



The Newsletter for Keene Amateur Astronomers

Vol. 2026 No. 6

June 2026

Cometary Globule CG 4



This cloudy, ominous structure is [CG 4](#), a cometary globule nicknamed 'God's Hand'. CG 4 is one of many cometary globules present within the Milky Way, and how these objects get their distinct form is still a matter of debate among astronomers. This image was captured by the Department of Energy-fabricated [Dark Energy Camera](#) on the U.S. National Science Foundation [Victor M. Blanco 4-meter Telescope](#) at [Cerro Tololo Inter-American Observatory](#), a Program of NSF NOIRLab. Credit: CTIO/NOIRLab/DOE/NSF/AURA

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Editor's Message

May ended with a spectacular Blue Moon, the second full moon of the month. Jupiter and Venus have been putting on a spectacular show that will be continuing this month. On June 9th there will be a conjunction of the two planets. They will be joined by Mercury which is currently low on the horizon after sunset and will continue to climb higher as the days progress. The waxing crescent Moon will join the trio on the 15th and pass through them on the 16th and 17th before moving past them on the 18th.

If you are hoping to observe Mars and Saturn, they are currently in the morning sky in the East. The waning crescent will pass through them on the 10th - 12th.

You might hear about an occultation of Venus by the Moon on the 17th. From our location, this will be happening between 4 and 5 pm making it likely that you will not be able to see Venus. However, if you have travel plans, you might be in luck.

This month also brings the longest days and shortest nights. The summer solstice is June 21st.

Great objects to view this month:

- **NGC 5907 - The Splinter Galaxy** is a thin spiral galaxy viewed edge-on in Draco. It will be faint in large binoculars under good conditions but a telescope will be needed to see the dust lanes and other details including a faint halo. This is a perfect example of an edge-on galaxy.
- **Messier 4** - an ancient and closest globular star cluster to the Earth. It is located in Scorpius. Binoculars will see a hazy group of stars. Through a telescope it will resolve into countless stars and a bar across its core.

- **Messier 51, The Whirlpool Galaxy** - can be seen interacting with NGC 5195. It can be found 3.5 degrees from Alkaid, the handle of the Big Dipper. This has long been a favorite to view and image with a telescope.
- **Messier 92** - one of the brightest globular clusters in the night sky and can be found in Hercules. It is a very tightly packed cluster of stars. Messier 13 is a nearby globular cluster also worth looking at.
- **Nu Draconis of Kuma** - a great double star with matching magnitude in Draco. The two white stars can be easily viewed with binoculars and a great object to view under low magnifications with a telescope. It is easily found with the naked eye combined with its almost identical brightest and easy separation make it a great summer target.

Enjoy the beauty and wonder of the night sky,

- Susan Rolke

Monthly Business Meeting

The business meeting will be June 12th at the Observatory followed by observing.

Astronomy Conventions, Retreats, and More

[Stellafane](#) will be held August 13th - 16th. You can learn more and buy tickets for the event at their [new website](#) dedicated to the convention.

