

# San Diego Astronomy Association

Celebrating Over 50 Years of Astronomical Outreach



August 2019

## August Program Meeting

<http://www.sdaa.org>

A Non-Profit Educational Association  
P.O. Box 23215, San Diego, CA 92193-3215

### Next SDAA Business Meeting

August 13th at 7:00pm  
7270 Trade Street  
San Diego, CA 92121

### Next Program Meeting

August 21th at 7:00pm  
Mission Trails Regional Park  
Visitor and Interpretive Center  
1 Father Junipero Serra Trail

Date: August 21, 2019

Speaker: Steve Hallman

Topic: Discovering The Darkness ...

Dark Matter & Dark Energy - An Overly Simplified Tale of How We Came To Know  
That Most Of The Universe Is Dark

Mr. Steve Hallman is a Physicist who has over thirty 30 experience in the Aerospace Industry, designing & building visible, infrared, and radar, imaging systems for ground and space applications. An avid amateur Astronomer, Mr Hallman enjoys exploring the limits of what can be done with "low cost" astronomy equipment such as: Observing Exoplanet Transits, Observing Nebula in Light Polluted Areas, and Detecting the Atmospheric Chemical Composition of Planets beyond Earth.

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Published Monthly by the

San Diego Astronomy Association

Incorporated in California in 1963

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San Diego Astronomy Association (SDAA) sponsors speakers on a wide range of astronomy topics on the third Wednesday of every month at the Mission Trails Regional Park Visitors Center. The program meeting begins at 7:00pm. Each attendee receives one free door prize ticket. After announcements and a small amount of business, the audience is treated to the featured presentation. At the close of the meeting the door prizes are presented. The event is open to the public. The Mission Trails Regional Park Visitors Center is at One Fr. Junipero Serra Trail, San Diego CA 92119. Call the park at 619-668-3281 for more information or visit <http://www.mtrp.org>

### Newsletter Deadline

The deadline to submit articles  
for publication is the  
**15th** of each month.

[Link to Outreach Calendar](#)

<https://calendar.google.com/calendar/embed?src=g-calendar@sdaa.org&ctz=America/Los>



# San Diego Astronomy Association

## *San Diego Astronomy Association Board of Directors Meeting*

*July 9, 2019* – Unapproved and subject to revision

### 1. Call to Order

The meeting was called to order at 7:00pm with the following board members in attendance: Dave Wood, President; Steve Hallman, Vice President; Bill Nguyen, Corresponding Secretary; Brian McFarland, Recording Secretary; Gene Burch, Treasurer; Pat Boyce, Director; Dave Decker, Director. Members in attendance: Dan Kiser, Erik Davies, and Nick Campo.

### 2. Approval of Last Meeting Minutes

June meeting minutes were approved.

### 3. Priority / Member Business

- a. None.

### 4. Treasurer's & Membership Report

- a. Treasurer's report approved.
- b. We are \$24K over last year.
- c. Gene is actively seeking a new bank with better returns on our investments.
- d. Up to 710 members.

### 5. Standard Reports

- a. Site Maintenance – Mustard plants and other weeds are out of control. We need a serious weed-whacking effort on the site.
- b. Observatory/Loaner Scope Report
  1. Scope continues to perform well. We donated some telescope time to Isaac (GSDS&EF winner) to obtain data with his home-built polarization detector. Light gathering was more difficult than expected as were the diffraction spikes. Follow-up observations are unlikely.
  2. Loaner Scopes: Having some difficulties with one return.
  3. Telescope Sales: The 16" Meade Lightbridge was a popular item as expected. Five members entered the drawing and Jim Billingsley was the winner. All other sale offers have gone quickly to SDAA contributing members thereby getting the equipment back into use and adding to the treasure. 10 items sold in the amount of \$3,585. I will continue to work this endeavor with David Wood and Dave Decker as my advisors. The storage box looks great – thank you for the board's support!
- c. Private Pad Report
  1. We currently have three free private pads and two people on the waiting list, both current pad lessees who are looking to upgrade to darker parts of the site.
  2. Pad 54 has submitted plans to add solar in order to turn his temporary observatory into a remotely operated unit.
  3. I plan to have a draft copy of the updated private pad development rules and procedures well in advance of the August meeting. I'd be happy to work on the sub-committee that will work on the final update.
- d. Program Meetings

