

PRIMEFOCUS

Tri-Valley Stargazers



June 2019



Meeting Info Summer Barbecue

Who:
TVS Family and Friends

When:
June 21, 2019
Set-up at 6:30 p.m.
Dinner at 7:00 p.m.

Where:
Unitarian Universalist
Church in Livermore
1893 N. Vasco Road

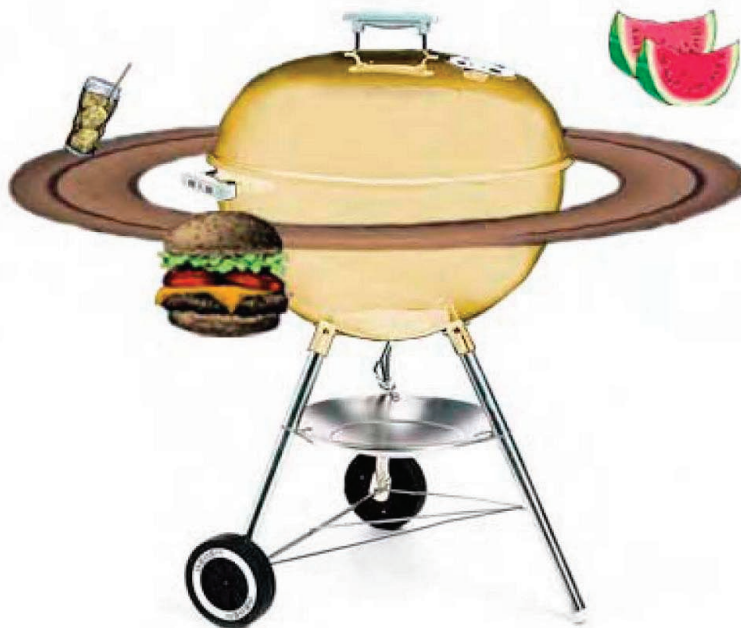
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June Meeting

TVS Summer BBQ

The June TVS meeting will be our annual summer BBQ. Plan on working up an appetite by helping to set-up and get the charcoal going at about 6:30pm. We will start eating around 7:00pm.



TVS will provide hamburgers, veggie-burgers, and hotdogs, with a variety of toppings including cheese, mushrooms, bacon, etc.

Members are asked to bring a side dish, salad, or dessert to share. Please bring enough to feed about 5-8 people. Use the first letter of your last name to determine which type of dish to bring:

- A-D Vegetable or Beans
- E-J Appetizer
- K-O Dessert
- P-Z Macaroni, Potato, Green, or Fruit Salad

News & Notes

2019 TVS Meeting Dates

Below are the TVS meeting dates for 2019. 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
Jun. 21	Jun. 24	
Jul. 19	Jul. 22	Jun. 28
Aug. 16	Aug. 19	Jul. 26
Sep. 20	Sep. 23	Aug. 30
Oct. 18	Oct. 21	Sep. 27
Nov. 15	Nov. 18	Oct. 25
Dec. 20	Dec. 23	Nov. 29

Money Matters

As of the last Treasurer's Report on 5/20/19, our club's checking account balance is \$14,857.06.

TVS Welcome to New Members

TVS would like to welcome new members Phil Cali, Alekh Shah, and Fernando and Martha Garcia. Please say hello and chat with them at upcoming club meetings.

Outreach Star Parties

Friday-Saturday, July 12-13: Yosemite Star Party. Every year TVS does an 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 at the nearby Bridal Veil Creek campground.

This year's Glacier Point Star Party will be Friday-Saturday nights (departure on Sunday). The Moon is approaching full phase this weekend, with moonset occurring from 3:22am to 4:05am.

We will have the usual Saturday evening pot luck, and TVS will provide hamburgers, hot dogs and veggie burgers. If you are planning to join us this year, please contact Eric Dueltgen as soon as possible (outreach at trivalleystargazers.org), indicating how many people, how many tents, and for how many days you and your group plan to attend.

2019 Club Star Parties

Save the dates for the 2019 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. 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.

June 22: Tesla Vintners, set-up at 8:00pm. The observing theme is "Asteroids."