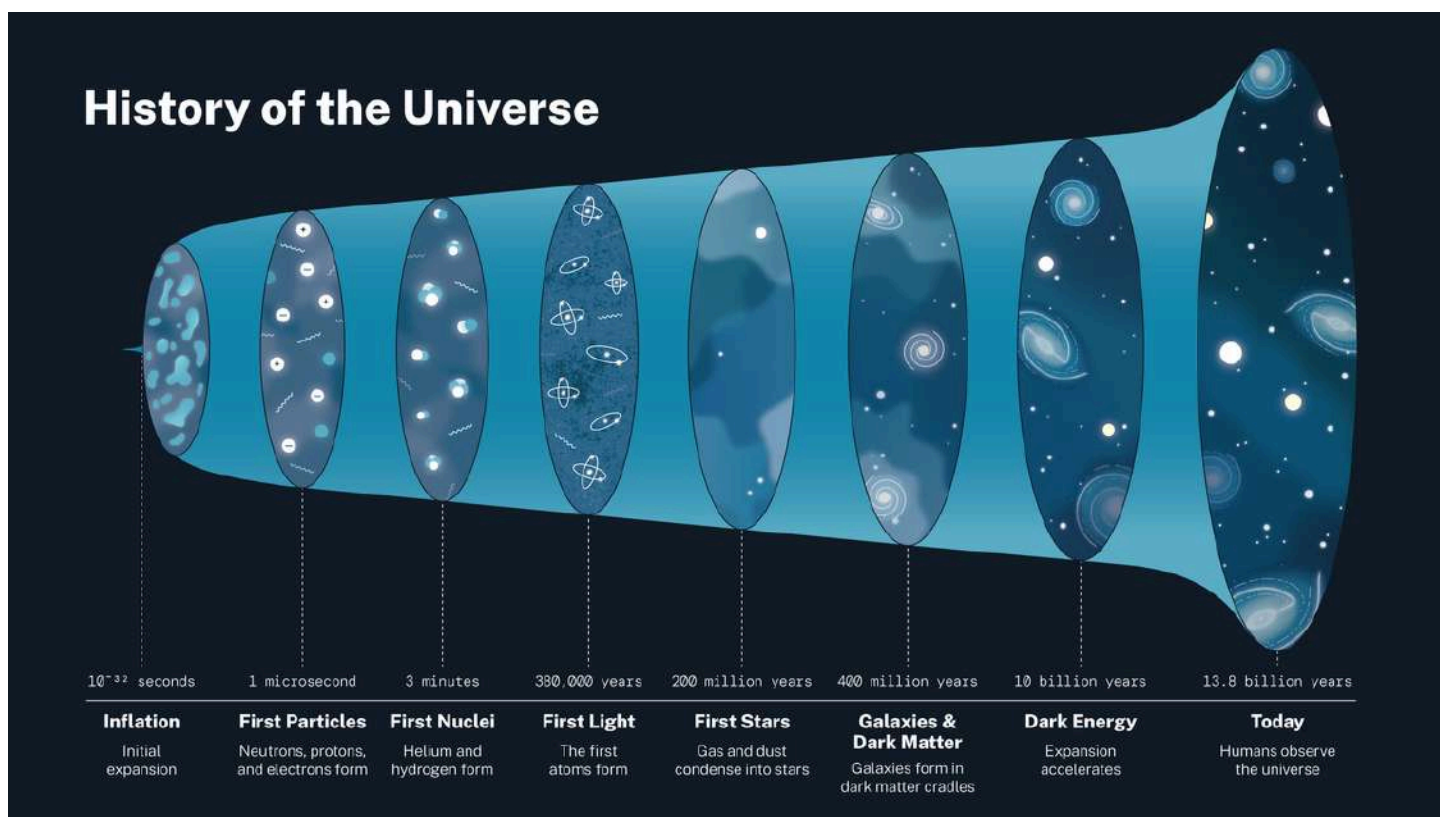
[DarkSky International's Photo Contest - Capture the Dark](#), submit your entry by June 30th. The contest is in its 5th year. There are multiple categories.

Dark Energy, Does it Exist?

By Susan Rolke

There is a big issue with current astronomy. Okay, there are several but I am only going to focus on one of them in this article. It is an issue that isn't just a little off, it is really off. Like, I can't believe how bad the predictions are. Despite this, individuals are very invested in the concept. We are human and despite our best efforts, we sometimes develop our own biases even when it comes to scientific ideas and theories.

What am I talking about? Dark Energy. That mysterious force that is pushing the universe apart. It is a mysterious 'something' that was proposed to explain the acceleration of our universe. No one has directly observed it. It is invoked to explain what we observe. It makes the math work. Or does it?