Jul - Jack Lightholder // Roving the Red // Confirmed  
Aug -  
Sep - Dave Wood // TARO // Confirmed  
Oct - Dr. Bill Welsh // ?? // Confirmed  
Nov - Gadget Night or Member Image Gallery  
Backup - Steve Hallman  
Possible Speaker: Andy Boden (Spectroscopy), Shelley Wright (Searching for ETs)



# San Diego Astronomy Association

19 June Guest Speaker/Topic:

- Speaker: Steve Murray
- Presentation: Event Horizon Telescope
- Attendees: 34

Current Program Meeting Petty Cash (as of 3July19): \$445

- Previous Report \$369 (3Jun19)

Expenses Since Previous Report (as of 3July19)

- \$35.90 Snacks & Coffee

- e. AISIG – The June AISIG meeting focused on opportunities for amateurs to observe exoplanets for fun and/or for science. There were presentations by Steve Hallman, Pat Boyce, and Scott Dixon. It was a full evening and the audience was very engaged.
- f. Newsletter Report – Andrea continues to do stellar work.
- g. Website Report – Nothing new to report this month, but I am still not receiving the information I need about future meetings to post on the website. Please remember to send me the information on upcoming meetings when they become scheduled and when more detailed information becomes available so that I can update the Program page of the SDAA website. It contains similar information to the newsletter, except that I sometimes make links to relevant information
- h. Social Media Report – We received a request for Twitter access (do we even have an account?). A live feed from JSF might be fun.
- i. Outreach Report – This first six months of 2019, almost duplicates the stats for the first six months of 2018. We have a few more completed events this year, with the same total attendance. The June events are down, mostly because many of our OSIG volunteers have been on the road. With the Cuyamaca Paso Picacho events “off calendar” this year, Ben Grunbaum has negotiated with the park for a couple of events at Green Valley Falls campground. He has also negotiated for two dates at Lake Morena County Park. So, our net summer events have not changed. Many other summer events remain, including Julian Starfest, SPIE, Borrego Springs Library, (4) events at Dixon Lake, Mt. Helix Park, and of course the RAS event, Nightfall.

## Totals for June

<b>Totals for Month:</b>	<b>Events Completed</b>	<b>7.0</b>
	<b>Events Cancelled</b>	<b>2.0</b>
	<b>Public Attendance</b>	<b>482.0</b>
	<b>Private Attendance</b>	<b>75.0</b>
	<b>Total Attendance</b>	<b>557.0</b>
	<b>Mem Support:</b>	<b>25.0</b>
	<b>Average:</b>	<b>Mem/Event: 3.6</b>

## Year to Date since January 1

<b>Completed Events since January 1:</b>	<b>55.0</b>
<b>Cancelled Events since January 1:</b>	<b>21.0</b>
<b>Events Scheduled since January 1:</b>	<b>76.0</b>
<b>Public Attendees since Jan 1:</b>	<b>2310.0</b>
<b>Private Attendees since Jan 1:</b>	<b>2613.0</b>
<b>Total Attendees since Jan 1:</b>	<b>4923.0</b>



# San Diego Astronomy Association

- j. TARO Report – Taro is functional.
- k. Merchandise Report – No report.
- l. Cruzen Report – Brian McFarland and Jim Traweek cleaned and reassembled the G11 mount this weekend. Tracking still performs the same as before. Even 30 second exposures (guided or unguided) trail every few frames. Additionally, RA/DEC errors have been preventing the mount from slewing to objects without stopping and stalling. Balancing/power supply/internal hand controller battery has been checked. Doing a factory reset today to see if that will help.  
Craig E. and Bill N. have been trying different coarse grit sandpaper on the wall in hopes of getting the protective paint off with no luck. Perhaps painting or covering the spots would be easier. With the Takahashi back in place, a garage door limit sensor has been attached to not open/close the roof when the scopes are not in the proper positions.  
Bill N was directed to provide the Board with the steps required and the timeline needed for having the observatory operational and available to the membership.
- m. Astronomical League Report – Our latest number of SDAA members in the Astronomical League is 29.
- n. Julian Starfest Report – Everything is ready, pamphlets are complete, and with a few minor exceptions, all the speakers are lined up.