July 20: Tesla Vintners, set-up at 8:00pm

August 3: Del Valle (Arroyo Staging Area), set-up at 7:30pm

August 24: H2O Open House, Caravan departs at 6:00pm

September 21: Tesla Vintners, set-up at 6:30pm

October 5: Del Valle (Arroyo Staging Area), set-up at 6:00pm

Golden State Star Party and CalStar Events

The Golden Star Star Party will be held over four nights on June 29-July 2 (departure July 3) near Aiden, CA. Early Registration online is \$60 through March 30, \$70 thereafter, or \$75 onsite. If you do not plan on spending 4 nights, registration is \$25/night. For additional fees you can feast at the BBQ's on Sunday and Monday nights, and there is a free pancake breakfast on July 2. Attendance is typically 300-400 people. For more informations see: <http://goldenstatestarparty.org/> and TVS member Curtis Macchioni's presentation on GSSP can be found at: <http://www.trivalleystargazers.org/pdfs/GSSP.pdf>

The CalStar Star Party will be held on September 25-28. The location is only 3 hours away at Lake San Antonio in southern Monterey County. CalStar is a loosely organized party with no registration and no structure held at the County park. Just show up and pay the camping fee and join the group of about 100 star gazers in a section of the park reserved for us. For more information see: <https://calstar.observers.org/>

Calendar of Events

June 15, 6:00pm - 9:30pm

What: Adult Hike and Sip: Cultural Tales of the Night Sky
Who: You and Chabot Staff
Where: Chabot Space and Science Center, 10000 Skyline Blvd., Oakland, CA 94619
Cost: Advanced Registration Required: \$27 Members, \$30 General Public

The journey begins at sunset from the Center into the beautiful surrounding redwood forest. We'll hike along some of the most popular trails and learn about local history as we uncover evidence from early settlers and will examine local plants as we discuss the ecology of the forest. At sunset, we'll stop to observe the first of the night's visible stars and planets and discuss cultural stories related to the night's sky. Upon return, each hiker will receive two complimentary glasses of wine or beer along with small bites. A perfect evening for a date night

Header Image: SN2019fck in NGC5243 as imaged by Gert Gottschalk at the TVS Open House. See the Open House report on p.4.

Calendar of Events (continued)

or fun with friends!

Capacity is limited, and the hike is ~4-5 miles round trip.

For more information see: <https://chabotspace.org/events/events-listing/> or for more information, call (510) 336-7373.

June 15, 7:30pm-9:00pm

What: Our Journey Toward Mars
Who: Dr. J. R. Skok, SETI Institute
Where: Houge Park, 3972 Twilight Drive, San Jose, CA
Cost: Free

Our journey toward Mars began when first looked up to the night sky and noticed the ruby red glow of this celestial body. Join Mars scientist, Dr. J.R. Skok, on the journey from our first sight of the planet, through the telescopes, satellites, rovers, and samples that have transformed Mars into a familiar world next door. Learn how scientists are working to find evidence of past life on Mars and are developing the technology to allow us to become a future generation of Martians.

For more information see: <https://www.meetup.com/SJ-Astronomy/events/262011151/>

July 8, 7:30pm

What: Science Expeditions to Planetary Analogs
Who: Rosalba Bonaccorsi, SETI Institute
Where: California Academy of Sciences, 55 Music Concourse Dr., Golden Gate Park, San Francisco, CA
Cost: Advanced ticketing required. Academy members \$12, Seniors \$12, General \$15. Reserve a space online or call 1-877-227-1831.

Fueled by advances in software, computation, microelectron-

ics, and large optics fabrication, a novel type of sky survey will begin in 2022. In a rapid campaign of 30 second exposures, the Large Synoptic Survey Telescope will cover the southern sky deeply for ten years, opening a movie-like window on objects that change or move on rapid timescales. The deep images from the LSST will chart billions of remote galaxies in 4-D, providing multiple interlocking probes of the mysterious Dark Matter and Dark Energy. In a high dimensional database, hundreds of petabytes will be mined for the unexpected.

See www.calacademy.org/events/benjamin-dean-astronomy-lectures for lecture and reservation information.

