PrimeFocus

June 2025

WHEN

June 20, 2025 Club Picnic
Doors open at 6:30pm
Cooking starts at 7:00pm
Serve Food starts at 7:30pm

WHERE

Unitarian Church
1893 North Vasco Road
Livermore, CA 945571
and via Zoom

TVS QR CODE

INSIDE THIS ISSUE

M101 by Ashish Joshi

NEWS AND NOTES

Meeting Dates

Club Meeting	Board Meeting	PrimeFocus Deadline
June 20	June 23	June 6
July 18	July 21	July 6
August 15	August 18	August 5

Money Matters

As of the last Treasurer's Report on 5/19/25, our club's account balance is $47,682.81, this includes $11,170.77 in the H2O Rebuild fund.

TVS Welcomes New Members

TVS welcomes new members Seetharaman Chakrapany, Christopher Archer, Rajesh Batchu, Ameerah Massar, and Grant Kourey. 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.

August 30: Del Valle Star Party, details to be determined

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.

June 21: Tesla Vintner's Star Party, 5143 Tesla Rd., Livermore. Set-up at 8:00pm, Observing 8:30-11:30pm.

July 19: Tesla Vintner's Star Party, 5143 Tesla Rd., Livermore. Set-up at 7:30pm, Observing 8:00-Midnight.

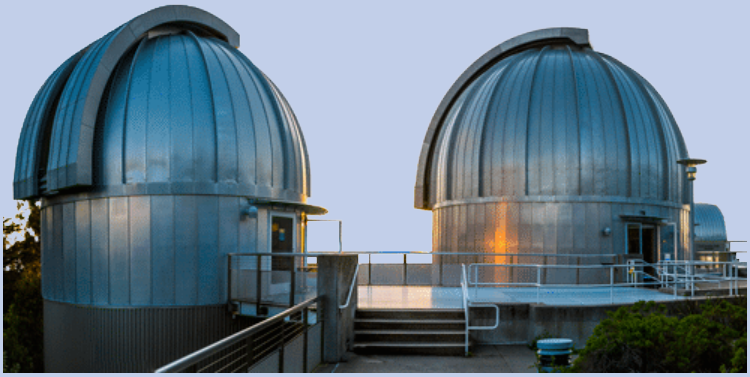
September 13: Tesla Vintner's Star Party, 5143 Tesla Rd., Livermore. Set-up at 6:30pm, Observing 7:00pm-11-30pm.

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.

August 16: H20 Open House, 5:00pm caravan to H2O PROMPTLY leaves the corner of Mines and Tesla Rds., Livermore. Observing until 11:30pm. Meeting times are tentative.

June 28: Public star party at Sunol Regional Wilderness. Set up 8:00. Observing starts 9:00 pm, ends about 11:00 pm.

CALENDAR OF EVENTS



June 23, 24, 30,31, July 6, 7, 13,14, 20, 21, 7:30-10:30pm

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/

July 10, 2:30-3:00pm

What	Modeling the Ice-Rich Crust of an Evolving Dwarf Planet
Who	Seti Institute
Where	Online
Cost	Free

Join planetary scientist Beth Johnson and Dr. Ian Pamerleau, lead author of a groundbreaking new Nature Astronomy study, for a deep dive into the icy mysteries of Ceres—the largest object in the asteroid belt and the only dwarf planet to be orbited by

a spacecraft.

While Ceres shows signs of an ice-rich interior, its heavily cratered surface doesn't behave like soft, ice-laden terrain. So what gives? To solve the puzzle, Pamerleau and colleagues used simulations and an updated model of how impure ice deforms. Their work reveals that Ceres once hosted a subsurface ocean that froze from the top down, concentrating impurities as it solidified and creating a gradient from ice-rich surface layers to a rockier interior.