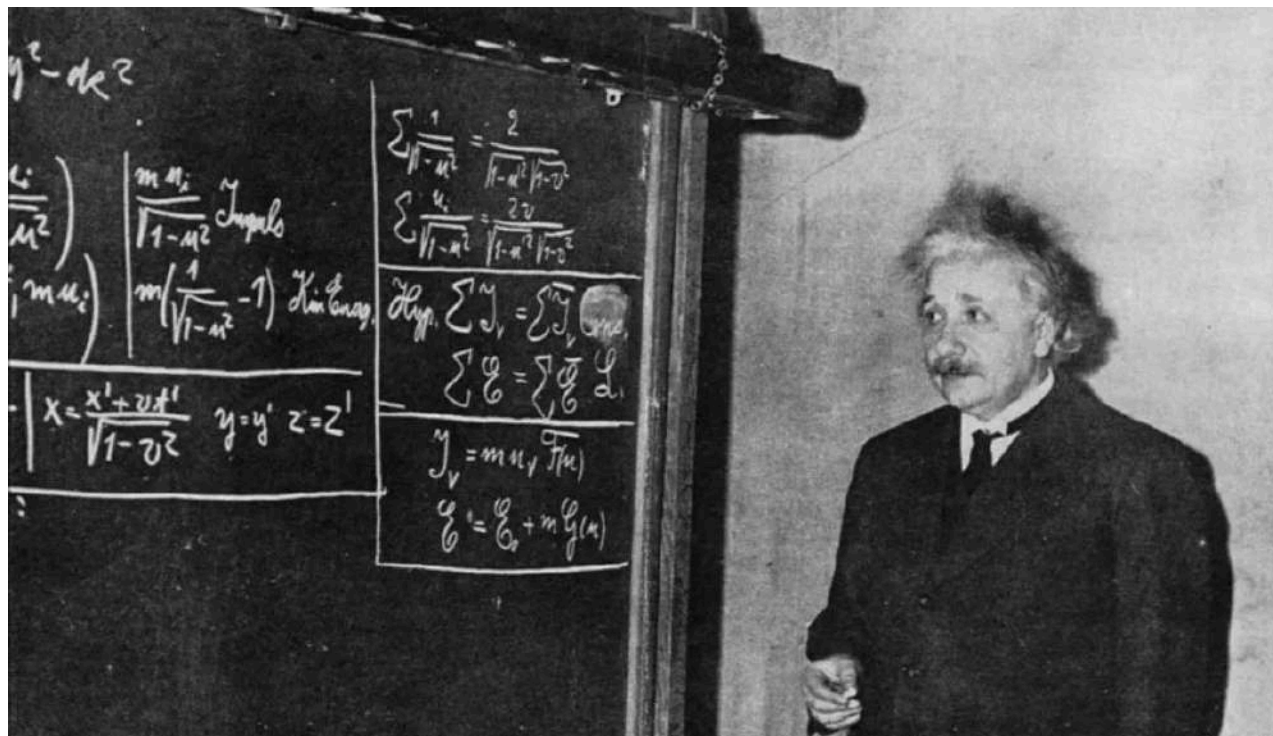


The history of the universe is outlined in this infographic. Credit: NASA.

There are several ideas that have gained attention that propose what dark energy could possibly be. Here are four leading explanations of dark energy. The one I have seen the most is vacuum energy. A sort of ever present background energy of space itself which could be equal to Einstein's cosmological constant. Vacuum energy exerts a negative pressure which drives the acceleration of the universe. Interestingly, it was originally proposed by Einstein to counter gravity in his static universe.

Some scientists have proposed that dark energy could be a type of energy fluid or field that fills space, and that it is unevenly distributed throughout space and time. This is known as quintessence. Others have

proposed 'wrinkles' in space time, a sort of defect in the fabric of the universe that formed in the early universe. While others some support the idea that there is an issue with general relativity and the theory of gravity on a grand universal scale.



This 1934 photograph shows Einstein, deriving Special Relativity for a group of students and onlookers. Credit: public domain

But the question comes down to, is dark energy real? Do we really need it to describe the accelerated expansion of the universe?

Our current predictions based on dark energy are off. They aren't a little off. It is not the kind of, we can pretend it isn't there and sweep it under the carpet off. It is one of the most embarrassing issues in current astronomy (and one no one likes to point out). Observations of distant supernovas differ from the value predicted by as much as 10 to the power of 121. Yes, you read that right - a 1 followed by 121 zeroes.

Try that with your bank account. It probably wouldn't end well.