July 12, 7:30pm - 10:30pm

What: Evening Under The Moon
Who: Astronomer Gerald McKeegan
Where: Chabot Space and Science Center, 10000 Skyline Blvd., Oakland, CA 94619
Cost: Free

Join us for an evening under the stars and learn all about the Moon! Get your chance to walk through our newest exhibit, Luminous Moon- an exhibition of high-resolution lunar images captured by NASA orbiters and from Chabot astronomers.

At 8:30pm, join us for a talk by Astronomer Gerald McKeegan about lunar geography and geology, and the contributions to lunar science that came (and still come) out of the Apollo Missions.

And while you are here, be sure to view the Moon through one of our historic telescopes during our free public viewing hours (weather permitting).

continued on p.4

<p>Officers</p> <p>President: Roland Albers president@trivalleystargazers.org</p> <p>Vice-President: Eric Dueltgen vice_president@trivalleystargazers.org</p> <p>Treasurer: David Feindel treasurer@trivalleystargazers.org</p> <p>Secretary: Ron Kane secretary@trivalleystargazers.org</p> <p>Past President: Rich Combs past_president@trivalleystargazers.org</p>	<p>Volunteer Positions</p> <p>Astronomical League Rep.: Dennis Beckley alrep@trivalleystargazers.org</p> <p>Club Star Party Coordinator: Eric Dueltgen coordinator@trivalleystargazers.org</p> <p>Del Valle Coordinator: David Feindel delvalle@trivalleystargazers.org</p> <p>Historian: Hilary Jones historian@trivalleystargazers.org</p> <p>Internat. Dark-Sky Assoc. Rep.: Aadi Duggal darksky@trivalleystargazers.org</p> <p>Librarian: Ron Kane librarian@trivalleystargazers.org</p> <p>Loaner Scope Manager: Ron Kane telescopes@trivalleystargazers.org</p>	<p>Night Sky Network Rep.: Ross Gaunt nnsn@trivalleystargazers.org</p> <p>Newsletter Editor: Ken Sperber newsletter@trivalleystargazers.org 925-361-7435</p> <p>Observatory Director/Key Master: Chuck Grant observatory@trivalleystargazers.org</p> <p>Outreach Coordinator: Eric Dueltgen outreach@trivalleystargazers.org</p> <p>Potluck Coordinator: Jill Evanko potluck@trivalleystargazers.org</p> <p>Program Coordinator: Dan Helmer programs@trivalleystargazers.org</p> <p>Publicity Coordinator: Jim Theberge publicity@trivalleystargazers.org</p>	<p>Refreshment Coordinator: Laurie Grefsheim</p> <p>Webmaster: Hilary Jones webmaster@trivalleystargazers.org</p> <p>Web & E-mail www.trivalleystargazers.org info@trivalleystargazers.org</p> <p>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.</p>
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Calendar of Events (continued)

Snacks and hot chocolate will be available for purchase.

For more information see: <https://chabot.space.org/calendar/evening-under-the-moon/> or call (510) 336-7373.

July 13, 8:00pm

What: Cassini's Spectacular Final Year at Saturn
Who: Dr. Matthew Tiscareno, SETI Institute
Where: Mt. Tamalpais State Park, Cushing Memorial Amphitheater, more commonly known as the Mountain Theater, Rock Spring parking area
Cost: Free.

Cassini's 13-year exploration of Saturn stands as the most successful interplanetary mission in NASA history. Its "Grand Finale" (with dives off the outer ring edge, and between inner rings & cloud tops) culminated with a plunge into Saturn's depths. Insights earned during these maneuvers bring Saturn's complex glory into focus as never before.

For more information see: <http://www.friendsofmonttam.org/astronomy/schedule>

H2O Open House By Ken Sperber

On May 25, TVS held one of two H2O Open Houses scheduled for this summer. Though moderate cloud cover was apparent, approximately 10 car loads of people caravanned up to H2O. Some folks were new keyholders who were getting instructed on properly accessing and leaving H2O and the etiquette of nighttime observing at a shared site. Other folks were club regulars who were interested in seeing the great progress that has been made in upgrading the Marling Observatory and the Herb Quick Dome.