For more information, see:
https://www.seti.org/event/seti-live-how-ceres-froze-over

July 14, 7:30 PM

What	Revealing Dark Matter with Strong Gravitational Lensing
Who	California Academy of Sciences
Where	Morrison Planetarium; 55 Music Concourse Drive, San Francisco, CA 94118
Cost	Public: $15; Members and seniors: $12

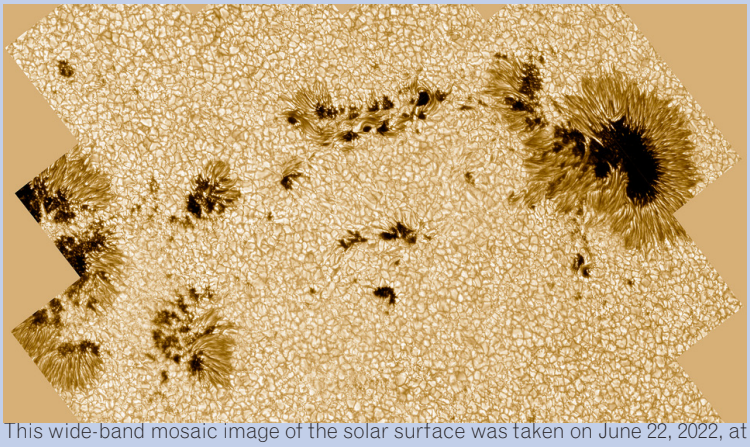
Featuring Dr. Rebecca Robinson, SETI Institute: MUSE Mission Outreach

From our daily routines to seasonal changes, there are so many ways to experience our relationship with the Sun. For something upon which we rely so heavily, there are still quite a few mysteries that surround it! One of the biggest questions scientists have about the Sun seems so simple: Why is the Sun's atmosphere so hot? Finding the answer to this question is a driving force behind solar physics today, and the key to solving this mystery might just unlock a few other clues along the way.

Join Dr. Robinson on a journey that begins deep inside the Sun, where superheated plasma flows generate the Sun's tangled magnetic field. Learn how the magnetic field shapes and is shaped by the diffuse Solar atmosphere, and how resulting magnetic explosions offer crucial insights into unveiling the secrets of the Sun's atmospheric processes.

Soon to join NASA's proud fleet of Heliophysics missions, the Multi-Slit Solar Explorer (MUSE) is designed to collect the signatures of bright magnetic events in the Sun's atmosphere and analyze them with unprecedented spectral detail. New data from MUSE will help us better understand not only the Sun's atmosphere, but also how Earth's relationship with the Sun is dictated by dynamic Solar magnetism.

Dr. Becca Robinson is a Michigan-born Norwegian transplant, now back in the US working as the outreach lead for NASA's Multi-slit Solar Explorer (MUSE) mission. She is a Sun scientist, world traveler, rock collector, aurora chaser, and stargazer whose curious mind drives her day-to-day life as well as her



