PrimeFocus

February 2025

WHEN:

February 21, 2024
Doors open at 7:00pm
Meeting at 7:30pm
Lecture at 8:00pm

WHERE:

Unitarian Church
1893 North Vasco Rd.
Livermore, CA 94551
and via Zoom

TVS QR CODE

INSIDE THIS ISSUE:

CITIZEN SCIENCE, VARIABLE STARS, AND THE AAVSO BRIAN KLOPPENBORG

"Citizen Science, Variable Stars, and the AAVSO" introduces the exciting world of citizen science in astronomy, focusing on how you can actively contribute to scientific discovery. The talk covers engaging citizen science projects, such as those on Zooniverse, and collaborations like JunoCAM, IOTA, and SAS. It includes a detailed look at variable stars, featuring examples like SS Cyg, T CrB, and Cepheid variables, and highlights recent discoveries, such as the Great Dimming of Betelgeuse and the newly discovered Iota Del. Finally, the talk introduces the AAVSO, its resources, and how you can start observing variable stars either visually or digitally.

NASA, ESA, and the Hubble Heritage Team (STScI/AURA)-Hubble/Europe Collaboration; Acknowledgment: H. Bond (STScI and Pennsylvania State University).

Continues to page 2.

Citizen Science continued.

Dr. Brian Kloppenborg is an astrophysicist and entrepreneur currently serving as the Executive Director of the AAVSO. He earned a Ph.D. in Physics with an astrophysics specialization from the University of Denver and a B.A. in Physics from Hastings College. Before joining the AAVSO, Dr. Kloppenborg worked as a Research Scientist at the Georgia Tech Research Institute, where he led multidisciplinary teams as a subject matter expert, lead engineer, product owner, and project director.

Dr. Kloppenborg's research focuses on combining photometry, spectroscopy, astrometry, and long-baseline optical interferometry to deepen our understanding of eclipsing binaries, novae, and young stellar objects. His work has been published in esteemed journals, including Nature, The Astrophysical Journal, and the Journal of the AAVSO.

Throughout his career, Dr. Kloppenborg has been dedicated to fostering collaboration between amateur and professional astronomers, advancing scientific discovery, and promoting educational outreach in astronomy.

NEWS AND NOTES

2025 Meeting Dates

Club Meeting	Board Meeting	PrimeFocus Deadline
Feb. 21	Feb. 24	Feb. 8
Mar. 21	Mar. 24	Mar. 9
Apr. 18	Apr. 21	Apr. 6

Money Matters

As of the last Treasurer's Report on 1/20/25, our club's account balance is $49,359.82, this includes $13,104.47 in the H2O Rebuild fund.

TVS Welcomes New Members

TVS welcomes new members Natasha Ruble and Nitin Duggal. Please say hello and chat with them during our meetings.

2025 TVS Club Star Party Schedule

Save the dates for the 2025 Club Star Parties.
Del Valle star parties are also public outreach events. They are jointly hosted with the EBRPD and held at the Arroyo Staging Area (Coords: 37.6196638, -121.7528899). The public is invited for the first 1.5-2 hours, while club members can stay the remainder of the night.
No events currently scheduled.

Tesla Vintners star parties are open to only club members and their guests. These star parties end at midnight, but participants can leave earlier, should they wish.
No events currently scheduled.

H2O Open House star parties are open to only club members and their guests. The open house ends at midnight, and all participants are encouraged to stay the duration. The drive to H2O takes about 1 hour, and the caravan leaves promptly from the corner of Mines and Tesla Rds. No gas stations are available on the route, so be prepared. Admission is $3/car-bring exact change. H2O is a primitive site with two porta-potties. Bring water, food, and warm clothing, as needed. Red flashlights are to be used so observers can preserve their night vision.
No events currently scheduled.

Feb 27: School star party at Sunset Elementary School in Livermore. Sunset Elementary School, 1671 Frankfurt Way, Livermore. Set up 5:00pm, observing from 5:30pm to 7:30pm.

Feb 28: Star party at Muslim Community Center, 5724 W Las Positas, Pleasanton. Set up starts 5:00. We plan to finish about 8:00. Food trucks on site.

Mar 13: School star party ay Kolb Elementary School, 3150 Palermo Way, Dublin. Set up 6:30pm, observing 7:30pm-9:00pm.