As seen in the photo at the right (taken by Hilary Jones), the Marling Telescope has been mounted on the recently donated AstroPhysics 1200 mount. Located on the pier is a power distribution unit that powers the mount and enables USB connection for CCD/CMOS cameras. The USB cable runs under the carpet to a corner desk where it can be connected



to your laptop. Using your laptop you can then perform image acquisition. Additionally, if you have ASCOM based telescope control software on your laptop you can drive the telescope to objects of your choosing from the laptop. Otherwise, via the AP1200 keypad you can access its extensive object catalog to GoTo objects of your choice.

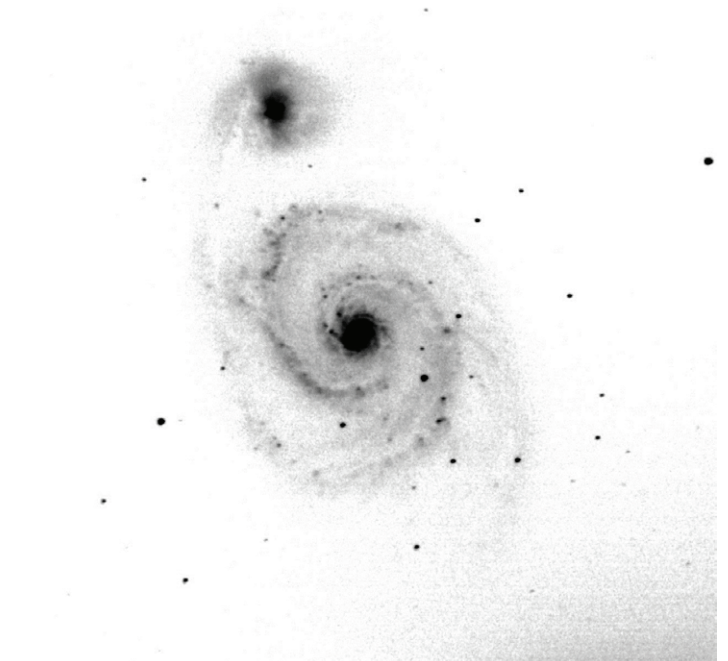
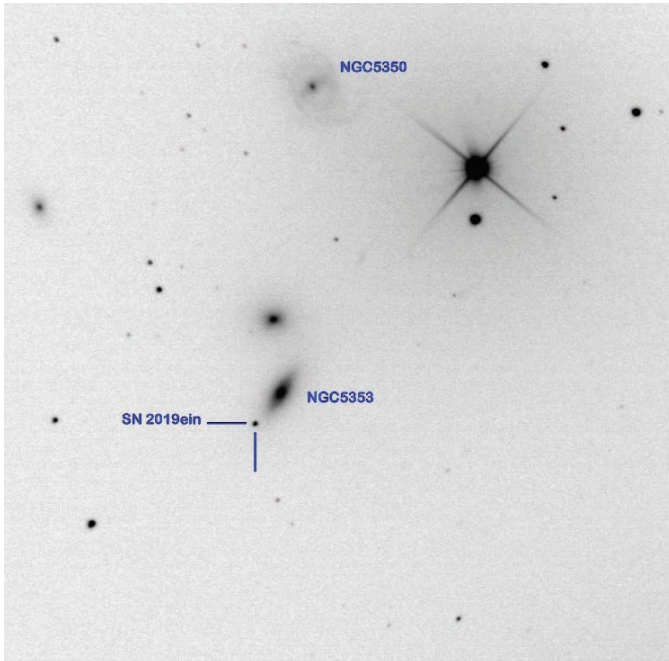
Usually, guests observe deep-sky objects through the telescope eyepiece, but given the quickly degrading sky conditions, Gert Gottschalk hooked up his ZWO ASI174MM monochrome planetary imager to the eyepiece holder to show deep-sky objects on his laptop to many observers all at once. The crowd awaited each image with great anticipation while the 30 second exposures were taken and downloaded! One of the first objects imaged was NGC5353, seen on the top-left of p.5. We easily saw Supernova SN2019ein, shining at about 14.2mag, on the outskirts of the galaxy and it is classified as a Type 1a-Peculiar. We also observed Type 1a SN2019fck, located in NGC5243, which was easily seen at 14.4mag (Header image on p.1). This supernova clearly outshone its host galaxy, attesting to the power of the explosions of these standard candles. As you may recall, Type 1a supernova explode with a nearly uniform luminosity, and dozens of them were used to identify the Nobel Award winning finding the the expansion of the universe is accelerating. (If you would like to learn more about supernovae, come to the July TVS meeting at which Dr. Dave Dearborn will be talking about Stellar Evolution). One of the highlights was M51, with its spiral arms on proud display (top-right on p.5). We also imaged the outstanding globular cluster M13 (not shown). The images revealed some collimation issues that need to be addressed to further improve the telescope capabilities.