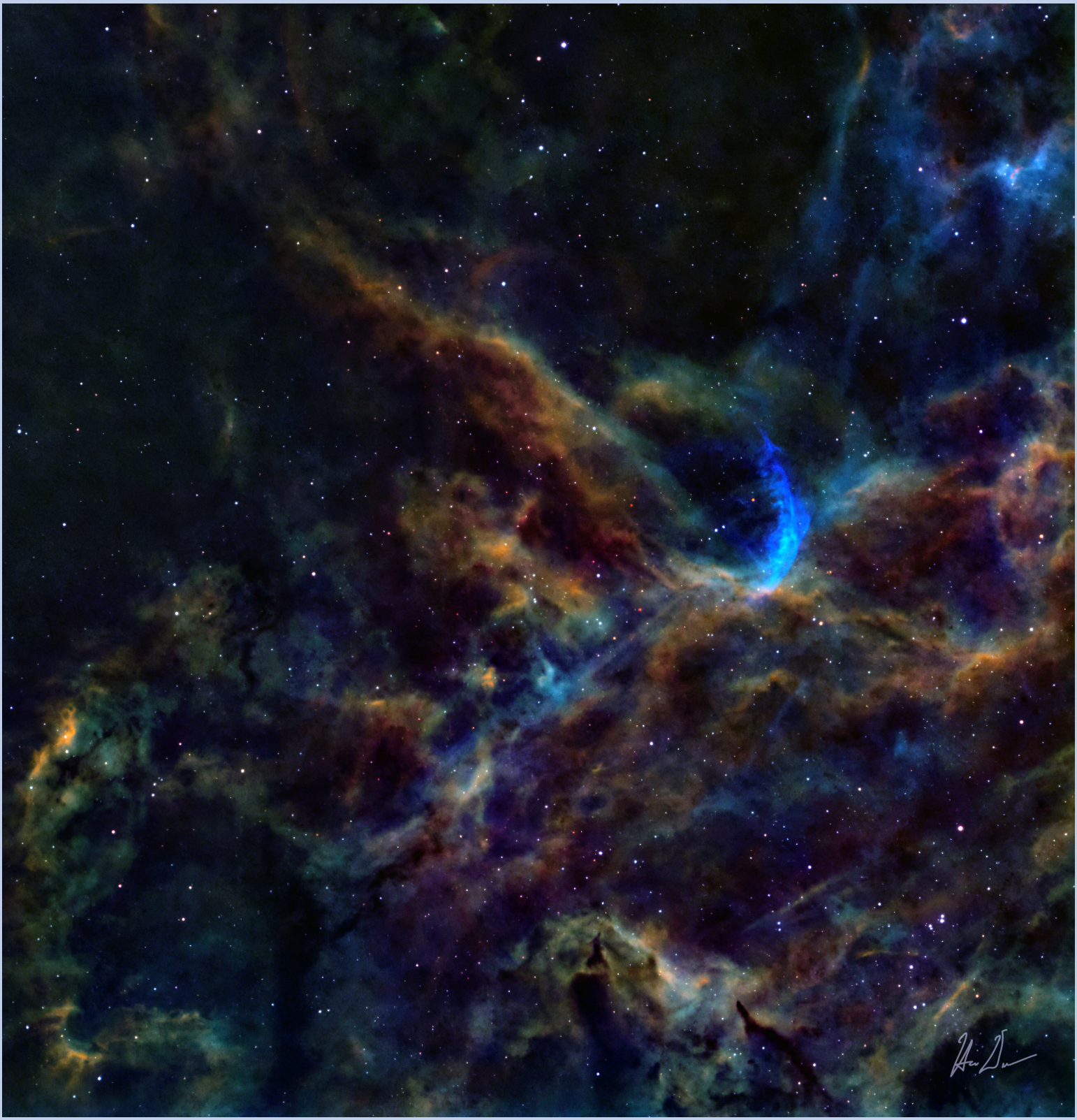
This wide-band mosaic image of the solar surface was taken on June 22, 2022, at the Swedish 1-meter Solar Telescope located on La Palma in the Canary Islands, Spain. The image showcases beautiful examples of sunspot active regions and high-resolution surface granulation. Mosaic courtesy of Luc Rouppe van der Voort.

research. Her research projects have involved drilling ice cores on Icelandic glaciers, analyzing solar simulations from her couch in Norway, and delivering scientific presentations worldwide from Svalbard to Armenia.

Becca received her BSc degrees in Physics and Astrophysics from Michigan State University, her MSc in Geophysics from the University of Iceland, and her PhD in Theoretical Astrophysics from the University of Oslo, specializing in solar magnetic fields. She's been visible on a variety of platforms as an outreach specialist, but her two favorite outreach projects have been serving as the resident astrophysicist for Badlands National Park and sailing the Norwegian coast with Hurtigruten Expeditions (HX) as a solar and aurora specialist. She is a born communicator with a trained science background who enjoys making hard science accessible to everyone. If you're curious to learn more about our Sun and what it means to live under its influence, don't hesitate to get in touch with Becca!

For more information, see:
https://www.calacademy.org/events/benjamin-dean-astronomy-lectures/the-sun-and-the-earth-a-magnetic-connection

TVS ASTROPHOTOGRAPHY



NGC 6883, By Mark Hai Du.
For a full resolution image see https://app.astrobin.com/u/MHDu_Photography?i=an039l#gallery

M101 (NGC 5457), By Gert Gottschalk.

Sh2-1, By Kevin McLoughlin.
For a full resolution image see https://app.astrobin.com/i/gxtgd5

WHATS UP

Adapted from Sky and Telescope

All times are Pacific Standard Time

June 2025		
18	**Wed**	**Moon at last quarter**
20	Fri	Longest day of the year
25	**Wed**	**New Moon**
26	Thu	At dusk, crescent moon is 3½° right of Mercury
29	Sun	After sunset, Moon is just ½° lower left of Mars
July 2025		
2	**Wed**	**Moon at first quarter**
3	Thu	Earth is at aphelion, farthest away from the sun for the year
7	Mon	Looking south in the evening, the waxing gibbous Moon is 4½° from Antares
10	**Thu**	**Full Moon**
12	Sat	In the morning, look low in the east-northeast to see Venus rising about 3½° above Aldebaran
15	Tue	In the Evening look for Saturn just 2° below the Moon as they rise together in the the east