## 6. Old Business

- a. Electrical Upgrade – Still in progress.
- b. Audit Committee Review – Will occur July 17<sup>th</sup>.
- c. Other old business – None.

## 7. New Business

- a. Annual BBQ – Will occur on 28 September.
- b. Private Pad Development Doc Update – Mark Smith will draft a new private pad development document, run it by Brian M, and then submit to the Board for approval.
- c. Call for new business – Need to start advance planning for the annual banquet.

## 8. Adjournment

Adjourned at 8:15pm.

## StarFest 2019

Come and enjoy the largest public star party in Southern California at the Julian StarFest on August 1-3, 2019. The event is hosted by the San Diego Astronomy Association, under the dark skies of Menghini Winery near the mountain resort of Julian (think fine wine and fresh baked hot apple pie)!

Free public star party on Saturday night, August 3

Camping availability for tent and RV campers

Exhibits by major telescope and accessory vendors

Food and beverage vendors

Astronomy games and crafts for kids

Raffle for donated astronomy equipment on Saturday

Optional behind the scenes tour of the world famous Palomar Observatory on Saturday

The Star Party runs from dusk to 10:30 p.m. Saturday. Primitive camping is available for tent campers and RVs for up to three nights at the beautiful Menghini Winery. Camping fees, are \$40 per adult, \$20 per teen and free for those 12 and under. Send emails to [info@julianstarfest.com](mailto:info@julianstarfest.com) or visit the Julian StarFest web page for more information about camping, schedule of speakers, the Palomar Observatory tour, and other activities: [www.julianstarfest.com](http://www.julianstarfest.com)



# San Diego Astronomy Association

## For Sale to an Intrepid Astronomer(s)



Off Axis Newtonian



Sirius Scope Case

NexStar 8" SCT Tube



Meade LXD 55 (mount only)

We are going to this month's sales a little differently. As usual we will have a **"Contributing"** member asking price, but will also consider lesser best offers (any membership status) at the end of the month. Please remember "zero" is a number. All sales are "as-is". Our goal is to get these pieces of equipment into SDAA member hands.

**Off Axis Newtonian:** Observe as Sir Isaac Newton did. No central obstruction – no diffraction spikes. Obviously a production scope – no manufacturer name, but flawless bending and machining. Looked through it hand held and the image was very nice. Everything works well and design provides for fine adjustments. Not sure how it is supposed to be mounted, but handle and end support offer clues. A fun and rewarding project scope. **\$135** and it is yours, or best offer.

**Sirius Scope Case:** Seriously folks, this is a very nice case!!! Sturdy canvas, light weight, and secure latching. Currently configured for an 8" NexStar – foam included. You could swap out your current foam – dimensions are 13" x 19" x 28.5". An exceptional deal for 8" NexStar users! **\$50** and it is yours, or best offer.

**NexStar 8" SCT Tube:** Azimuth gear is trashed. Hand controller works but unreadable. Time to de-fork this fine instrument and put it on a GEM. Great Celestron optics and focuser. You will not be disappointed. Maybe some salvage value with the remainder. **\$255** and it is yours, or best offer.

**Meade LXD 55 (mount only):** Clean GEM. Nice case. Hand controller (497?) alone goes for \$50 to \$80 on Astromart. Needs a counterweight. No tripod. Instructions included. **\$135** and it is yours, or best offer.



# San Diego Astronomy Association



**Sept. 19-22, 2019**  
**Thursday—Sunday**  
**Camp Oakes**  
**Big Bear,**  
**California**

## 2019 - Changes and Innovations in Astronomy

Welcome to our 51st RTMC Astronomy Expo!

RTMC has a fresh aspect now as we gather in September, just before the fall Equinox. Until this year, we have always met in May with the spring and early summer sky visible. This year, the RTMC evening sky will have moved 120 degrees to the west, putting the summer Milky Way high overhead with the fall constellations coming up in the East.

