

PRIMEFOCUS

Tri-Valley Stargazers



May 2020



Meeting Info: Is There a Star Party in Your Future?...There Should Be!

Who:
Dr. Curtis Macchioni

When:
May 15, 2020
Meeting at 7:30 p.m.
Lecture at 8:00 p.m.

Where:
Virtual Meeting using: Zoom*
[See p.3 about getting connected
using Zoom.](#)

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April Virtual Meeting Using "Zoom"

Is there a Star Party in Your Future? There Should Be! By Dr. Curtis Macchioni

The severe light pollution levels in the urban and suburban areas in which we live make it nearly impossible to see the Milky Way and greatly limits everything else that we are able to see from our backyards or even nearby parks. Light pollution filters and narrow band imaging help to cut through much of this background noise, but they can not truly reproduce the experience of viewing the night sky from a Bortle 1 or 2 location. This is why like-minded amateur astronomers gather together at almost monthly star parties held all across the country at remote locations in the four corners of the country (Maine, the Florida Keys, Washington State, Southern California) and all points in between. If you haven't availed yourself of one of these multi-night events you are missing out on a great opportunity to be blown away at how the night sky was meant to look. Even if you have attended a major star party or two, the talk will still be of interest and should help you in planning your next star party outing.

In this talk I will provide several reasons for you to get out of your comfort zone and attend your first remote site star party. The most obvious is dark skies, but how dark? In addition to dark skies, there are the many other great reasons to attend your first multi-day star party. We'll talk about those as well. And no star party would be complete without some great daytime adventures. We'll look at some examples from several different star parties.

If you have never attended one of these multi-day star parties you will have lots of questions. In fact, you may have avoided attending because you are unsure of what to expect. How do I plan my adventure? What should I bring? Where will I sleep? What about food and water? Will there be bathrooms and showers? What else do I need to bring to make sure that I have a good time? While every star party is unique, this talk will go over the common features of any star party to give you a leg up on preparing to have a great time. We will discuss star party etiquette and typical rules you need to follow. We will even dig into specifics for some of the major star parties you might wish to attend in the future.

Curtis Macchioni has a Ph.D. in Physics from Carnegie-Mellon University. He spent 37 years in the high tech industry working in multiple start-ups and Fortune 500 companies on everything from flat panel displays to stealth coatings for the military. For over 25 years he has worked in the hard disk drive industry where he is currently a Sr. Director in the Magnetic Heads Division of Western Digital Corporation. He first became interested in astronomy in grade school and dreamed of becoming an astronaut. He bought his first telescope, a 60mm Unitron refractor, with money saved from his paper route. After a long hiatus from the hobby, he got back into astronomy a dozen years ago. His focus has been camera assisted viewing of deep sky objects, but he is not headed in the direction of astrophotography.

News & Notes

2020 TVS Meeting Dates

Below are the TVS meeting dates for 2020. The lecture meetings are on the third Friday of the month, with the Board meetings on the Monday following the lecture meeting.

Lecture Meeting	Board Meeting	Prime Focus Deadline
May 15	May 18	
Jun. 19	Jun. 22	Jun. 05
Jul. 17	Jul. 20	Jul. 03
Aug. 21	Aug. 24	Aug. 07
Sep. 18	Sep. 21	Sep. 04
Oct. 16	Oct. 19	Oct. 02
Nov. 20	Nov. 23	Nov. 06
Dec. 18	Dec. 21	Dec. 04

Money Matters

As of the last Treasurer's Report on 04/20/20, our club's checking account balance is \$13,507,80.

TVS Welcome to New Members

TVS would like to welcome new members David Hoyt, Bruno and Korbie Le Galloudec, and Karthik Vasudevan. Please say hello and chat with them at upcoming club meetings.

H2O and Del Valle Observing Sites Closed

The TVS Board voted to temporarily terminate access the two club observing sites while the COVID-19 stay-at-home restrictions are in place. When the access restriction is lifted, club members will be informed via email and the club website.

TVS Star Party Descriptions

NOTE: ALL STAR PARTIES ARE SUBJECT TO POSSIBLE CANCELLATION PENDING THE STATUS OF THE STAY-AT-HOME ORDER!

Del Valle star parties are also public outreach events. They are jointly hosted with the EBRPD and held at the Arroyo Staging Area. The public is invited for the first 1.5-2 hours, while club members can stay the remainder of the night.

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.

H2O star parties are open to the public. 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.