OFFICERS AND VOLUNTEER POSITIONS

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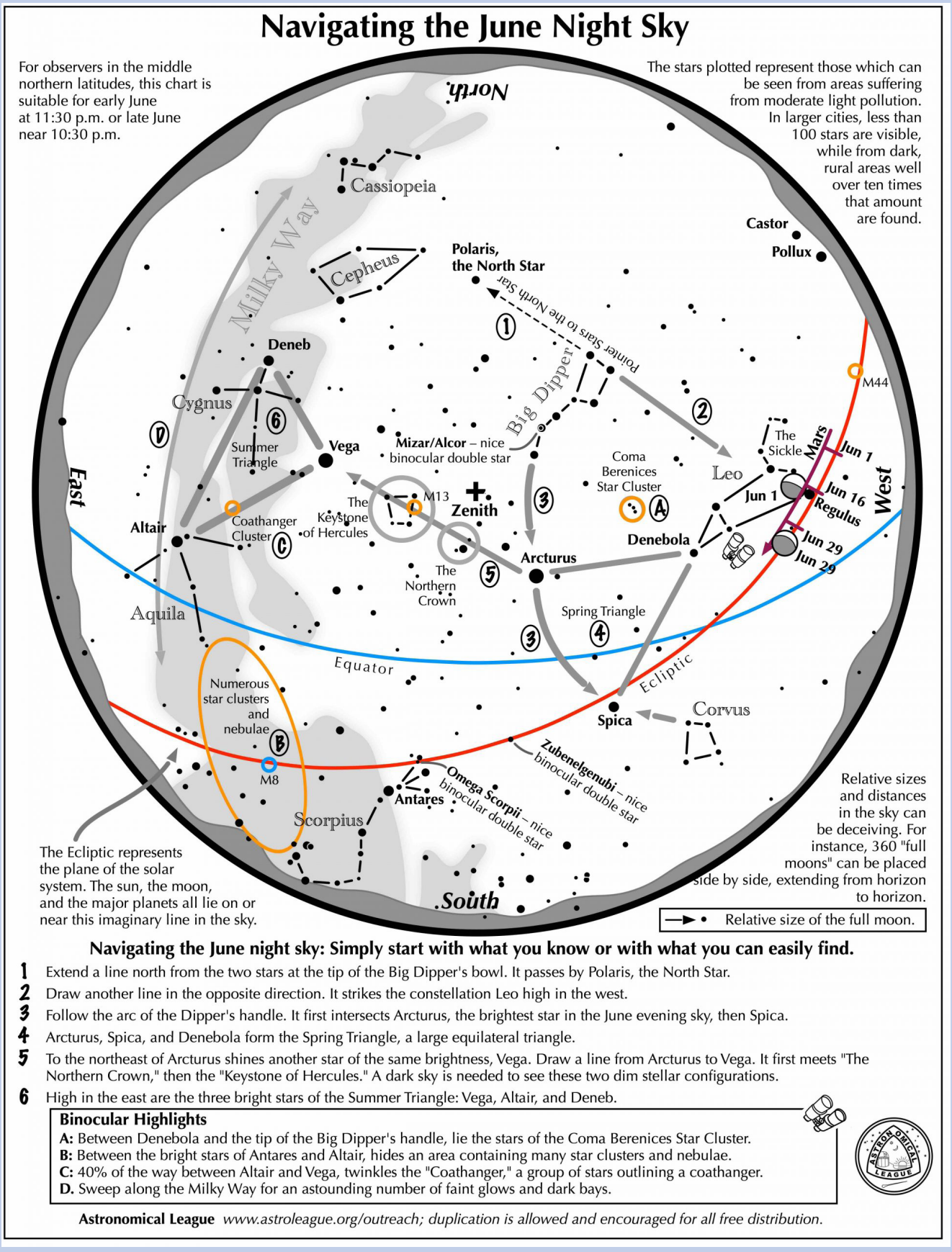
Refreshment Coordinator
OPEN

Web and Email
www.trivalleystargazers.org
info@trivalleystargazers.org

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 JUNE 2025



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.