CALENDAR OF EVENTS

February 21,22, 28,
March 1, 7, 8, 14, 15, 21,22, 7:30-10:30 PM

What	Free Telescope Viewing
Who	Chabot Staff
Where	Chabot Space and Science Center, 10000 Skyline Blvd. Oakland, CA 94619
Cost	Free

Join Chabot astronomers on the Observatory Deck for a free telescope viewing! Weather permitting, this is a chance to explore stars, planets and more through Chabot's historic telescopes. Chabot's three large historic telescopes offer a unique way to experience the awe and wonder of the Universe. Three observatory domes house the Center's 8-inch (Leah, 1883) and 20-inch (Rachel, 1916) refracting telescopes, along with a 36-inch reflecting telescope (Nellie, 2003).

Are the skies clear for viewing tonight? Viewing can be impacted by rain, clouds, humidity and other weather

conditions. Conditions can be unique to Chabot because of its unique location in Joaquin Miller Park. Before your visit, check out the Weather Station to see the current conditions at Chabot.

For more information, see:
https://chabotspace.org/events/events-listing/
https://eastbayastro.org/chabot-telescope-status/

March 3, 7:30 PM

What	Reconstructing Our Galactic Story with Stellar Sound
Who	California Academy of Sciences
Where	Morrison Planetarium; 55 Music Concourse Drive, San Francisco, CA 94118
Cost	Public: $15; Members and seniors: $12

Why are we here? Although we may think we know our place in the Galaxy, the Sun was likely born far from where it resides today. In recent years, ESA's space-based Gaia satellite and NASA's K2, Kepler, and TESS missions have helped to uncover not only our own Sun's history but that of our stellar neighbors. While the field of Galactic archaeology has uncovered some of the stories of our Galaxy, decades-old mysteries still remain about how the Galaxy formed and evolved --- touching on larger, age-old questions of why life exists.

In this talk, we will explore how stellar sound waves are revealing the origins of the Milky Way and our place in it. From the Sun's home here in the Galaxy's disc to the graveyard of disintegrated galaxies surrounding us, we will tour through the halls of the Milky Way as seen by ESA and NASA missions. Along the way, we will retrace how generations of stars have set the stage for life here and elsewhere in the Galaxy. We will also preview how upcoming space-based missions may unearth secrets of the oldest regions of the Galaxy.

Dr. Joel C. Zinn is an Assistant Professor of Physics and Astronomy at California State University, Long Beach, where his research focuses on studying stellar sound waves---asteroseismology---to explore the physics of red giant stars and the evolution of the Milky Way. Dr. Zinn's work has helped establish asteroseismology as a reliable tool for astrophysical investigations. He led the analysis for the K2 Galactic Archaeology Program, producing the largest asteroseismic catalog in the literature, and his ongoing research continues to use space-based data from missions like Kepler, TESS, and Gaia.

Dr. Zinn previously held an NSF Astronomy and Astrophysics Postdoctoral Fellowship at the American Museum of Natural History and completed a postdoctoral appointment at the University of New South Wales. His doctoral research at Ohio State University contributed to refining distance scales for stars using Gaia data. Since 2023, he has directed astronomy outreach efforts at CSULB, and launched a mobile planetarium initiative that brings astronomy to local schools. Dr. Zinn is also interested in the intersection of art and astronomy, having developed interdisciplinary theatre and dance curricula at the American Museum of Natural History.

For more information, see:
https://www.calacademy.org/events/benjamin-dean-astronomy-lectures/reconstructing-our-galactic-story-with-stellar-sound

March 5, 7:00 PM

What	Copernicus 4.0: How Our Views of Earth's Importance and the Search for Life are Changing
Who	Silicon Valley Astronomy Lecture Series
Where	Smithwick Theater (Bldg. 1000), see: https://foothill.edu/map/
Cost	Free

Copernicus' work in 1543 was the kick-off date in the cosmic decentralization of Planet Earth. First, we were relegated to be just another planet in the solar system, then our sun to being just another star in the Milky Way. Now our galaxy seems to be just a suburban member of a regional supercluster. What has remained stubbornly geocentric is our understanding of life and intelligence in the cosmos. But for how much longer? New discoveries and technological advances are accelerating us towards a cosmic vision of Earth as part of a living and thinking universe. This talk will focus on the latest research and observations, at the SETI Institute and elsewhere, about the search for life and intelligence in the Milky Way, and beyond.