Outreach Star Party Schedule

July 17- July 19: Yosemite Outreach Star Party

August 22: Bankhead Theater

Contact Eric Dueltgen if you are interested in participating (outreach"at"trivalleystargazers.org).

2020 Club Star Party Schedule

June 13: Tesla Vintners

July 25: Del Valle Arroyo

August 15: H2O

September 12: Tesla Vintners

September 19: Del Valle Arroyo

October 17: Tesla Vintners

Yosemite Outreach Star Party

This is our annual outreach star party at Glacier Point in Yosemite National Park. In return for setting up our telescopes and binoculars at Glacier Point, we get free admission to the park, and free camping (typically at the nearby Bridal Veil Creek campground). This year's Glacier Point Star Party will be Friday and Saturday nights, July 17 and 18.

The moon will be just a couple days before new, so we will have nice dark skies almost the whole night!

We will have the usual Saturday evening pot luck, and TVS will provide hamburgers, hot dogs and veggie burgers.

We are limited to 30 people total, so you must sign up ahead of time by sending an email to outreach"at"trivalleystargazers.org. Also, let me know how many people in your group, how many telescopes, how many nights, and what you want for dinner Saturday.

Barcroft High-Altitude Star Party: Reservations

Reservations for the Eastbay Astronomical Society's Barcroft High-Altitude Star Party are now open to members of both the EAS and Tri-Valley Stargazers clubs. This year's event will be held from Sunday, August 16 through Friday, August 21 (with departure by noon of Saturday, August 22).

Before sending payments for reservations (\$60 per night, per person), please FIRST contact Don Saito (donsaito"at"yahoo.com) to ensure the dates you wish to attend are available. You will also be asked to read the Barcroft Write-up, as it provides the information you'll need to have a safe, comfortable stay, and what is expected of guests to this University of California research facility.

Space at Barcroft is limited to a maximum of 12 people per day, so to ensure you get the days you want, make your reservations early.

Barcroft is one the premier amateur astronomy view sites in the world, and it's less than a day's drive from the Bay Area to its location in the White Mountains.

Reservations and information can be found at: <http://eastbayastro.org/events/> where links to other star parties can also be found.

Header Image: Header Image: Some of the TVS members who attended the 2019 Golden State Star Party. Credit: Ken Sperber

Zoom: Getting Connected to the TVS Monthly Meeting

Our May 15th club meeting will be presented online using the Zoom video conference software. If anyone has not used Zoom before, now is a good time to download it to your computer or phone and practice using it. There are plenty of on-line help documents and video tutorials available for those just learning to use Zoom, but here are a few of the basics you'll need to successfully participate in our club meeting:

Prerequisites: You can participate in the club's Zoom meeting using a desktop computer, laptop, tablet, or smart phone. At a minimum you'll also need a microphone and speakers to participate in the meeting. A webcam helps but is not required.

Club Members: The Zoom link and password to the meeting have been supplied to you in the monthly meeting announcement email. Please do not share the link and password.

Members of the public: Those interested in attending the virtual meeting need to register by sending an email to the TVS club president asking for the meeting link and telling us a little about their areas of interest in astronomy: president@trivalleystargazers.org

Joining: Plan to join the club meeting a few minutes before it starts. To join the meeting, simply click on the link provided in the monthly meeting announcement email sent to all club members. If you don't already have Zoom installed on your system, you'll first be prompted to download and install it. You'll then be prompted to open Zoom and then to join the meeting. Upon joining, you'll be placed in a virtual Waiting Room until the meeting starts.

While waiting for the meeting to start, you can test your audio and video equipment. Click on the "Test Computer Audio"

button and you'll be brought to a Settings dialog box where you can test your microphone, speakers, and video camera. Exit the settings dialog when you've completed your testing to return to the Waiting Room. Once the meeting is starting, your Zoom window may temporarily close and reopen, and then you'll be able to see and hear the presenter in the main window. You will also see thumbnail videos of all other participants.

Participating: To ask questions or make comments during the meeting, first use the "Chat" button to type in your question or to ask to speak. To control noise, all participants are muted by default. When you need to first use your microphone, hit the "Join Audio" button in the lower-left corner of your Zoom window. Then hit the same button again to "Unmute". When done speaking, hit the same button once again to "Mute".

Leaving: When the meeting is over, the presenter will end the meeting. Should you need to leave early, hit the "Leave Meeting" button in the lower-right corner of the Zoom window.

And that's it. Remember there are plenty of on-line resources if you wish to learn more about using Zoom. I hope to see many of you at our club's on-line meeting!

