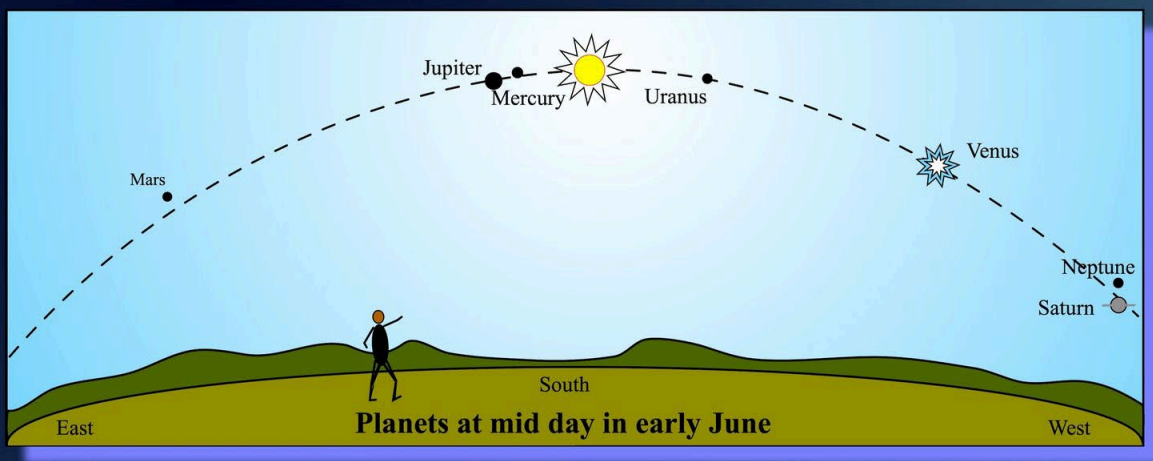
The planets are in constant motion



What planet is closest to Earth in June?

What planet is farthest from Earth in June?

The Outer Solar System is much larger than the Inner Solar System.



2505

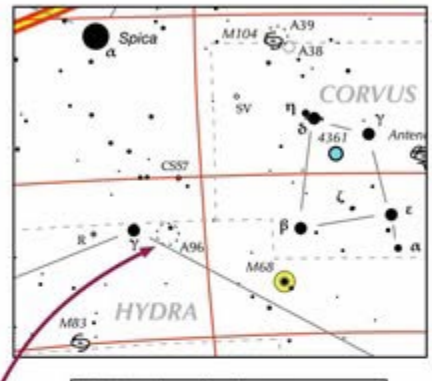
Seahorse Asterism

On the Astronomical League's Asterism list as no. 96

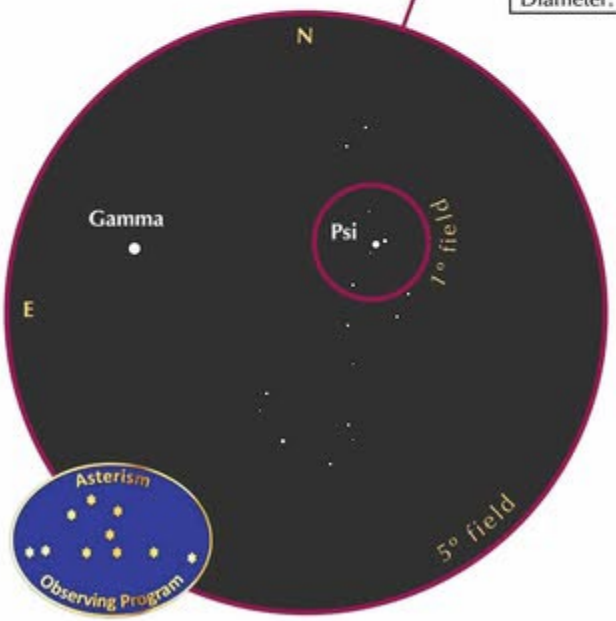
How to find the Seahorse ...

1. 10° south of Spica lies 3rd magnitude Gamma Hydrae. (10° is the angular width of your fist on your outstretched arm.)
2. Place Gamma at the center of the finder (or binocular) field.
3. At the west edge of the finder (or binocular) field lies the 4.9 magnitude Psi Hydrae.
4. Aim the finder (or binoculars) at Psi.
5. Follow the string of 7th, 8th, and 9th magnitude stars as it roughly traces the outline of a seahorse.

To see it through a finderscope or binoculars, clear, dark skies are a must!