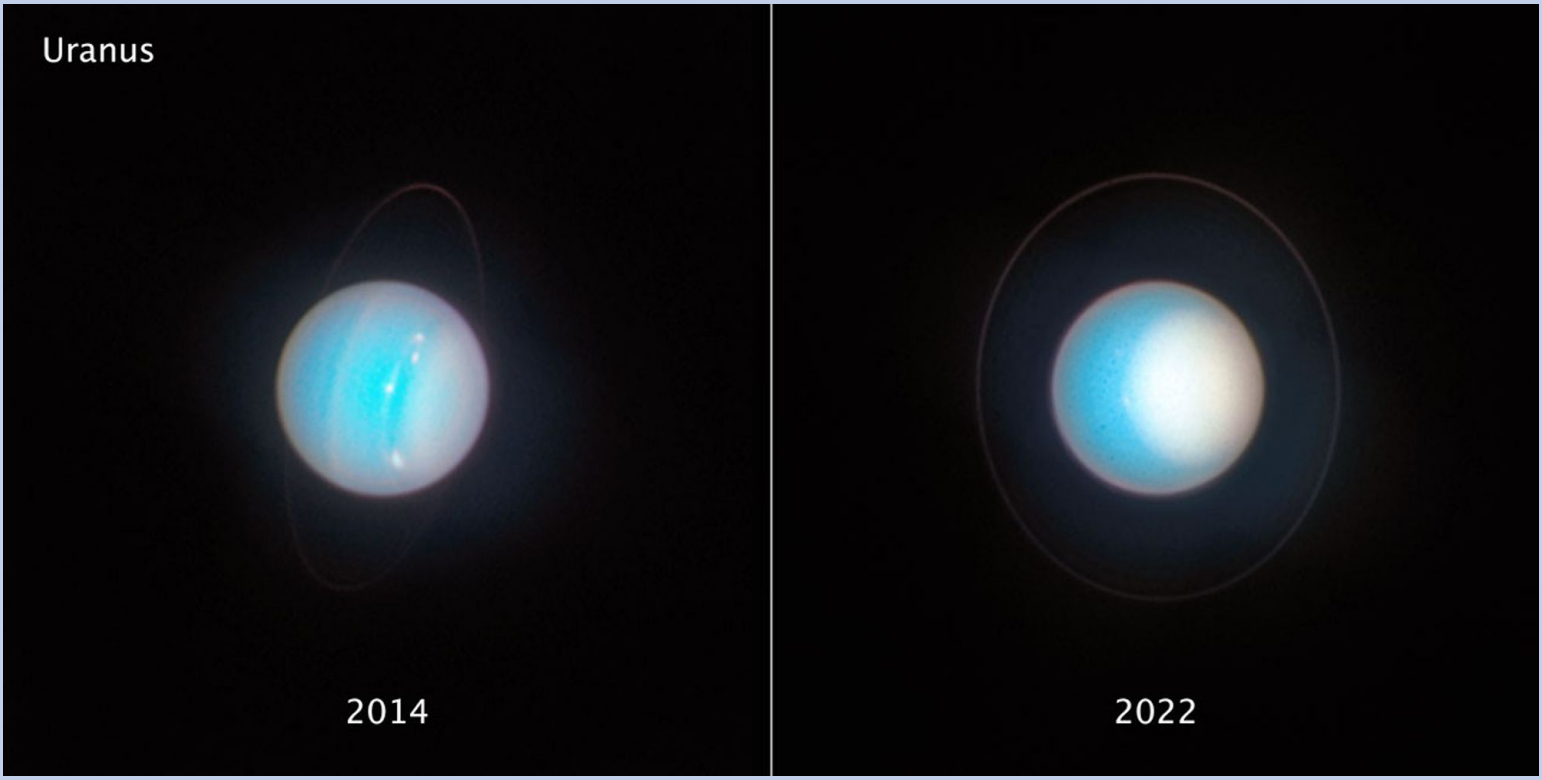
Download pdf here: https://www.astroleague.org/wp-content/uploads/2025/05/2025-June-15.pdf

NASA NIGHT SKY NOTES

Seasons of the Solar System

By Kat Troche

Here on Earth, we undergo a changing of seasons every three months. But what about the rest of the Solar System? What does a sunny day on Mars look like? How long would a winter on Neptune be? Let's take a tour of some other planets and ask ourselves what seasons might look like there.