RTMC is a well-rounded astronomy event that includes excellent science lectures and a great star party with outdoor observing day and night with fellow amateurs and telescopes of all kinds. We also feature astro-vendors bringing you the latest astronomy gear. You won't be sitting in a conference center merely talking about astronomy—at RTMC we are surrounded by real stars. Naturally, the outdoors includes real weather, so come prepared for cool nights and warm sun.

RTMC is the place for telescope makers, so if you built it, bring it and show it off. If you took a picture of the sky, bring it to share. We will recognize your best telescoping making efforts and astro photos in our telescope-maker Merit Awards and Astrophotography Competition. And, for photographers, this year's AstroPhotography Workshop is designed for the average astroimager who wants to take good photos with portable equipment at star parties.

We invite you to contribute to our program, whether by speaking on a subject you have studied or by showing something you have done. Bring your telescope to our nightly star party and join us on the main telescope field if you wish. The RTMC star party is a great opportunity to make new friends. This year the moon comes up later, so our evenings offers deep sky objects along with Jupiter and Saturn. On the upper telescope field, there are a few power outlets available for telescopes and computers, so you may want to bring a power pack or extension cord.

We are a family event: all kids come in for free and students enter at half price. We have events for everyone, including hikes, mountain biking, swimming, archery, a zip line, and canoeing. Sunday afternoon our kids' creative astronomy activity capped off with ice cream sundaes. Check your program for details.

Come join our Beginners' Corner talks and star party and activities. We can help you get started and explore many aspects of our hobby while answering your questions. Saturday and Sunday mornings, there is fun at the Swap Meet where many surprises and curiosities await.

Come on up to the mountain and see for yourself!

Martin Carey

RTMC President



# San Diego Astronomy Association

2019 RTMC ASTRONOMY EXPO

## Astro Imaging Exhibition

You are highly encouraged to bring a print of a favorite image you have produced since last year's conference in any or all of five categories:

- Solar System,
- Deep Sky,
- Eclipses/Transits,
- Meteors and Atmospheric Effects,
- General (astronomically related).

Pictures must be unframed and from 8x10 to 16 x 20 (if matted, do not exceed 16 x 20 mat). Register from Friday, 11 am until Saturday, 10 am in the tent (in front of the main dining hall). Entry and contest rules are at [www.rtmcastronomyexpo.org](http://www.rtmcastronomyexpo.org). RTMC AE attendees will enjoy your work and have an opportunity to vote for their favorites. Winners will be named Saturday night.

## Telescope Makers, Merit Awards

In 1969, the tradition started with the "Telescope Makers Conference" at Riverside City College. If you have designed a telescope, bring it so others can see your innovative designs or craftsmanship in telescope making. Be sure to register for the Merit Awards program. All entries must be completed (not "Under Construction") and must be located on the Telescope Field, Telescope Alley, or the Meadow. Judging is on Friday afternoon and Saturday morning with Merit Awards named Saturday evening.

## Telescope Viewing

For those of you who venture up to the telescope field Friday and Saturday night, we'll have various telescope stations set up for you to look thru at the night sky. We'll also announce and direct your attention to any possible iridium flares and ISS passes that may happen on those evenings. If you've never witnessed an iridium flare or watched the International Space Station fly by, make plans to stop by and see us up on the telescope field.

## Nightfall

Nightfall is still going strong! Come join the fun at the Palm Canyon Resort in Borrego Springs, CA.

Dates: 10/24/19 - 10/27/19

Be sure to make your reservations now as the hotel and campground sells out quickly! Reservations can be made at: <http://www.palmcanyonrvresort.com/>

Borrego Springs is the second international IDA dark sky community. See [www.nightfallstarparty.com](http://www.nightfallstarparty.com) for all the details.

Sponsored by: The Riverside Astronomical Society.

## Beginner's Corner

Come check out the fun things going on for all ages!

You can hear talks about The Basic Telescopes, Observing Techniques, Eyepiece Basics, Overview of Astronomy, Messier Objects, Understanding Star Charts, and so much more!