I've always been a little bit of a skeptic regarding the existence of dark energy. It has always felt a little too similar to the ether that was created to describe how light and gravity could move through space. In other words, we created something we couldn't see or measure directly to make what we knew work. Does that sound familiar?

Being a skeptic doesn't mean you are a denier. It is actually a really good trait in a scientist to be a skeptic and question things. It means that one is not going to blindly accept what they are told. Did you believe your science teacher when they balanced an egg on its end and told you that this could only be done on the

Equinox? Most of my fellow students believed that hook line and sinker, but this trick can be done any day of the year. No special celestial alignments needed.

Skeptics want to see evidence to support the claim, and multiple lines of evidence are even better. It is a valuable trait especially in light of science being dynamic and changing as new observations are made that require us to modify prior understanding. And, here is where I finally get to the findings that inspired this month's writing.



Supernova explosions revealed the universe was accelerating apart Credit : NASA/ESA

Do we really need dark energy to explain the acceleration of the universe?

According to a new paper published by mathematicians from UC Davis we do not.

Stop the press. What!

Let's revisit how we got here.

Albert Einstein first introduced the cosmological constant Λ , with the assumption that the universe was static. He later discarded this idea when Edwin Hubble discovered the universe was expanding. Fast forward to 1998 when a team of researchers discovered the universe's expansion was accelerating.

Einstein's Λ was revived to explain accelerated expansion. As a result, the standard cosmological model came to be known as the [lambda-cold dark matter model](#).

A key component of the standard cosmological model are Friedmann's spacetimes, the mathematical framework based on Einstein's theory of general relativity. His model assumes matter is spread evenly throughout space and expands uniformly in all directions. The UC Davis mathematicians found this solution unstable which in physics means the solution isn't only unlikely but one that would never be observed in nature.

In short, the math wasn't mathing.

A rather interesting finding was made after removing these instability. Accelerating didn't disappear. It simply had a different explanation. Accelerating expansion was there all along in Einstein's equations. There is no need to invoke a mysterious unseen cause to explain observations. The universe accelerates due to the inherent properties of how space and matter behave in the wake of the Big Bang which can be modeled mathematically.

This finding makes for a stranger and simpler solution for accelerated cosmic expansion. The findings are intriguing but only time and more evidence will tell if this is accepted as our best explanation that fits the observed data.

Resources:

- Great article on Einstein written by Universe Today. It includes lots of great info on Einstein, his work, the ether mentioned in the above article, Cosmic Expansion, the Eddington Experiment with great videos. I highly recommend reading this. [What is Einstein's Theory of Relativity?](#)
- [Taking dark energy out of the equation: Mathematicians challenge the standard cosmological model of the universe](#)
- The published article - [The instability of critical and underdense Friedmann spacetimes at the Big Bang as an alternative to dark energy](#)

Final note - my goal is to shed light on new findings. I am not condemning Dark Energy and refuting whether or not it exists. I am providing an alternative, plausible explanation which is at the heart of all good science. Whether or not these findings are confirmed by others and shape our future understanding is yet to be seen. I hope you enjoyed considering this possibility with me and found some levity in this rather 'heavy' topic.

Night Sky Network Online Webinar

Check out past webinars from the [Night Sky Network](#). This past [May](#) Dr. Ryan Watkins to discuss the lunar science of Artemis II.

Observing

To find out skywatching tips for this month, click on the following link to learn more.

Video: [What's Up June 2026 Sky Watching Tips from NASA](#)

You can find past pdfs of the Astronomical League charts [here](#). Turn to the end of the Newsletter to see what is up this month.

NASA Night Sky Notes



This article is distributed by NASA's Night Sky Network (NSN).