Uranus rolls on its side with an 84-year orbit and a tilt just 8° off its orbital plane. Its odd tilt may be from a lost moon or giant impacts. Each pole gets 42 years of sunlight or darkness. Voyager 2 saw the south pole lit; now Hubble sees the north pole facing the Sun. Credit: NASA, ESA, STScI, Amy Simon (NASA-GSFC), Michael Wong (UC Berkeley); Image Processing: Joseph DePasquale (STScI)

Martian Autumn

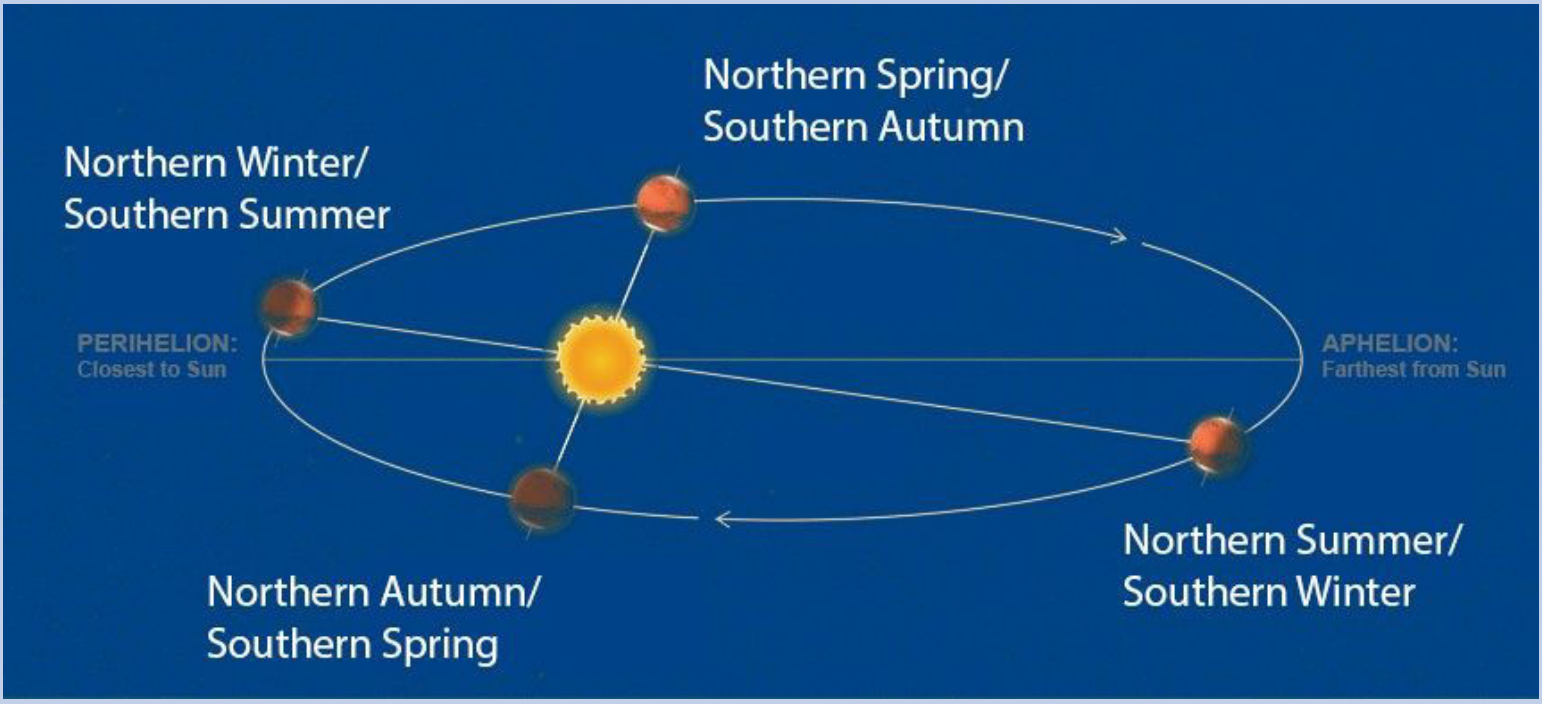
Although Mars and Earth have nearly identical axial tilts, a year on Mars lasts 687 Earth days (nearly 2 Earth years) due to its average distance of 142 million miles from the Sun, making it late autumn on the red planet. This distance and a thin atmosphere make it less than perfect sweater weather. A recent weather report from Gale Crater boasted a high of -18 degrees Fahrenheit for the week of May 20, 2025.

