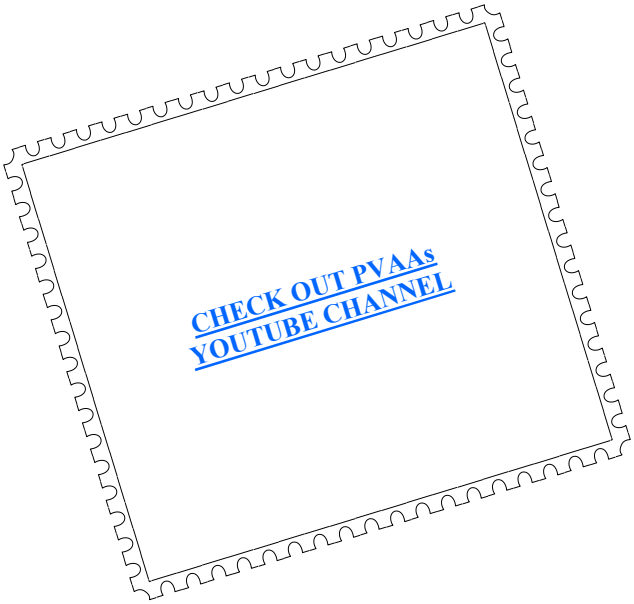
nightwatch
Newsletter of the Pomona Valley Amateur Astronomers

There was so much that you could do,
instead of looking for things that you couldn't do.
Theodore Sturgeon



Volume 45 Number 4 ***nightwatch*** **April 2025**

Club Events Calendar

Apr 2	**Board Meeting 6:15 PM**
Apr 5	**Cahuilla/Joat Park in Claremont**
Apr 11	**General Meeting 7:30 PM Alex McConahay "So You Want to be an Astroimager…"**
Apr 26	**Star Party–GMARS**
Apr 30	**Board Meeting 6:15 PM**
May 9	**General Meeting 7:30 PM**
May 24	**Star Party – GMARS**
Jun 4	**Board Meeting 6:15 PM**
Jun 13	**General Meeting 7:30 PM**
Jun 21	**Star Party – White Mountain**
July 2	**Board Meeting 6:15 PM**
July 11	**General Meeting 7:30 PM**
July 26	**Star Party – GMARS**
July 30	**Board Meeting**
Aug 8	**General Meeting 7:30 PM**
Aug 23	**Star Party – GMARS**
Aug 27	**Board Meeting**
Sep 5	**General Meeting 7:30 PM**
Sept 20	**Star Party – GMARS**
Oct 1	**Board Meeting 6:15 PM**
Oct 10	**General Meeting 7:30 PM**
Oct 18	**Star Party – GMARS**
Oct 29	**Board Meeting 6:15 PM**
Nov 7	**General Meeting 7:30 PM**
Nov 22	**Star Party – GMARS**
Dec 3	**Board Meeting 6:15 PM**
Dec 6	**Holiday Party**

PVAA Officers and Board

Officers

President ….....	Mathew Wedel	909-767-9851
Vice President ..	Joe Hillberg	909-949-3650
Secretary	position is currently open	
Treasurer	Gary Thompson	909-935-5509

Board

Jim Bridgewater (2026).....	909-599-7123
Richard Wismer(2026)	
Ron Hoekwater (2025).....	909-706-7453
Howard Maculsay (2025)……	909-913-1195