Calendar of Events

May 16, 7:30pm

What: Near-Earth Asteroids: Impact Hazard and Space Missions

Who: Michael Busch, SETI Institute

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Officers

President:

Roland Albers
president@trivalleystargazers.org

Vice-President:

Eric Dueltgen
vice_president@trivalleystargazers.org

Treasurer:

Jenny Siders
treasurer@trivalleystargazers.org

Secretary:

Ross Gaunt
secretary@trivalleystargazers.org

Past President:

Rich Combs
past_president@trivalleystargazers.org

Volunteer Positions

Astronomical League Rep.:

Dennis Beckley
alrep@trivalleystargazers.org

Club Star Party Coordinator:

Eric Dueltgen
coordinator@trivalleystargazers.org

Del Valle Coordinator:

David Feindel
delvalle@trivalleystargazers.org

Historian:

Hilary Jones
historian@trivalleystargazers.org

Librarian:

Ron Kane
librarian@trivalleystargazers.org

Loaner Scope Manager:

Ron Kane
telescopes@trivalleystargazers.org

Night Sky Network Rep.:

Ross Gaunt
nnsn@trivalleystargazers.org

Newsletter Editor:

Ken Sperber
newsletter@trivalleystargazers.org
925-361-7435

Observatory Director/Key Master:

Chuck Grant
observatory@trivalleystargazers.org

Outreach Coordinator:

Eric Dueltgen
outreach@trivalleystargazers.org

Potluck Coordinator:

OPEN
potluck@trivalleystargazers.org

Program Coordinator:

Dan Helmer
programs@trivalleystargazers.org

Publicity Coordinator:

OPEN
publicity@trivalleystargazers.org

Refreshment Coordinator:

Laurie Grefsheim

Webmaster:

Hilary Jones
webmaster@trivalleystargazers.org

Web & E-mail

www.trivalleystargazers.org
info@trivalleystargazers.org

TVS E-Group

To join the TVS e-group just send an e-mail message to the TVS e-mail address (info@trivalleystargazers.org) asking to join the group. Make sure you specify the e-mail address you want to use to read and post to the group.

Calendar of Events (continued)

Sponsor: Mt. Tam Astronomy Nights
Online: www.youtube.com/channel/UCc2q6lGFSOglvh-66VFSLw

Near-Earth asteroids (NEAs) are small solar system bodies in orbits that come near — or cross — the orbit of Earth. This illustrated talk will explore NEAs as unique physical worlds, as impact hazards to Earth, and as accessible destinations for spacecraft.

May 20, 7:00pm

What: Finding Life on Europa: Do We Have the Chemistry?
Who: Dr. Jill Mikucki (U TN) and Dr. Cynthia Phillips (JPL)
Sponsor: SETI Institute
Online: <https://www.seti.org/event/finding-life-europa-do-we-have-chemistry>; REGISTRATION REQUIRED

Decades ago, science fiction offered a hypothetical scenario: What if alien life were thriving in an ocean beneath the icy surface of Jupiter's moon Europa? Recent observations of Europa from Earth-based telescopes, and reanalysis of spacecraft data, have increased the confidence for Europa's ocean.

NASA, together with other space agencies, is looking for a way to explore Europa and hopefully identify the presence of life after solving technological challenges like landing on a chaotic and cryogenic surface, drilling into its crust and analyzing samples directly. If there is an ocean of liquid water beneath the relatively thin ice shell of Europa, is life there as well?

The possible detection of a thin plume of water in 2019 being ejected from Europa's surface has re-energized the community, which is now looking for a new way to answer these questions. Could a spacecraft travel through this plume, sample and analyze it, and confirm the existence of life in this ocean? What kind of biomarkers should we look for? What would they tell us about this extraterrestrial life?

May 22, 8:00pm

What: What's Happening in the Sky This Month?
Who: Gerald McKeegan and Don Saito (Chabot)
Sponsor: Chabot Space and Science Center
Online: <https://chabot.space.org/events/events-listing/>;
Presented on Facebook Live, "Like" the Chabot Space and Science Facebook Page

Join Chabot's astronomers, with Gerald McKeegan & Don Saito on Facebook Live for a short tour of May's nighttime sky. Learn to recognize many of this month's constellations and bright stars, and even learn a little about celestial navigation! To receive a notification when the talk begins, make sure to "Like" the Chabot Space and Science Center Facebook page.