96 Asterism: Seahorse
Magnitudes: 4.9 – 9.6
Diameter: 15 x 90 arc-minutes

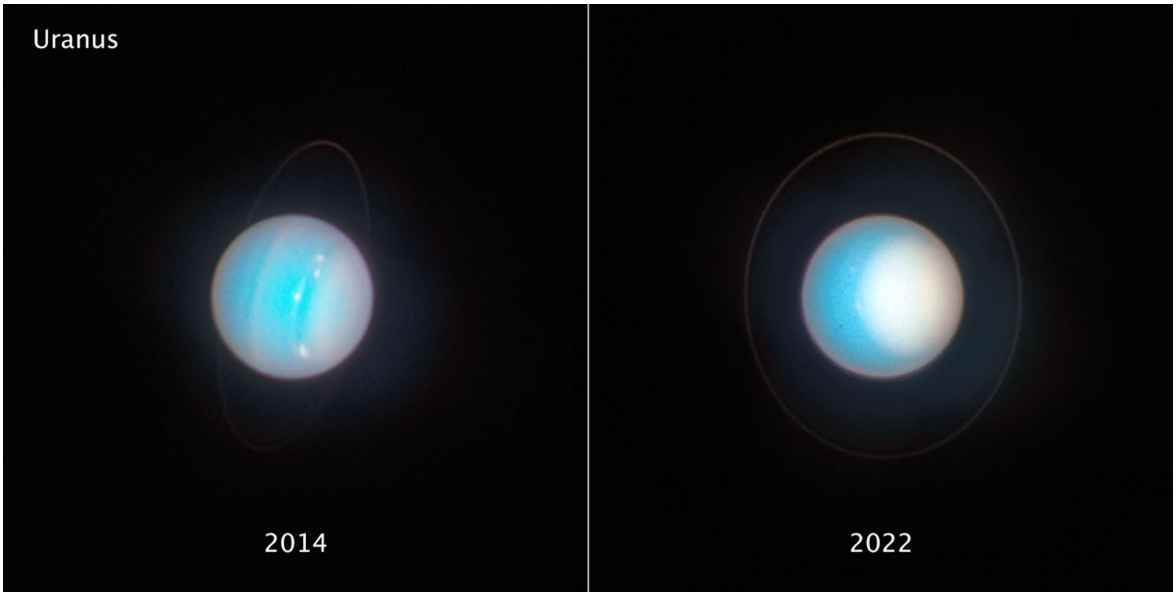


Use a tripod to help bring in the asterism's 7th, 8th, and 9th magnitude stars.