Dr. Simon Steel is Deputy Director of the Carl Sagan Center for Research at the SETI Institute and Principal Investigator for the NASA Community College Network. Simon's background is in extragalactic astrophysics; for his research, he studied star formation in Blue Compact Dwarf galaxies. As a science educator and communicator of over 25 years, Simon has taught at Harvard University, Tufts University, and University College London. His experience spans formal and informal education, teacher training, museum exhibit design and multimedia product development. He has an interest in special needs audiences and co-wrote, for NASA and the Chandra X-Ray Center, the first Braille book on multiwavelength astrophysics: Touch the Invisible Sky.

Ghost of Cassiopeia (IC 63), by Mark Hai Du
For a full resolution image see https://app.astrobin.com/i/gmk4ib

WHATS UP

Adapted from Sky & Telescope

All times are Pacific Standard Time

February 2025

20	Thu	Moon is at third quarter
21	Fri	In the morning moon is just 1° from Antares, the heart of Scorpius.
24	Mon	At dusk looking west Mercury and Saturn are just 1½° apart
28	**Fri**	**New Moon**

March 2025

1	Sat	At dusk Moon is 6° lower left of Venus, Mercury is near the horizon
5	Wed	Looking west, Moon, Jupiter, and the Pleiades from shallow triangle in Taurus
6	Thu	Moon at first quarter
8	Sat	At dusk, while looking high in the southeast in Gemini, Mars is just 1° lower left of the Moon, while Pollux shines 5° lower left of the pair Algol shines at minimum brightness from about 9:48pm to 11:48pm
9	Sun	Day Light Saving Time begins at 2:00am
11-12	Tue-Wed	Moon and Regulus arc across sky in tandem. The distance between them shrinks from about 3½° to about 1° when they set in the west before dawn
14	**Fri**	**Full Moon**
16	Sun	In the morning while facing south-southwest to see the Moon just 4½° right of Spica
20	Thu	Spring begins at equinox 2:01am

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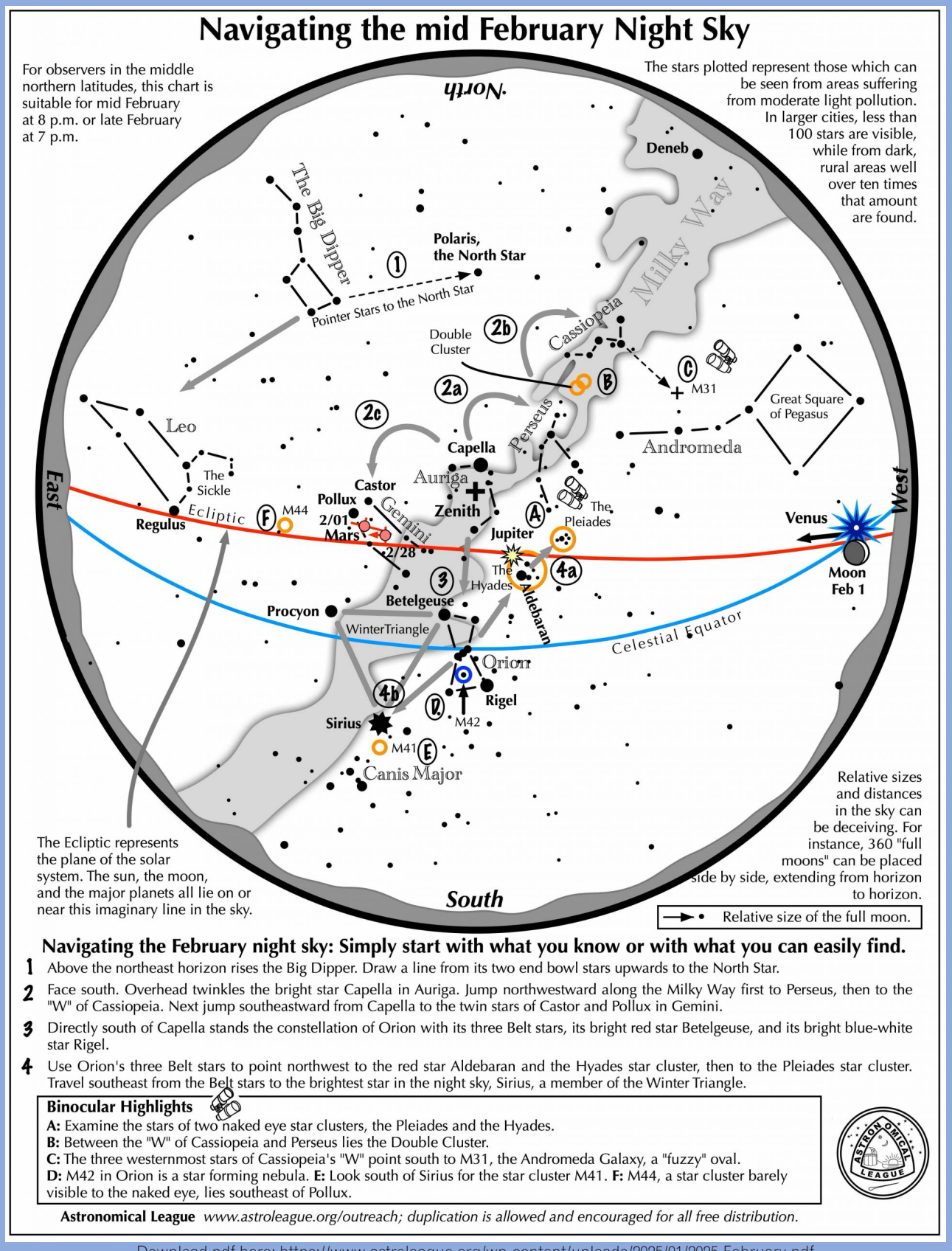
TVS E-Group
To Join the TVS E-Group just send an email to TVS at info@trivalleystargazers.org asking to join the group. Make sure you specify the email address you want to use to read and post to the group.