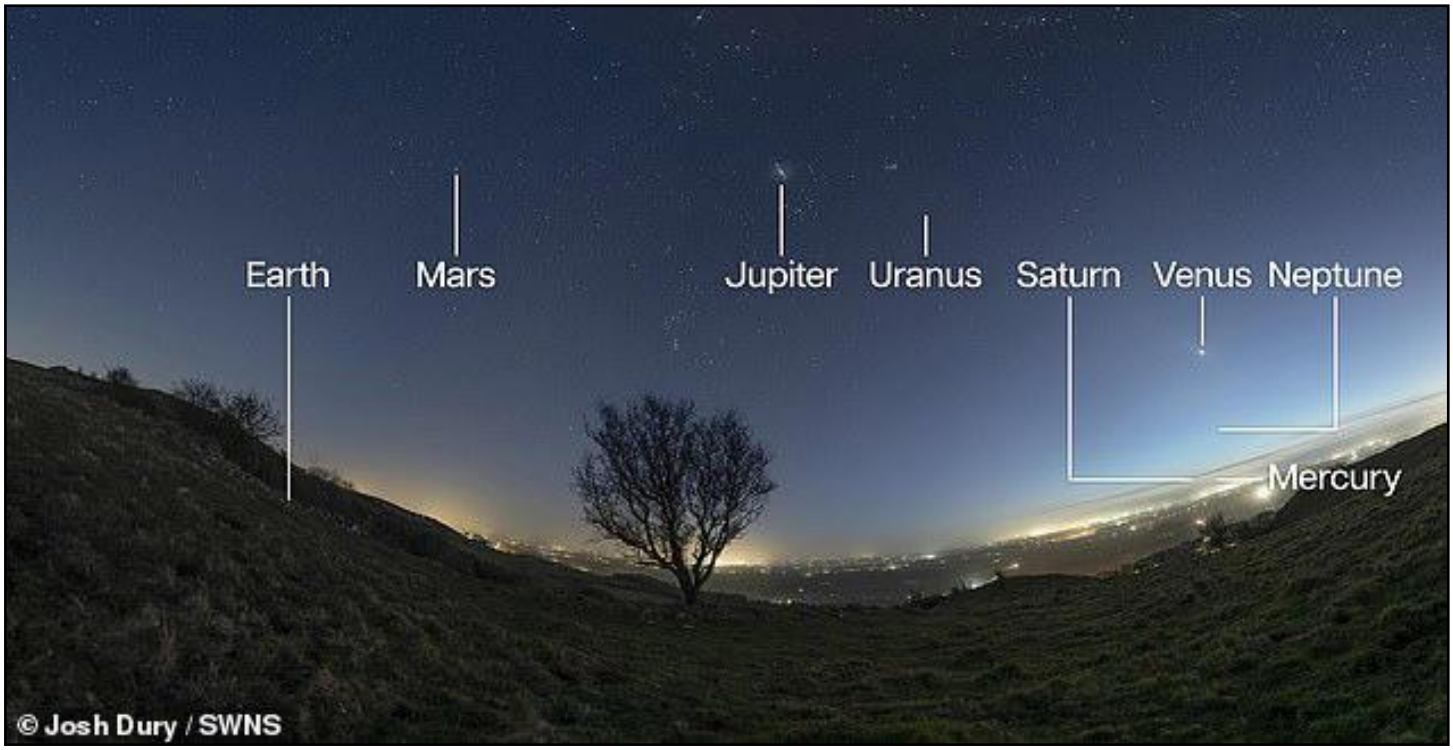
Directors

Membership / Publicity....	Gary Thompson .	909-935-5509
Outreach	Jeff Schroeder	909-758-1840
Programs	Ron Hoekwater	909-391-1943

March 14 PVAA General Meeting

Jeff Schroeder started off the March meeting with pictures of the lunar eclipse that went from late March 13th to early morning March 14th. With a generally cloudy sky, his perseverance paid off with 15 great shots of the eclipse.

Ken Elchert followed with his "Astronomical & Aerospace Events March 14 to April 14, 2025' report. On March 23rd Earth crossed Saturn's ring plane, and being "edge-on" they would disappear. This year it didn't matter, as Saturn is on the other side of the Sun. On April 5th, the Moon will have a conjunction with the star Pollox (2 degrees away) and Mars (2.2 degrees). You can see all 8 planets all in a row (using a telescope for Neptune & Uranus), which won't happen again in our lifetimes.