May 29, 8:00pm

What: Star Stories

Who: Doug Olsen
Sponsor: Chabot Space and Science Center
Online: <https://chabot.space.org/events/events-listing/>;
Presented on Facebook Live, "Like" the Chabot Space and Science Facebook Page

Learn the mythology behind the constellations! Friday, May 29th 8-9 p.m. Free Join us on Facebook Live and listen to Doug Olsen, expert stargazer and storyteller, explain the mythology behind the constellations. He will tell ancient stories from the night sky as seen throughout history and look for planets and other clues to help orient you to the night's sky. To receive a notification when the talk begins, make sure to "Like" the Chabot Space and Science Center Facebook page.

What to Observe? By Ken Sperber

I'm a deep sky object observer and sometime imager. I love observing Planetary Nebulae, which come in all varieties of shapes and structures. Some are large and easily seen, while others are barely larger than a garden variety dim star and require the use of an Oxygen III filter to confirm their identity. They have lots of character—the Dumbbell Nebula, the Owl Nebula, the Saturn Nebula, the Cat's Eye Nebula, and the Ghost of Jupiter—to name a few. I love observing galaxies, whether they are face-on, edge-on, have bright cores, and/or dust lanes. I love observing Globular Clusters, tight circular groupings consisting of thousands or even millions of stars. Globular Clusters range in compactness and size, with some filling the eyepiece looking like so much diamond dust, and others small and barely showing any granulation because they are so far away.

So what's an observer to do during the ongoing shelter-in-place? Well, if you are lucky enough to live outside of town it might be business as usual. If you live in town, you might image from your yard or driveway using narrowband filters to isolate key emission lines and suppress light pollution. Me, I live in a condo. I don't even have a lawn of my own to set-up on, so portability is essential. Binoculars and at best my short tube 70mm refractor on a camera tripod are about all I can muster. As for location, I'm relegated to the curb or maybe the local park under the cover of night when no one is around—social distancing you know... So, what's an observer to do? Why, look at the Moon of course!

I dug around my telescope room and I came across the Lunar Observing Program list from the Astronomical League (<https://www.astroleague.org/al/obsclubs/lunar/lunar1.html>). Whether you know it or not, as a TVS club member you are a member of the Astronomical League and the Lunar Observing Program is but 1 of nearly 70 observing programs they offer. The observing programs will help you become a better observer, as you familiarize yourself with different classes of objects. For the Lunar Observing program you must observe

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What to Observe? (continued)

100 different features on the Moon in order to be awarded a certificate and pin from the Astronomical League in recognition of your accomplishment. From the afore-mentioned website you can download the observing list in PDF or as an Excel file. The observing list consists of unaided eye, binocular, and telescopic features of the Moon.

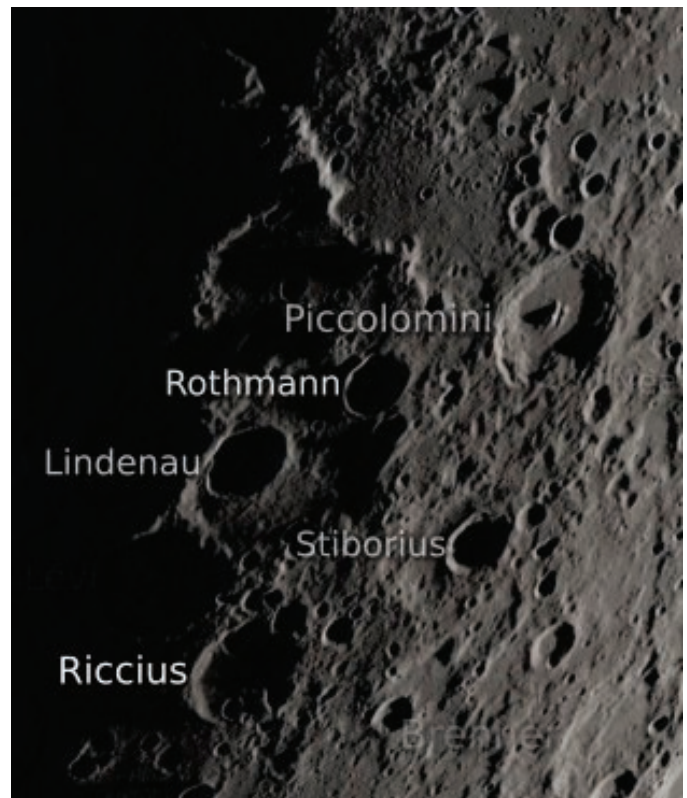
I had started the Lunar Observing Program back in 2017, and now it is time to pick it up again. The majority of objects are listed by Moon phase, as features tend to stand out better when they are close to the day-night terminator of the Moon. The low Sun angle accentuates features and makes them easier to see, as opposed to when the Moon is full when low contrast features can be washed out in the bright light.