NAVIGATING THE NIGHT SKY FOR FEBRUARY



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

1. Above the northeast horizon rises the Big Dipper. Draw a line from its two end bowl stars upwards to the North Star.
2. Face south. Overhead twinkles the bright star Capella in Auriga. Jump northwestward along the Milky Way first to Perseus, then to the "W" of Cassiopeia. Next jump southeastward from Capella to the twin stars of Castor and Pollux in Gemini.
3. Directly south of Capella stands the constellation of Orion with its three Belt stars, its bright red star Betelgeuse, and its bright blue-white star Rigel.
4. Use Orion's three Belt stars to point northwest to the red star Aldebaran and the Hyades star cluster, then to the Pleiades star cluster. Travel southeast from the Belt stars to the brightest star in the night sky, Sirius, a member of the Winter Triangle.

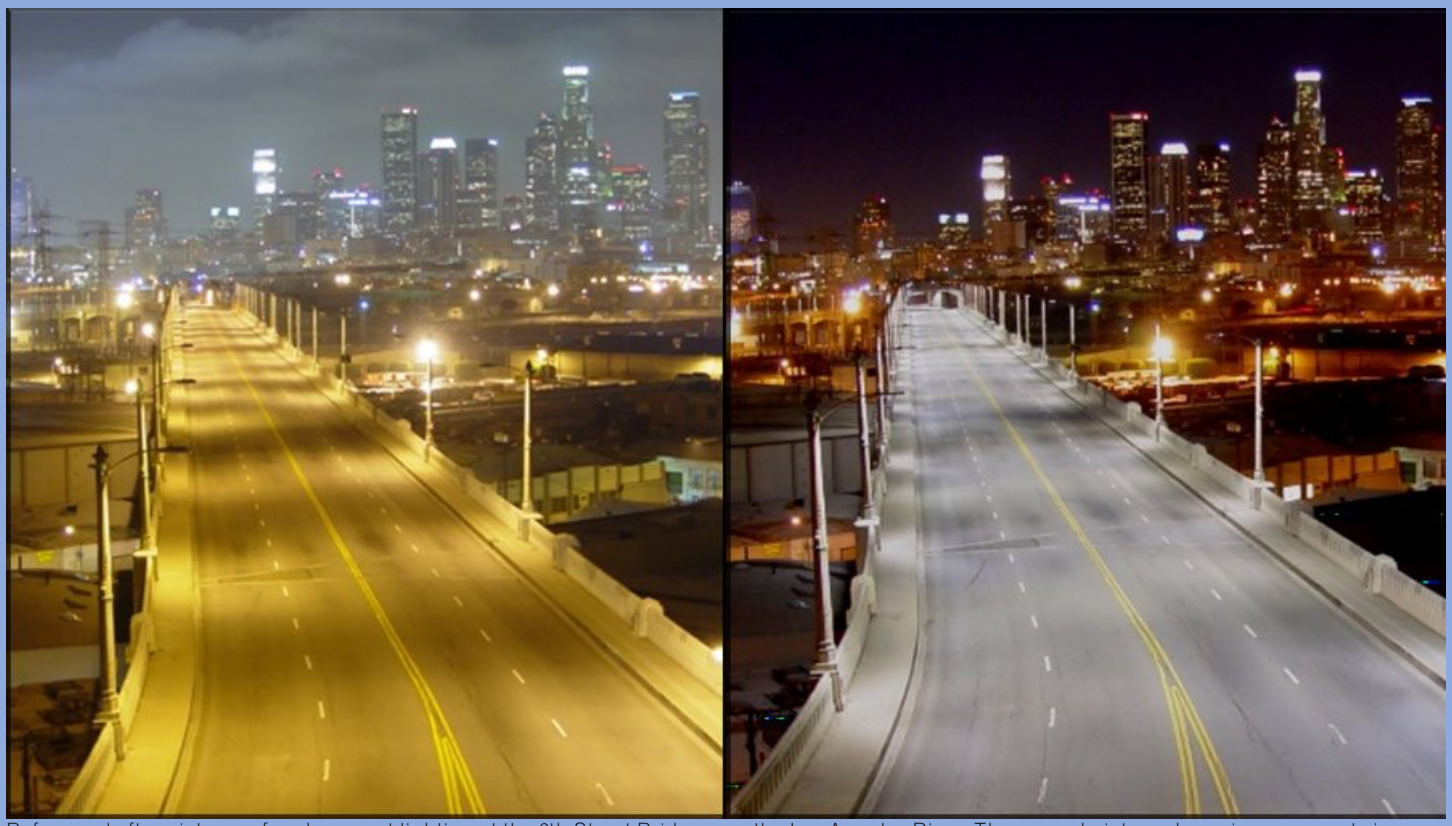
Binocular Highlights

A: Examine the stars of two naked eye star clusters, the Pleiades and the Hyades.
B: Between the "W" of Cassiopeia and Perseus lies the Double Cluster.
C: The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval.
D: M42 in Orion is a star forming nebula. **E:** Look south of Sirius for the star cluster M41. **F:** M44, a star cluster barely visible to the naked eye, lies southeast of Pollux.

Download pdf here: https://www.astroleague.org/wp-content/uploads/2025/01/2025-February.pdf

NASA NIGHT SKY NOTES

How Can You Help Curb Light Pollution?
By Dave Prosper; Updated by Kat Troche



Before and after pictures of replacement lighting at the 6th Street Bridge over the Los Angeles River. The second picture shows improvements in some aspects of light pollution, as light is not directed to the sides and upwards from the upgraded fixtures, reducing skyglow. However, it also shows the use of brighter, whiter LEDs, which is not generally ideal, along with increased light bounce back from the road. Image Credit: The City of Los Angeles