In time for the Open House, Ross Gaunt and David Feindel, seen in the image below taken by Hilary Jones, worked hard to integrate the recently donated C-14, and the recently purchased Paramount ME into the Herb Quick Dome. Ross reported that due to a missing O-ring on the finder scope it was not possible to align and calibrate the telescope for observations. A new finder scope is needed, so if any club member has a one to donate, please contact Ross or David. Integration



continued on p.6

TVS Member Astrophotos



At the TVS Open House on May 25, Gert Gottschalk used his ZWO ASI174MM camera on the 17.5 inch f/4.5 Marling Telescope to image Supernova SN2019ein in NGC5353 (top-left). He also imaged M51 (top-right). Both exposures were 30 seconds in duration. For more details see the article on the Open House on p.4.



On June 1, Deniz Demirci persevered after waiting out hours of cloud to image M20, the Trifid Nebula. He used his ZWO ASI071MC Pro (cmos gain 50, offset 65) camera on his 10 inch f/3.9 Newtonian with a coma corrector and a SkyGlow filter. He stacked twenty-five 100 sec exposures using Nebulosity.

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

All times are Pacific Daylight Time

June

- 09 Sun **First-Quarter Moon (10:59pm)**
10 Mon Jupiter at opposition (All Night)
15-16 Sat- On the 15th the Moon, Jupiter, and Antares form a triangle in the southwest. They appear as an arc on the 16th (Night)
17 Mon **Full Moon (1:31am)**
17-18 Mon- Mercury and Mars are $<0.5^{\circ}$ apart in the west-northwest just after sunset. They are $<2^{\circ}$ apart a couple of nights before and after (Evening)
18 Tue The Moon and Saturn rise together, being about 1° apart (Evening)
21 Fri The summer solstice arrives (8:54am); shortest night of the year in the Northern Hemisphere
25 Tue **Last-Quarter Moon (2:46am)**
30 Sun Directly below the Pleiades (M45), the Moon is near the Hyades in Taurus (Dawn)

July

- 1 Mon Venus and the thin crescent Moon rise in the east, less than 6° apart (Dawn)
2 Tue **New Moon (12:16pm)**
5 Fri The Moon is in Leo, less than 3° from Regulus (Dusk)
8 Mon The Moon is about 2° from Gamma Virginis (Evening)
09 Tue **First-Quarter Moon (3:55am)**
9 Tue Saturn at opposition in Sagittarius (All Night)
12-15 Fri- Over the next 4 nights the Moon passes from Scorpius into Sagittarius and is in the vicinity of Jupiter, Antares, ending up less than 2° from Saturn (Night)
16 Tue **Full Moon (2:38pm)**
20 Sat 50th Anniversary of the landing of Apollo 11 on the Moon
24 Wed **Last-Quarter Moon (6:18pm)**
28 Sun The waning crescent Moon trails Aldebaran in Taurus by about 5° (Dawn)
29-30 Mon The Delta Aquariid meteor shower peaks; best in the morning (see July S&T p.50) (All Night)

H2O Open House (continued)

also revealed that pier was too high. After hard work, Ross and David were able to shorten the pier, and on June 4 Ross and Aadi Duggal reinstalled the resized pier and reassembled the Paramount ME and C-14. In a week or so Ross and David will return to H2O to align the C-14 and begin observations. Additional work includes lubrication of the bearings on which the dome rotates and replacement of the dome rotation motor belts.