First image of all 8 planets captured in a single picture Feb 22,2025 near Somerset, England by Josh Dury.

Successful Lunar Landings

	Mission	Launch Date	Landing Date	Country	Organization	Location	Manned?	
	Luna 9	Jan. 31, 1966	Feb. 3, 1966	USSR		Near Side	Unmanned	
2.	Surveyor 1	May 30, 1966	June 2, 1966	US	NASA	Near Side	Unmanned	
3.	Luna 13	Dec. 21, 1966	Dec. 24, 1966	USSR		Near Side	Unmanned	
4.	Surveyor 3	Apr. 17, 1967	Apr. 20, 1967	US	NASA	Near Side	Unmanned	
5.	Surveyor 5	Sept. 8, 1967	Sept. 11, 1967	US	NASA	Near Side	Unmanned	
6.	Surveyor 6	Nov. 7, 1967	Nov. 10, 1967	US	NASA	Near Side	Unmanned	
7.	Surveyor 7	Jan. 7, 1968	Jan. 10, 1968	US	NASA	Near Side	Unmanned	
8.	Apollo 11	July 16, 1969	July 20, 1969	US	NASA	Near Side	Manned	
9.	Apollo 12	Nov. 14, 1969	Nov. 19, 1970	US	NASA	Near Side	Manned	
10.	Luna 16	Sept. 12, 1970	Sept. 20, 1970	USSR		Near Side	Unmanned	
11.	Luna 17	Nov. 10, 1970	Nov. 17, 1970	USSR		Near Side	Unmanned	
12.	Apollo 14	Jan. 31, 1971	Feb. 5, 1971	US	NASA	Near Side	Manned	
13.	Apollo 15	July 26, 1971	July 30, 1971	US	NASA	Near Side	Manned	
14.	Luna 20	Feb. 14, 1972	Feb. 21, 1972	US	NASA	Near Side	Unmanned	
15.	Apollo 16	Apr. 16, 1972	Apr. 21, 1972	US	NASA	Near Side	Manned	
16.	Apollo 17	Dec. 7, 1972	Dec. 11, 1972	US	NASA	Near Side	Manned	
17.	Luna 21	Jan. 8, 1973	Jan. 15, 1973	USSR		Near Side	Unmanned	
18.	Luna 23	Oct. 28, 1974	Nov. 6, 1974	USSR		Near Side	Unmanned	← Partial success (fell over)
19.	Luna 24	Aug. 9, 1976	Aug. 18, 1976	USSR		Near Side	Unmanned	
37-yr gap → 20.	Chang'e 3	Dec. 1, 2013	Dec. 14, 2013	China	CNSA	Near Side	Unmanned	
21.	Chang'e 4	Dec. 7, 2018	Jan. 3, 2019	China	CNSA	Far Side	Unmanned	
22.	Chang'e 5	Nov. 23, 2020	Dec. 1, 2020	China	CNSA	Near Side	Unmanned	
23.	Chandrayaan-3	July 14, 2023	Aug. 23, 2023	India	ISRO	Near Side	Unmanned	
24.	SLIM	Sept. 6, 2023	Jan. 19, 2024	Japan	JAXA	Near Side	Unmanned	← Landed on its side
25.	Nova-C Odysseus	Feb. 14, 2024	Feb. 22, 2024	US	Intuitive Machines	Near Side	Unmanned	
26.	Chgang'e 6	May 3, 2024	June 1, 2024	China	CNSA	Far Side	Unmanned	
27.	Blue Ghost	Jan. 15, 2025	Mar. 2, 2025	US	Firefly Aerospace	Near Side	Unmanned	
28.	IM-2/Athena	Feb. 26, 2025	Mar. 5, 2025	US	Intuitive Machines	Near Side	Unmanned	← Partial success (fell over)

Hubble: M51 Whirlpool Galaxy

The Andromeda Galaxy (Messier 31), image: Giuseppe Donatiello (CC0 1.0)

As of this writing, Fram2 launched 4 civilians into a polar orbit onboard a SpaceX Dragon spacecraft, being above a pole of the Earth every 45 minutes. Their 'zero-G' indicator is a stuffed toy polar bear.