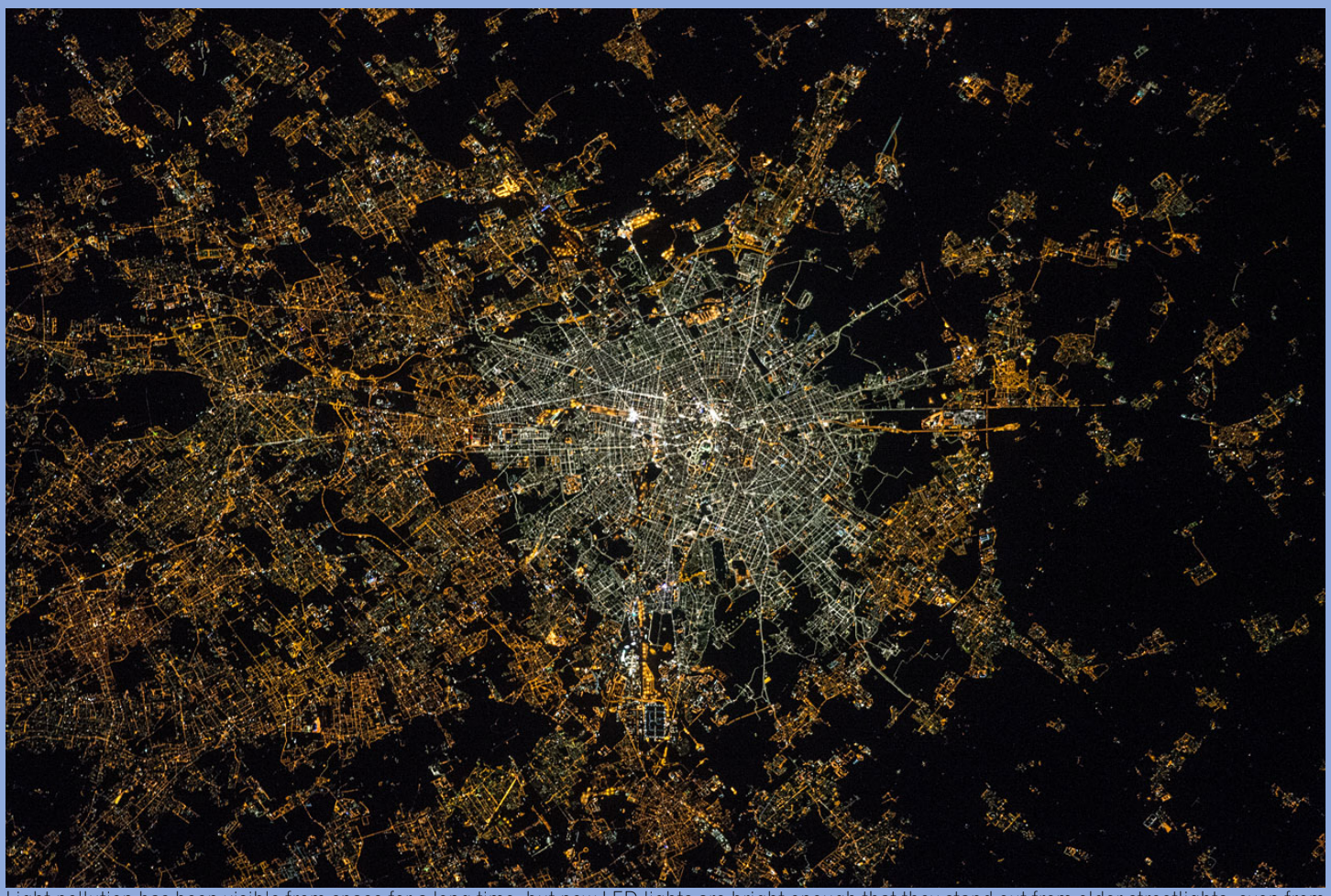
Light pollution has long troubled astronomers, who generally shy away from deep sky observing under full Moon skies. The natural light from a bright Moon floods the sky and hides views of the Milky Way, dim galaxies and nebula, and shooting stars. In recent years, human-made light pollution has dramatically surpassed the interference of even a bright full Moon, and its effects are now noticeable to a great many people outside of the astronomical community. Harsh, bright white LED streetlights, while often more efficient and long-lasting, often create unexpected problems for communities replacing their older streetlamps. Some notable concerns are increased glare and light trespass, less restful sleep, and disturbed nocturnal wildlife patterns. There is increasing awareness of just how much light is too much light at night. You don't need to give in to despair over encroaching light pollution; you can join efforts to measure it, educate others, and even help stop or reduce the effects of light pollution in your community.

Amateur astronomers and potential citizen scientists around the globe are invited to participate in the Globe at Night (GaN) program to measure light pollution. Measurements are taken by volunteers on a few scheduled days every month and submitted to their database to help create a comprehensive map of light pollution and its change over time. GaN volunteers can take and submit measurements using multiple methods ranging from low-tech naked-eye observations to high-tech sensors and smartphone apps.