On April 27 I was observing features near the terminator of the ~5-day old Moon using my 12x36 image-stabilized binoculars. One pronounced feature is the Altai Scarp (Rupes Altai). It is a cliff face that runs for nearly 300 miles, terminating at the western edge of the 53 mile wide crater Piccolomini. With the shallow Sun angle the peak at the center of Piccolomini is well-defined and it also casts a shadow. The Altai Scarp is brightly illuminated as the sunlight reflects off of the east-

ward facing cliff face. I could see it extending about 150 miles to the northwest, with its remaining length hidden in shadow. It is spectacular!

To challenge myself, using the Lunescope App on my phone (see image at lower-left), I was looking to the southwest of Piccolomini for 3 smaller craters (not on the observing list) that would have formed a curve: Rothman, Lindenau, and Rabbi Levi. But instead, I was seeing what looked to be 3 craters running in a straight line north-to-south, with their western edges brightly lit in sunlight with the northernmost of the trio abutted to the Altai Scarp.

What I needed to fix my conundrum was a higher resolution view of the Moon consistent with the time of my observation, and preserving the illumination of the terminator. Karen poked around on the web and found an indispensable website for lunar observers from the NASA Scientific Visualization Studio (<https://svs.gsfc.nasa.gov/4768>). This website uses data from the Lunar Reconnaissance Orbiter, including images and terrain altitude data from the laser ranging instrument. With this information they are able to present Moon images that show realistic lighting and shadows for the date and time of your choosing.



As seen in the image above from the NASA Scientific Visualization Studio for the date and time of my observations, the southernmost crater I was seeing is Riccius, the middle (unnamed?) crater is actually a larger crater within which Lindenau resides, and to its north is Rothmann G (noted as G in

What's Up By Ken Sperber (adapted from S&T and The Year in Space)

All times are Pacific Daylight Time

May

- 12 Tue The Moon, Jupiter, and Saturn form a triangle (Dawn)
- 13-14 Wed- The Moon approaches Mars (Dawn)
- 14 Thu **Last-Quarter Moon (7:03am)**
- 15 Fri The Moon is $\sim 4^\circ$ from Mars (Dawn)
- 21 Thu Venus and Mercury in conjunction, $\sim 1^\circ$ apart (Dusk)
- 22 Fri **New Moon (10:39am)**
- 23 Sat The thin crescent Moon is $\sim 4^\circ$ to the lower-left of Venus (Dusk)
- 24 Sun The Moon, Venus, and Mercury form a line $\sim 12^\circ$ long (Dusk)
- 26 Tue The Moon is $\sim 6^\circ$ left of Pollux (Evening)
- 28 Thu The Moon is $\sim 7^\circ$ northwest of Regulus (Evening)
- 29 Fri **First-Quarter Moon (8:30pm)**

June

- 4 Thu The Moon is $\sim 7^\circ$ above Antares in Scorpio (Evening)
- 5 Fri **Full Moon (12:12pm)**
- 7 Sun The Moon, Jupiter, and Saturn form an arc about 12° long in the southeast (Evening)
- 8 Mon The Moon is now 4° below Saturn (Evening)
- 12 Fri **Last-Quarter Moon (11:24pm)**
- 13 Sat The Moon is $\sim 5^\circ$ from Mars in the southeast (Dawn)
- 19 Fri The Moon and Venus rise together, $\sim 1^\circ$ apart (Dawn, See p.49 of the June S&T)
- 20 Sat **New Moon (11:41pm)**
- 25 Thu The waxing crescent Moon is $\sim 5^\circ$ from Regulus in Leo (Dusk)
- 28 Sun **First-Quarter Moon (1:16am)**
- 30 Tue The waxing crescent Moon is $\sim 3^\circ$ from Zubenelgenubi, or Alpha Librae (Dusk)

What to Observe? (continued)

the Lunescape image) that abutts the southern edge of the Altai Scarp.