The Blue Ghost Lunar Lander built by Firefly landed successfully on the moon, while the Athena lander by Intuitive Machines fell over on its side.

Butch Wilmore and Suni Williams returned to Earth. They launched to the ISS aboard a Boeing Starliner spacecraft, and returned on a SpaceX Dragon, spending 286 days in space.

NASA wants your ideas for a Zero Gee Indicator. Submit your idea to: **http://www.freelancer.com/moon-mascot**

Our main speaker of the night was Carey Sublette of the Riverside Astronomical Society. The title of his talk was "It's a Mess (ier)!." The subject was Charles Messier and the Messier catalog of 45 objects that expanded to 110. In 1774 he published his list of 45 objects. In 1780 it was expanded to 80 objects and expanded again to 103 objects in 1784. Based on Messier's notes, later astronomers added objects 104 through 110, where it stands today.

To be clear, Messier does not take credit for discovering these objects, they were just compiled together in his list. He does get credit for discovering 13 comets and co-discovering C/1801 N1 (Pons). He was made a fellow of the Royal Society in 1764. In 1769 he was elected a foreign member of the Royal Swedish Academy of Sciences, and in 1770 he was elected to the French Academy of Sciences. He was given the nickname "Ferret of Comets" by King Louis XV.

He called his 1774 list "Catalog of Nebulae and Clusters of Fixed Stars." (His day Deep Sky Objects.) However Messier 40 is only a double star in Ursa Major. Charles Messier never said his list was to eliminate objects when looking for comets. His list today is usually attributed to comet hunting, what to ignore. However, Mr. Sublette does not believe this to be true. These items are just his observations of what others have already seen but never cataloged carefully. He recorded his observations, not objects.

From the Paris latitude, Messier's catalog contains 97% of the 33 brightest, 96% of the 50 brightest, 93% of the 75 brightest, and 87% of the 100 brightest. M40 is considered 'Messier's mistake', as it is only a double star. Actually, another astronomer earlier had published a nebulous object at M40's coordinates. Messier then did his observation, with it only being a double star, not a nebulous object. So, in fact he is stating that the nebulous object is not in fact there.

After Herschel published his catalog, Messier stopped, as he couldn't compete with Herschel's large telescopes. Herschel was systematically cataloging thousands of newly found nebulae that could only be seen with large aperture telescopes. M110 is expected to be the final entry in the Messier catalog.

Gary Thompson

The Moon Puts on a Show

We were not planning to do to the dark site this month, so there are no deep sky pictures. But skies cleared just in time for the total lunar eclipse during the full moon on March 13. Since it appeared that it would be cloudy, I didn't take a telescope out. Instead, I used the tried and true, DSLR camera on a tripod setup.

Lunar eclipses occur when the Earth lines up perfectly between the Sun and the Moon. The shadow of the Earth crosses the Moon, and during totality, the only illumination comes from reflected light passing through the Earth's atmosphere. That's why the Moon appears orange as the light passes through all the sunsets and sunrises around the world. There are two phases of a lunar eclipse, the penumbral and umbral phases. The penumbral phase begins when Moon enters the partial shadow of the Earth and the umbral phase begins when the Moon enters the full shadow of the Earth. To give you a feeling of what is happening, imagine you're on the Moon watching the Earth cover the Sun. As the Earth begins to cover the Sun, a partial "solar" eclipse occurs, and the Moon enters the penumbral shadow of the Earth. When the Earth fully covers the Sun, a total "solar" eclipse occurs, and the Moon enters the umbral shadow of the Earth. The phases occur in reverse as the Earth continues across the Sun. From the Earth, the penumbral phase is sometimes difficult to see. This month's lunar eclipse entered totality around 11:20 pm local time on March 13 and ended about 12:40 am on March 14. Eclipse times where you are located would have been different.