The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

Summer Triangle Corner: Vega

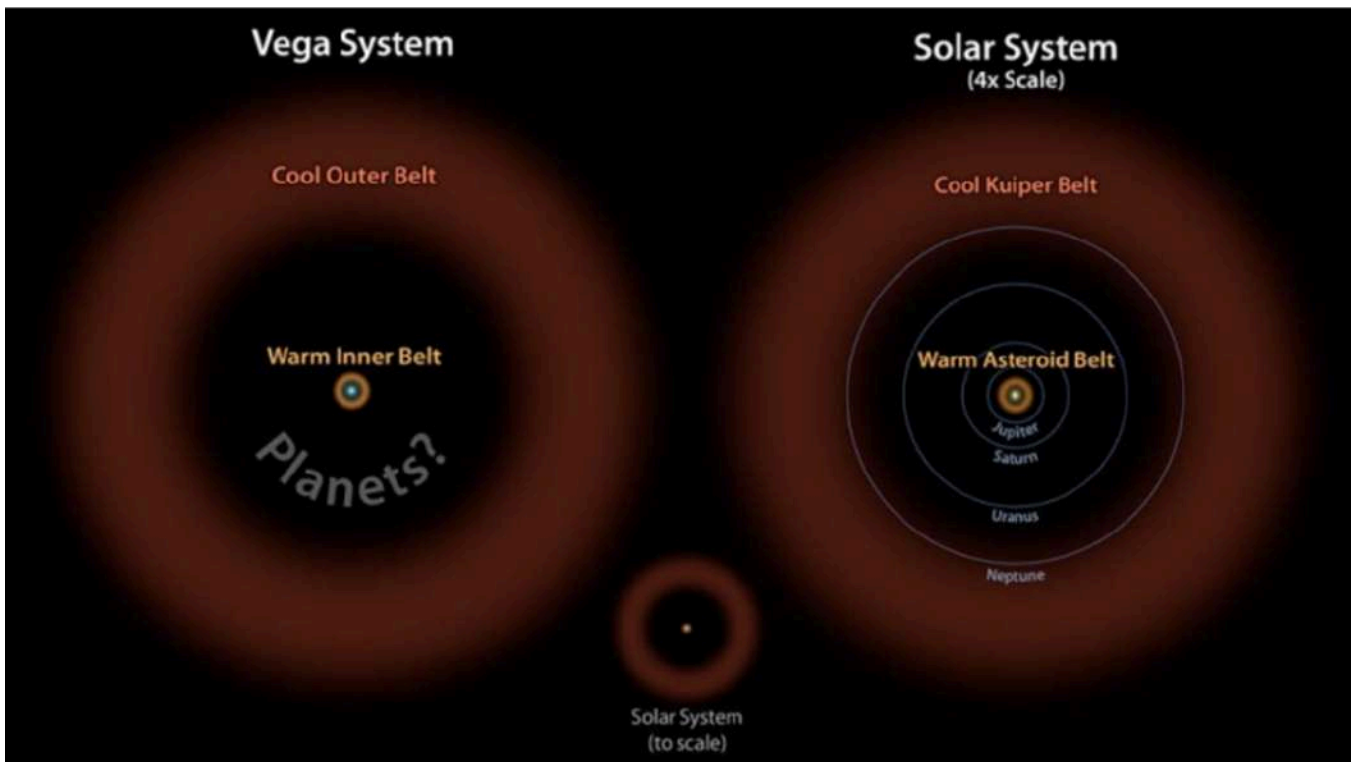
David Prosper and Vivian White

If you live in the Northern Hemisphere and look up during June evenings, you'll see the brilliant star Vega shining overhead. Did you know that Vega is one of the most studied stars in our skies? As one of the brightest summer stars, Vega has fascinated astronomers for thousands of years.