Seven Years of Summer

Saturn has a 27-degree tilt, very similar to the 25-degree tilt of Mars and the 23-degree tilt of Earth. But that is where the similarities end. With a 29-year orbit, a single season on the ringed planet lasts seven years. While we can't experience a Saturnian season, we can observe a ring plane crossing here on Earth instead. The most recent plane crossing took place in March 2025, allowing us to see Saturn's rings 'disappear' from view.

Seasons continues to page 10

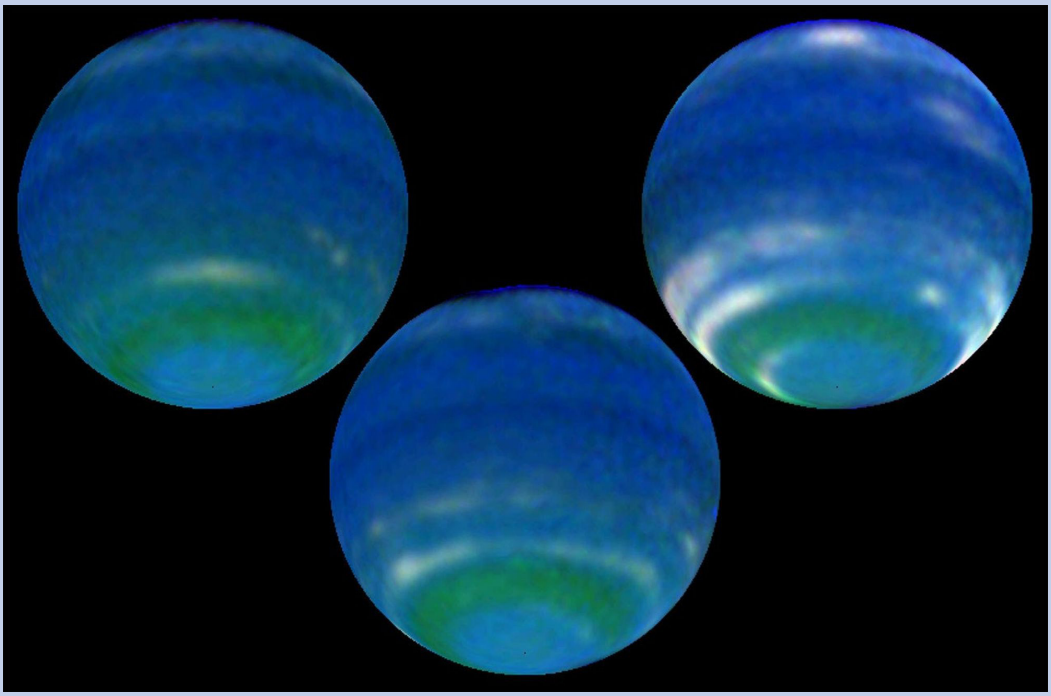
Seasons continued



An artist's rendition of Mars' orbit around the Sun, and its seasons. Credit: NASA/JPL-Caltech

A Lifetime of Spring

Even further away from the Sun, each season on Neptune lasts over 40 years. Although changes are slower and less dramatic than on Earth, scientists have observed seasonal activity in Neptune's atmosphere. These images were taken between 1996 and 2002 with the Hubble Space Telescope, with brightness in the southern hemisphere indicating seasonal change.



NASA Hubble Space Telescope observations in August 2002 show that Neptune's brightness has increased significantly since 1996. The rise is due to an increase in the amount of clouds observed in the planet's southern hemisphere. Credit: NASA, L. Sromovsky, and P. Fry (University of Wisconsin-Madison)

Seasons continues to page 11

Seasons continued

As we welcome summer here on Earth, you can build a Suntrack model that helps demonstrate the path the Sun takes through the sky during the seasons. You can find even more fun activities and resources like this model on NASA's Wavelength and Energy activity.

Additional Links:
Gale Crater Weather Report: https://mars.nasa.gov/layout/embed/image/mslweather/
Saturn Seasons: https://science.nasa.gov/missions/hubble/hubble-captures-the-start-of-a-new-spoke-season-at-saturn/
Ring Plane Crossing: https://science.nasa.gov/missions/hubble/hubble-captures-the-start-of-a-new-spoke-season-at-saturn/
Neptunian Springtime: https://science.nasa.gov/missions/hubble/brighter-neptune-suggests-a-planetary-change-of-seasons/
Suntrack Activity: https://solar-center.stanford.edu/AO/Sun-Track-Model.pdf
Wavelength and Energy: https://www.nasa.gov/stem-content/wavelength-and-energy/

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.