The attached image is a single image taken from the backyard using a Canon EOS 80D and EF-S55-250mm lens. The lens was set to 250mm zoom and manually focused. The shot is a 4 second exposure with the camera set to f/11 and ISO 800. The image was imported into Photoshop, cropped, and then stretched. Sharpening of the image was done in Photoshop and in PixInsight. A few stars can be seen around the moon but there weren't enough to plate solve, however, the eclipse occurred at the border between Leo and Virgo.

Sorry it's a short write-up this month. Hopefully, we will get under dark skies again soon in April and I can catch some galaxies. Clear skies until next time.

Ron Ugolick

https://www.astrobin.com/users/ruccdu/

NASA Night Sky Notes April 2025

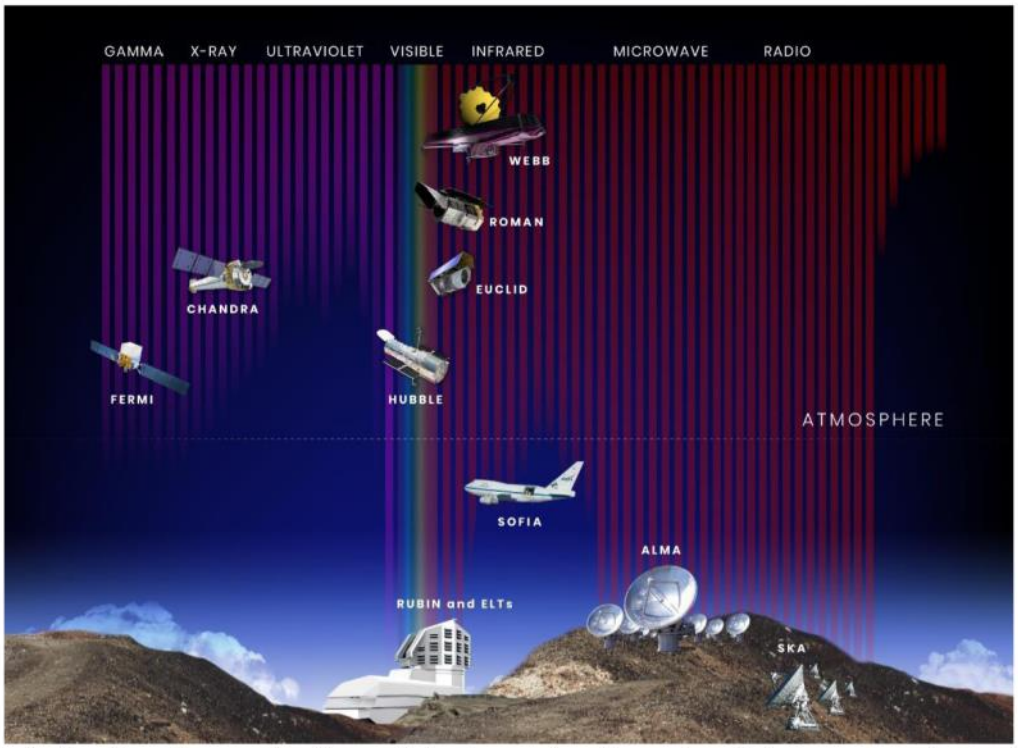
This article is distributed by NASA's Night Sky Network (NSN).
The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

April's Night Sky Notes: Catch the Waves!