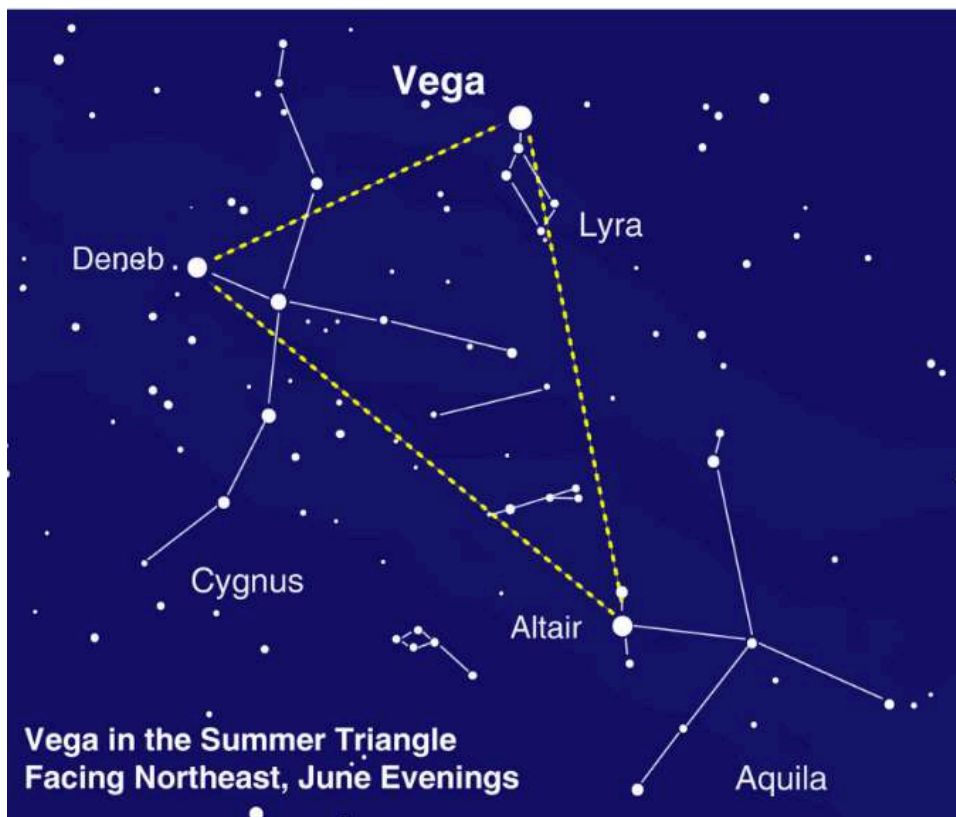
Vega is the brightest star in the small Greek constellation of Lyra, the harp. It's also one of the three points of the large "Summer Triangle" asterism, making Vega one of the easiest stars to find for novice stargazers. Ancient humans from 14,000 years ago likely knew Vega for another reason: it was the Earth's northern pole star! Compare Vega's current position with that of the current north star, Polaris, and you can see how much the direction of Earth's axis changes over thousands of years. This slow movement of axial rotation is called precession, and in 12,000 years Vega will return to the northern pole star position. Bright Vega has been observed closely since the beginning of modern astronomy and even helped to set the standard for the current magnitude scale used to categorize the brightness of stars. Polaris and Vega have something else in common, besides being once and future pole stars: their brightness varies over time, making them variable stars. Variable stars' light can change for many different reasons. Dust, smaller stars, or even planets may block the light we see from the star. Or the star itself might be unstable with active sunspots, expansions, or eruptions changing its brightness. Most stars are so far away that we only record the change in light, and can't see their surface.

NASA's TESS satellite has ultra-sensitive light sensors primed to look for the tiny dimming of starlight caused by transits of extrasolar planets. Their sensitivity also allowed TESS to observe much smaller pulsations in a certain type of variable star's light than previously observed. These observations of Delta Scuti variable stars will help astronomers model their complex interiors and make sense of their distinct, seemingly chaotic, pulsations. This is a major contribution towards the field of astroseismology: the study of stellar interiors via observations of how sound waves "sing" as they travel through stars. The findings may help settle the debate over what kind of variable star Vega is. Find more details on this research, including a sonification demo that lets you "hear" the heartbeat of one of these stars, at: bit.ly/DeltaScutiTESS

Interested in learning more about variable stars? Want to observe their changing brightness? Check out the website for the American Association of Variable Star Observers (AAVSO) at aavso.org. You can also find the latest news about Vega and other fascinating stars at nasa.gov.