That I initially couldn't rectify my observations with my Lunescape App reference image, as well as that from the Virtual Moon Atlas, did not make me mistrust my unexplained observation. Rather, the conundrum motivated me to look at alternate sources of data that in the end helped me confirm my observations. It was very satisfying that I was able to understand what I was seeing, and this gave me more confidence to trust my eyes, and verify when necessary.

I encourage others in the club to try Astronomical League Observing programs. While they have observing programs

for all levels of experience, observing (in some cases) up to 100 objects to complete a program might seem like a huge undertaking, especially for beginners. To that end, TVS is developing its own award observing programs for each season: spring, summer, autumn, and winter. Each list of approximately 20 "best of" objects will represent different classes of objects to help observer's familiarize themselves with the diversity of astronomical objects that we can appreciate from our local. A future article will be devoted to description of the TVS Award Observing Program.

To learn more about the Moon, be sure to read the S&T monthly article "Exploring the Moon" by Charles A. Wood.

NASA Night Sky Notes

Become a Citizen Scientist with NASA!

By David Prosper

Ever want to mix in some science with your stargazing, but not sure where to start? NASA hosts a galaxy of citizen science programs that you can join! You'll find programs perfect for dedicated astronomers and novices alike, from reporting aurora, creating amazing images from real NASA data, searching for asteroids, and scouring data from NASA missions from the comfort of your home. If you can't get to your favorite stargazing spot, then NASA's suite of citizen science programs may be just the thing for you.



Jupiter shines brightly in the morning sky this spring. If you'd rather catch up on sleep, or if your local weather isn't cooperating, all you need is a space telescope - preferably one in orbit around Jupiter! Download raw images straight from the Juno mission, and even process and submit your favorites, on the JunoCam website! You may have seen some incredible images from Juno in the news, but did you know that these images were created by enthusiasts like yourself? Go to their website and download some sample images to start your image processing journey. Who knows where it will take you? Get started at bit.ly/nasajunocam

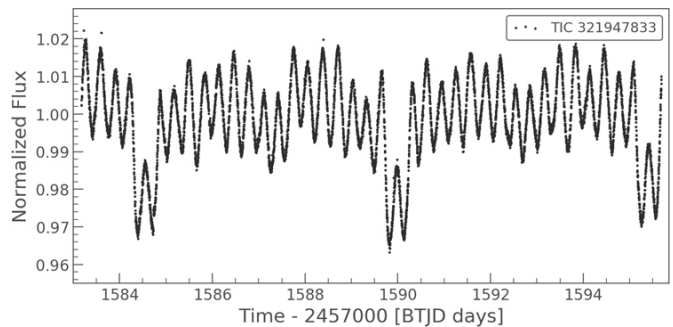


Caption: GREAT SOUTHERN JUPITER: Incredible image of Jupiter, submitted to the JunoCam site by Kevin M. Gill. Full Credits : NASA/ JPL-Caltech/SwRI/MSSS/Kevin M. Gill

Interested in hunting for asteroids? Want to collaborate with a team to find them?? The International Astronomical Search Collaboration program matches potential asteroid hunters together into teams throughout the year to help each other dig into astronomical data in order to spot dim objects moving in between photos. If your team discovers a potential asteroid that is later confirmed, you may even get a chance to name it! Join or build a team and search for asteroids at iasc.cosmosearch.org

Want to help discover planets around other star systems? NASA's TESS mission is orbiting the Earth right now and scanning the sky for planets around other stars. It's accumulating a giant horde of data, and NASA scientists need your help to sift through it all to find other worlds! You can join Planet Hunters TESS at: planethunters.org

Intrigued by these opportunities? These are just a few of the many ways to participate in NASA citizen science, including observing your local environment with the GLOBE program, reporting aurora with Aurorasaurus, measuring snowpack levels, training software for Mars missions – even counting penguins! Discover more opportunities at science.nasa.gov/citizenscience and join the NASA citizen science Facebook group at facebook.com/groups/Sciencing/ And of course, visit nasa.gov to find the latest discoveries from all the research teams at NASA!



Caption: Light curve of a binary star system containing a pulsating (variable) star, as spotted on Planet Hunters TESS by user mhuten and featured by project scientist Nora Eisner as a "Light Curve of the Week." Credit: Planet Hunters TESS/NASA/mhuten/Nora Eisner

This article is distributed by the NASA Night Sky Network, a coalition of hundreds of astronomy clubs across the US dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, stargazing info 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).

_____ Patron member (\$100). Patron membership grants use of the club's 17.5" reflector at H2O. You must be a member in good standing for at least one year, hold a key to H2O, and receive board approval.

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.