By Kat Troche

The Electromagnetic Spectrum

If you've ever heard the term "radio waves," used a microwave or a television remote, or had an X-ray, you have experienced a broad range of the electromagnetic spectrum! But what is the electromagnetic spectrum? According to Merriam-Webster, this spectrum is *"the entire range of wavelengths or frequencies of electromagnetic radiation extending from gamma rays to the longest radio waves and including visible light."* But what does **that** mean? Scientists think of the entire electromagnetic spectrum as many types of light, only some that we can see with our eyes. We can detect others with our bodies, like infrared light, which we feel as heat, and ultraviolet light, which can give us sunburns. Astronomers have created many detectors that can "see" in the full spectrum of wavelengths.



This illustration shows the wavelength sensitivity of a number of current and future space- and ground-based observatories, along with their position relative to the ground and to Earth's atmosphere. The wavelength bands are arranged from shortest (gamma rays) to longest (radio waves). The vertical color bars show the relative penetration of each band of light through Earth's atmosphere. Credit: NASA, STScI

NASA Night Sky Notes April 2025

Telescope Types

While multiple types of telescopes operate across the electromagnetic spectrum, here are some of the largest, based on the wavelength they primarily work in:

- **Radio:** probably the most famous radio telescope observatory would be the Very Large Array (VLA) in Socorro County, New Mexico. This set of 25-meter radio telescopes was featured in the 1997 movie Contact. Astronomers use these telescopes to observe protoplanetary disks and black holes. Another famous set of radio telescopes would be the Atacama Large Millimeter Array (ALMA) located in the Atacama Desert in Chile. ALMA was one of eight radio observatories that helped produce the first image of supermassive black holes at the center of M87 and Sagittarius A* at the center of our galaxy. Radio telescopes have also been used to study the microwave portion of the electromagnetic spectrum.

- **Infrared:** The James Webb Space Telescope (JWST) operates in the infrared, allowing astronomers to see some of the earliest galaxies formed nearly 300 million years after the Big Bang. Infrared light allows astronomers to study galaxies and nebulae, which dense dust clouds would otherwise obscure. An excellent example is the Pillars of Creation located in the Eagle Nebula. With the side-by-side image comparison below, you can see the differences between what JWST and the Hubble Space Telescope (HST) were able to capture with their respective instruments.

NASA's Hubble Telescope captured the Pillars of Creation in 1995 and revisited them in 2014 with a sharper view. Webb's infrared image reveals more stars by penetrating dust. Hubble highlights thick dust layers, while Webb shows hydrogen atoms and emerging stars. You can find this and other parts of the Eagle Nebula in the Serpens constellation. Credit: NASA, ESA, CSA, STScI, Hubble Heritage Project (STScI, AURA)

- **Visible:** While it does have some near-infrared and ultraviolet capabilities, the Hubble Space Telescope (HST) has primarily operated in the visible light spectrum for the last

35 years. With over 1.6 million observations made, HST has played an integral role in how we view the universe. Review Hubble's Highlights here.

The Crab Nebula, located in the Taurus constellation, is the result of a bright supernova explosion in the year 1054, 6,500 light-years from Earth. Credit: X-ray: NASA/CXC/SAO; Optical: NASA/STScI; Infrared: NASA/JPL/Caltech; Radio: NSF/NRAO/VLA; Ultraviolet: ESA/XMM-Newton

- **X-ray:** Chandra X-ray Observatory was designed to detect emissions from the hottest parts of our universe, like exploding stars. X-rays help us better understand the composition of deep space objects, highlighting areas unseen by visible light and infrared telescopes. This image of the Crab Nebula combines data from five different telescopes: The VLA (radio) in red; Spitzer Space Telescope (infrared) in yellow; Hubble Space Telescope (visible) in green; XMM-Newton (ultraviolet) in blue; and Chandra X-ray Observatory (X-ray) in purple. You can view the breakdown of this multiwavelength image here.

Try This At Home

Even though we can't see these other wavelengths with our eyes, learn how to create multiwavelength images with the Cosmic Coloring Compositor activity and explore how astronomers use representational color to show light that our eyes cannot see with our Clues to the Cosmos activity.