Vega possesses two debris fields, similar to our own solar system's asteroid and Kuiper belts. Astronomers continue to hunt for planets orbiting Vega, but as of May 2020 none have been confirmed. More info: bit.ly/VegaSystem Credit: NASA/JPL-Caltech



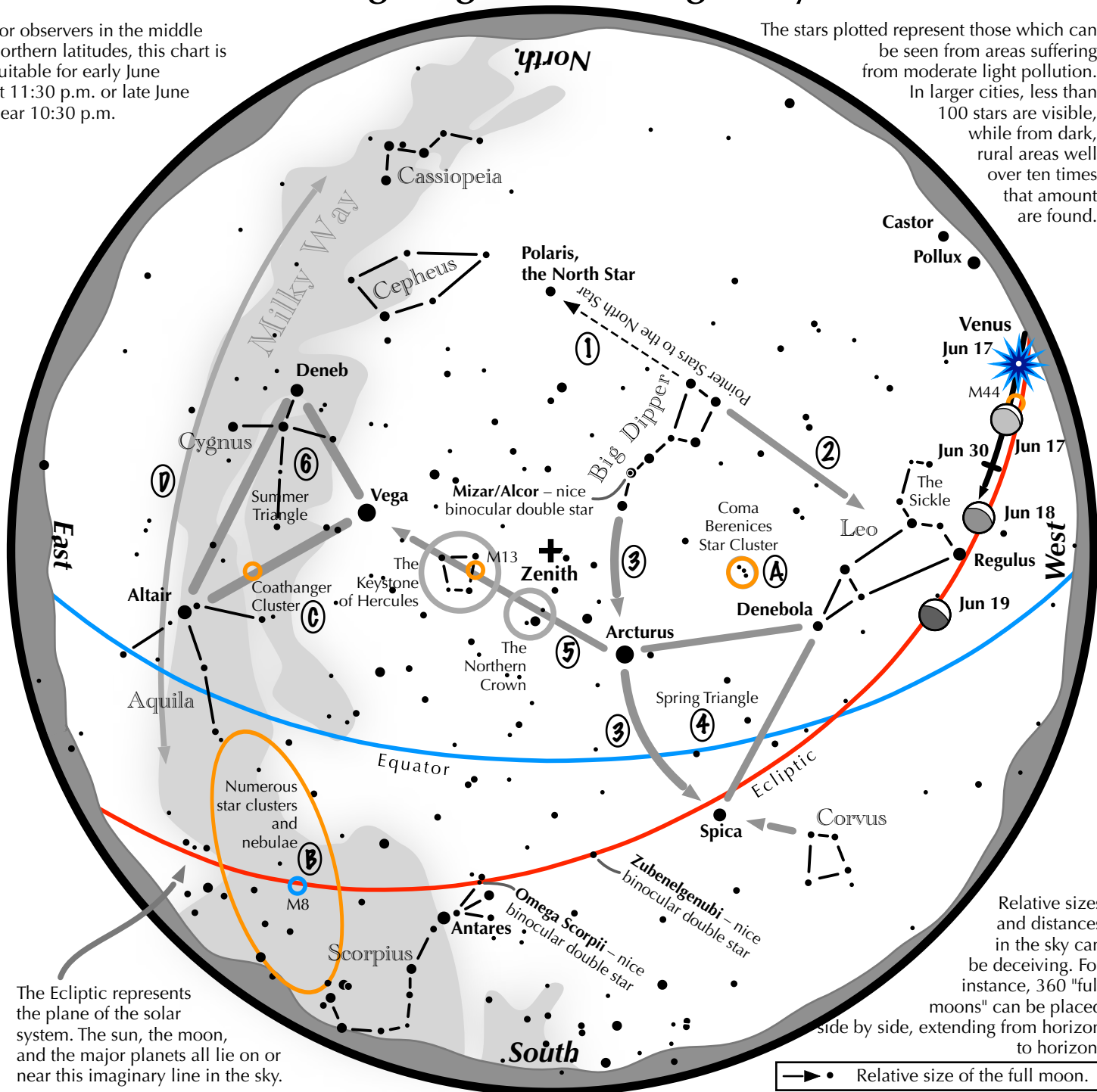
Can you spot Vega? You may need to look straight up to find it, especially if observing after midnight.