2504

June's Night Sky Notes: Seasons of the Solar System

By: Kat Troche

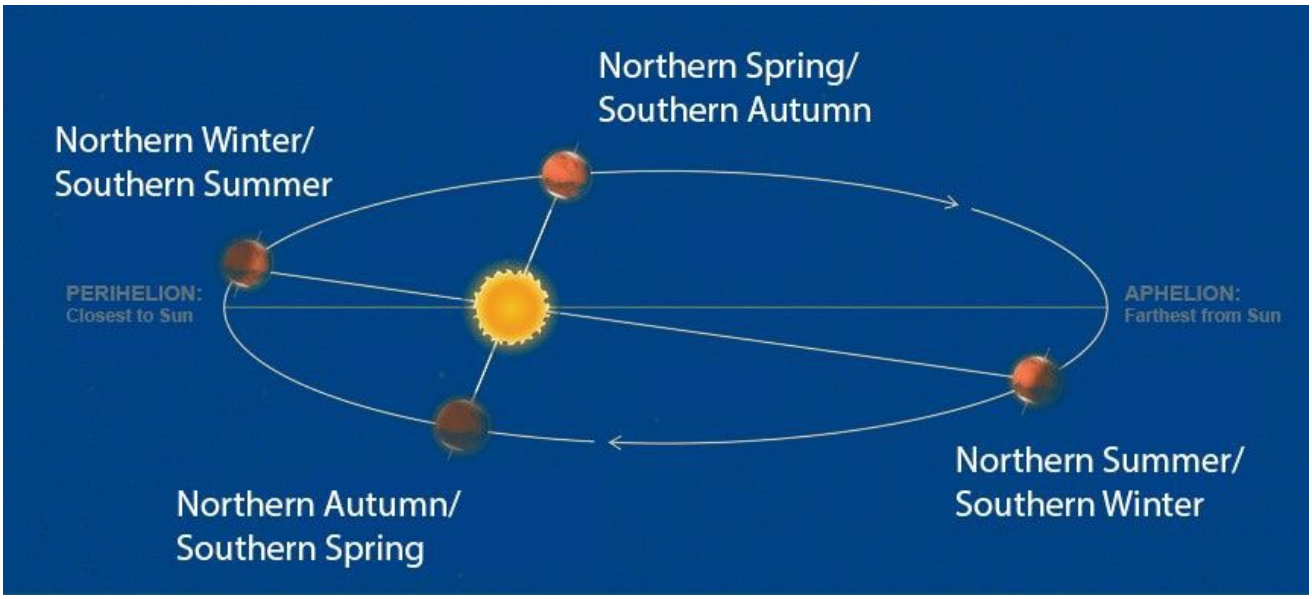


Uranus rolls on its side with an 84-year orbit and a tilt just 8° off its orbital plane. Its odd tilt may be from a lost moon or giant impacts. Each pole gets 42 years of sunlight or darkness. Voyager 2 saw the south pole lit; now Hubble sees the north pole facing the Sun. Credit: NASA, ESA, STScI, Amy Simon (NASA-GSFC), Michael Wong (UC Berkeley); Image Processing: Joseph DePasquale (STScI)

Here on Earth, we undergo a changing of seasons every three months. But what about the rest of the Solar System? What does a sunny day on Mars look like? How long would a winter on Neptune be? Let's take a tour of some other planets and ask ourselves what seasons might look like there.

Martian Autumn

Although Mars and Earth have nearly identical axial tilts, a year on Mars lasts 687 Earth days (nearly 2 Earth years) due to its average distance of 142 million miles from the Sun, making it late autumn on the red planet. This distance and a thin atmosphere make it less than perfect sweater weather. A recent weather report from Gale Crater boasted a high of -18 degrees Fahrenheit for the week of May 20, 2025.

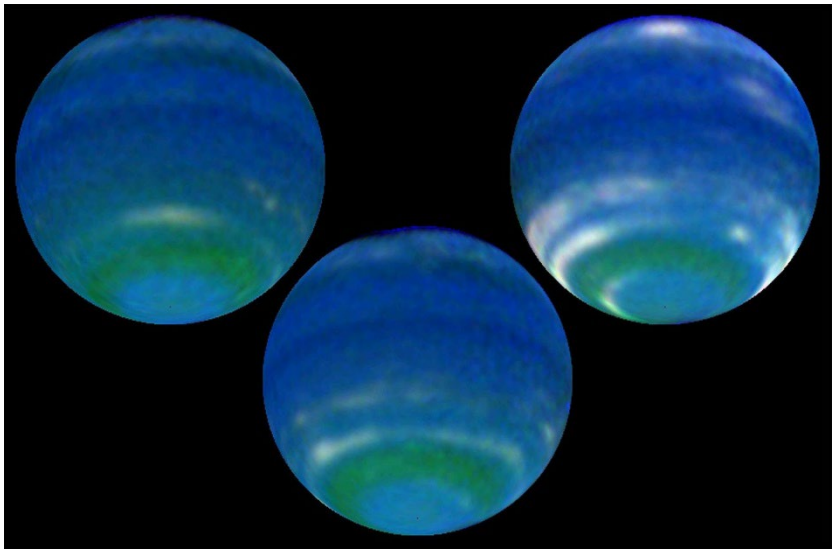


An artist's rendition of Mars' orbit around the Sun, and its seasons. Credit: NASA/JPL-Caltech

Seven Years of Summer

Saturn has a 27-degree tilt, very similar to the 25-degree tilt of Mars and the 23-degree tilt of Earth. But that is where the similarities end. With a 29-year orbit, a single season on the ringed planet lasts seven years. While we can't experience a Saturnian season, we can observe a ring plane crossing here on Earth instead. The most recent plane crossing took place in March 2025, allowing us to see Saturn's rings 'disappear' from view.

A Lifetime of Spring



NASA Hubble Space Telescope observations in August 2002 show that Neptune's brightness has increased significantly

since 1996. The rise is due to an increase in the amount of clouds observed in the planet's southern hemisphere. Credit: NASA, L. Sromovsky, and P. Fry (University of Wisconsin-Madison)

Even further away from the Sun, each season on Neptune lasts over 40 years. Although changes are slower and less dramatic than on Earth, scientists have observed seasonal activity in Neptune's atmosphere. These images were taken between 1996 and 2002 with the Hubble Space Telescope, with brightness in the southern hemisphere indicating seasonal change.

As we welcome summer here on Earth, you can build a Suntrack model that helps demonstrate the path the Sun takes through the sky during the seasons. You can find even more fun activities and resources like this model on NASA's Wavelength and Energy activity.