Globe at Night citizen scientists can use the following methods to measure light pollution and submit their results: Their own smartphone camera and dedicated app. Manually measure light pollution using their own eyes and detailed charts of the constellations. A dedicated light pollution measurement device called a Sky Quality Meter (SQM). The

free GaN web app from any internet-connected device (which can also be used to submit their measurements from an SQM or printed-out star charts)

Night Sky Network members joined a telecon with Connie Walker of Globe at Night in 2014 and had a lively discussion about the program's history and how they can participate. The audio of the telecon, transcript, and links to additional resources can be found on their dedicated resource page.



Light pollution has been visible from space for a long time, but new LED lights are bright enough that they stand out from older streetlights, even from orbit. Astronaut Samantha Cristoforetti took the above photo from the ISS cupola in 2015. The newly installed white LED lights in the center of the city of Milan are noticeably brighter than the lights in the surrounding neighborhoods. Image Credit: NASA/ESA

The International Dark-Sky Association (IDA) has long been a champion in the fight against light pollution and a proponent of smart lighting design and policy. Their website provides many resources for amateur astronomers and other like-minded people to help communities understand the negative impacts of light pollution and how smart lighting policies can not only help bring the stars back to their night skies but also make their streets safer by using smarter lighting with less glare. Communities and individuals find that their nighttime lighting choices can help save considerable sums of money when they decide to light their streets and homes "smarter, not brighter" with shielded, directional lighting, motion detectors, timers, and even choosing the proper "temperature" of new LED light replacements to avoid the harsh "pure white" glare that many new streetlamps possess. Their pages on community advocacy and on how to choose dark-sky-friendly lighting are extremely helpful and full of great information. There are even local chapters of the IDA in many communities made up of passionate advocates of dark skies.

The IDA has notably helped usher in "Dark Sky Places", areas around the world that are protected from light pollution. "Dark Sky Parks", in particular, provide visitors with incredible views of the Milky Way and are perfect places to spot the wonders of a meteor shower. These parks also perform a very important function, showing the public the wonders of a truly dark sky to many people who may have never before even seen a handful of stars in the sky, let alone the full glorious spread of the Milky Way.

More research into the negative effects of light pollution on the health of humans and the environment is being conducted than ever before. Watching the nighttime light slowly increase in your neighborhood, combined with reading so much bad news, can indeed be disheartening! However, as awareness of light pollution and its negative effects increases, more people are becoming aware of the problem and want to be part of the solution. There is even an episode of PBS Kid's SciGirls where the main characters help mitigate light pollution in their neighborhood!

Astronomy clubs are uniquely situated to help spread awareness of good lighting practices in their local communities to help mitigate light pollution. Take inspiration from Tucson, Arizona, and other dark sky-friendly communities that have adopted good lighting practices. Tucson even reduced its skyglow by 7% (as of 2018) after its own citywide lighting conversion, proof that communities can bring the stars back with smart lighting choices.

Originally posted by Dave Prosper: November 2018
Last Updated by Kat Troche: January 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!

Tri-Valley Stargazers
P.O. Box 2476
Livermore, CA 94551
www.trivalleystargazers.org

Tri-Valley Stargazers Membership Application

Contact information:

Name: _____ Phone: _____

Street Address: _____

City, State, Zip: _____

Email Address: _____

Status (select one): _____ New member _____ Renewing or returning member

Membership category (select one): Membership term is for one calendar year, January through December.

_____ Student member ($10). Must be a full-time high-school or college student.

_____ Regular member ($30).

Hidden Hill Observatory Access (optional): Must be 18 or older.

_____ One-time key deposit ($20). This is a refundable deposit for a key to H2O. New key holders must first hear an orientation lecture and sign a usage agreement form before using the observing site.

_____ Annual access fee ($10). You must also be a key holder to access the site.

Donation (optional):

_____ Tax-deductible contribution to Tri-Valley Stargazers

Total enclosed: $ _____

Member agrees to hold Tri-Valley Stargazers, and any cooperating organizations or landowners, harmless from all claims of liability for any injury or loss sustained at a TVS function. TVS will not share information with anyone except as detailed in our Privacy Policy (http://www.trivalleystargazers.org/privacy.shtml).

Mail this completed form along with a check to: Tri-Valley Stargazers, P.O. Box 2476, Livermore, CA 94551.