Navigating the June Night Sky

2026

For observers in the middle northern latitudes, this chart is suitable for early June at 11:30 p.m. or late June near 10:30 p.m.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

→ • Relative size of the full moon.

Navigating the June night sky: Simply start with what you know or with what you can easily find.

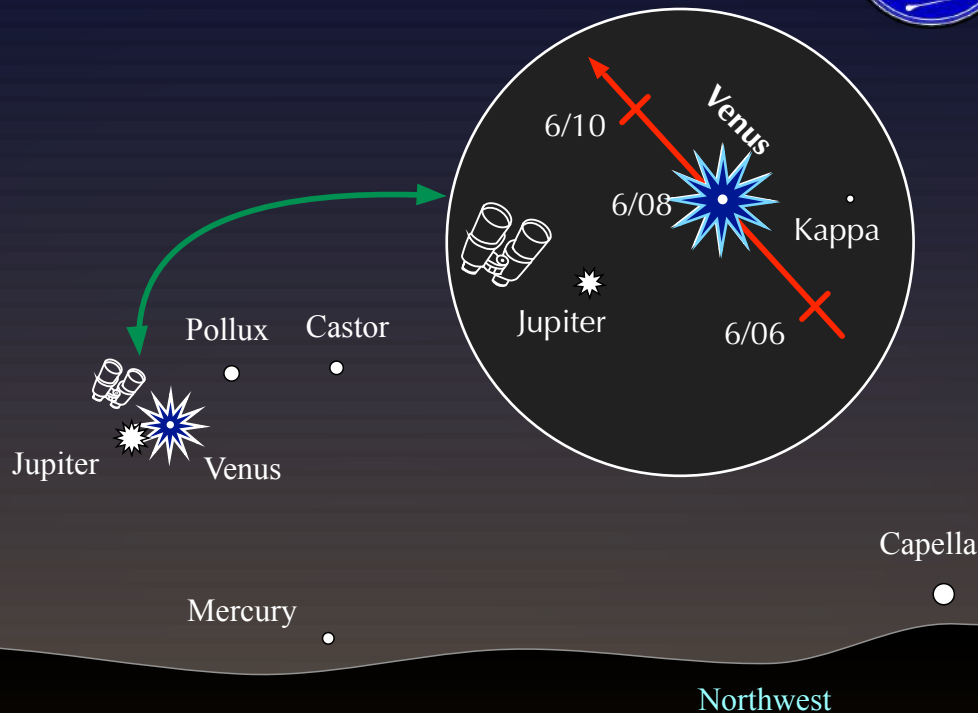
- 1 Extend a line north from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
- 2 Draw another line in the opposite direction. It strikes the constellation Leo high in the west.
- 3 Follow the arc of the Dipper's handle. It first intersects Arcturus, the brightest star in the June evening sky, then Spica.
- 4 Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
- 5 To the northeast of Arcturus shines another star of the same brightness, Vega. Draw a line from Arcturus to Vega. It first meets "The Northern Crown," then the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.
- 6 High in the east are the three bright stars of the Summer Triangle: Vega, Altair, and Deneb.

Binocular Highlights

- A: Between Denebola and the tip of the Big Dipper's handle, lie the stars of the Coma Berenices Star Cluster.
- B: Between the bright stars of Antares and Altair, hides an area containing many star clusters and nebulae.
- C: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
- D: Sweep along the Milky Way for an astounding number of faint glows and dark bays.



Regulus



**If you can see only one celestial event this June,
see this one.**

Brilliant Venus passes bright Jupiter

Look to the west-northwest 60 minutes after sunset in early June as the Venus/Jupiter gap narrows.

- On June 8, brilliant, unmistakable Venus lies slightly below and right of the lesser Jupiter.
- The next evening finds Venus having moved slightly above Jupiter.
- Then on succeeding evenings, Venus pulls above Jupiter, while the mighty planet drops toward the horizon.
- Enhance the view by using binoculars.
- All the while, the much dimmer Mercury lies close to the horizon in the bright twilight.

End your day with this enchanting meet-up!