The next TVS Open House is scheduled for August 24, so plan to come to H2O to enjoy the views through the newly upgraded telescopes.

NASA Night Sky Notes

Jupiter Shines in June

By David Prosper

Jupiter stakes its claim as the king of the planets in June, shining bright all night. Saturn trails behind Jupiter, and the Moon passes by both planets mid-month. Mercury puts on its best evening appearance in 2019 late in the month, outshining nearby Mars at sunset.



Jupiter is visible almost the entire evening this month. Earth will be between Jupiter and the Sun on June 10, meaning Jupiter is at opposition. On that date, Jupiter rises in the east as the Sun sets in the west, remaining visible the entire night. Jupiter will be one of the brightest objects in the night sky, shining at magnitude -2.6. Its four largest moons and cloud bands are easily spotted with even a small telescope.

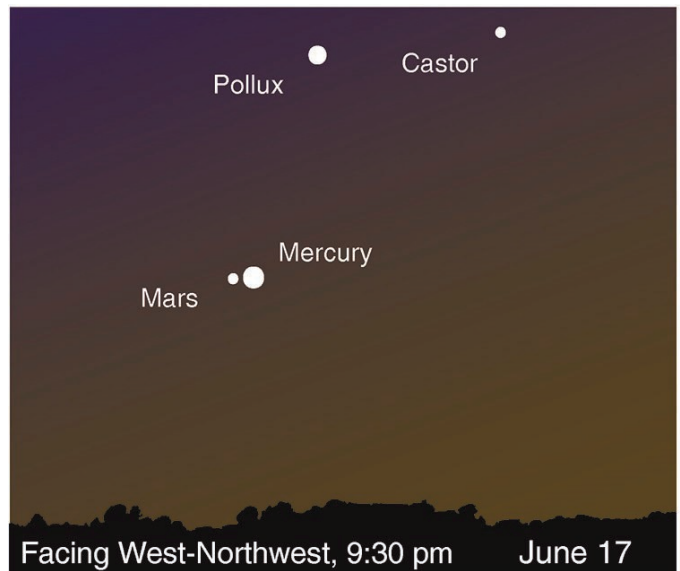


Caption: A giant storm in Jupiter's north polar region, captured by JunoCam on February 4, 2019. Image processing performed by citizen scientists Gerald Eichstädt and Seán Doran. Source: bit.ly/JupiterSpiral

What if your sky is cloudy or you don't have a telescope? See far more of Jupiter than we can observe from Earth with NASA's Juno mission! Juno has been orbiting Jupiter since 2016, swooping mere thousands of miles above its cloud tops in its extremely elliptical polar orbits, which take the probe over 5 million miles away at its furthest point! These extreme orbits minimize Juno's exposure to Jupiter's powerful radiation as it studies the gas giant's internal structure, especially its intense magnetic fields. Juno's hardy JunoCam

instrument takes incredible photos of Jupiter's raging storms during its flybys. All of the images are available to the public, and citizen scientists are doing amazing things with them. You can too! Find out more at bit.ly/JunoCam

Saturn rises about two hours after Jupiter and is visible before midnight. The ringed planet rises earlier each evening as its own opposition approaches in July. The Moon appears near both gas giants mid-month. The Moon's tour begins on June 16 as it approaches Jupiter, and its visit ends on June 19 after swinging past Saturn.



Caption: Mars and Mercury after sunset the evenings of June 17, 2019. On June 18, Mars will be located just north of Mercury. Image created with assistance from Stellarium

Mercury is back in evening skies and will be highest after sunset on June 23, just two days after the summer solstice! Spot it low in the western horizon, close to the much dimmer and redder Mars. This is your best chance this year to spot Mercury in the evening, and nearly your last chance to see Mars, too! The two smallest planets of our solar system pass close to each other the evenings of June 17-18, coming within just $\frac{1}{4}$ degree, or half the width of a full Moon, making for a potentially great landscape photo at twilight.

Discover more about NASA's current and future missions at nasa.gov

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 (\$5). 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):

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 (www.trivalleystargazers.org/privacy.shtml).

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