And have you ever walked the entire Solar System? Well you can (sort of). Meet at the front of Bose Lodge during the day for a very informative and fun "walk" thru the Solar System.

You can also get a guided Tour of the Constellations at night in the Amphitheater next to Bose Lodge.

## Presenters Needed

RTMC Astronomy Expo is well noted for its programs. We have three venues, going all weekend, so there is plenty to see and hear. We are looking for talks related to this year's theme: ***Changes & Innovations in Astronomy***, in addition to any other aspect of amateur or professional astronomy. As usual, we invite you to present information about telescope making, equipment, visual observing, imaging, outreach, or any and all other aspects of our hobby. If you would like to make a presentation, lead a workshop, chair a panel, or reserve time for a special interest group meeting, please send an abstract, audio-visual requirements & a brief (50 words) biography **by July 2nd** to Charles Morris at: [program@rtmcastronomyexpo.org](mailto:program@rtmcastronomyexpo.org).

## Show and Tell

If you have an image, movie, or short PowerPoint that you would like to share with the astro-crowd, please bring it to the main hall on Friday night after dinner. At "Show and Tell" you can do a little informal bragging on what you have done without making too big a deal of it. Simply bring the file on a separate CD or thumb drive, clearly labeled with your name and which files you want shown, to the AV volunteers in front. It really helps if you have set the separate images into a short presentation (PowerPoint or other simple viewer), rather than relying on the AV folks to find the separate files. Be ready to say a few words to the audience. Limit yourself to five minutes, please!



# San Diego Astronomy Association

2019 RTMC ASTRONOMY EXPO

## Family Fun

Camp Oakes will have a schedule of various activities offered by the Camp. Everyone may enjoy the swimming pool, lake canoes, archery, mountain biking (your own bike), climbing tower, catch & release fishing, and zip line (fee charged by the camp).

The schedule listing times and locations for these activities will be posted at the Main Hall, Bose Hall and the Information Booth. Be sure to check it out when you arrive so you don't miss out on anything. See you there!

## Important Camp information!

The camp has informed us that **NO DOGS will be allowed at Camp Oakes.** This is liability issue for them. Unless your dog is a licensed guide/therapy dog, please leave your dog at home.

Please be aware that there is NO water available to fill up your RV with. Please make sure your water tanks are already filled before arriving. There is also NO electricity hook ups for RVs.

No camping is allowed in or near the Indian Village. It is for the Camp Staff only. We appreciate your understanding in following the camp rules.

## Don't Forget . . .

We are at 7200+ fee in elevation, so be sure to drink plenty of water, use sunscreen and be prepared for various weather conditions. It can be cold, windy, snowing, hot, sunny, dry, etc., all in one day!

Bring layers to wear, a hat and a sense of adventure. We never know what Mother Nature will give us.

## How do we compare?

Over the years, our prices have fluctuated very little. In comparison to other large, outdoor astronomy expos/star parties, we are still very affordable. Most other expos have limited reservations, while we have unlimited reservations. We offer camping, dorms and 3-sided shelters, indoor talks and workshops. The ability to come and go from the expo camp at any time during your stay. Some places don't allow leaving at night.

	Texas Star Party	Winter Star Party	Golden State	OkieTex
PreRegistration	\$80, \$60 for add'l family	\$150	\$60	\$60, +\$5 per day
At the door reg.	\$150, \$70 for add'l family		\$70, or \$25 per night	\$120,+\$5 per day
Day only	\$100	?	?	?
Camping	\$16-\$30, per day	\$50-\$130	Included	Included
Reservations	Limited	Limited	?	?
Amenities	Open Pavilion, porta potties	Open Pavilion, flush toilets	Shade tent, porta potties	Enclosed building for talks

## Swap Meet

As usual, we'll be having our swap meet on BOTH Saturday and Sunday mornings. So dig deep in those closets, garages, and storage units for all that extra stuff you don't use. Sell it, make some money and gain some space - for some new stuff!

## AstroPhotography Workshop

### Mobile and Star Party AstroPhotography

This year's RTMC Premium AstroPhotography will be doing something different—concentrating on the needs of the average astroimager using portable equipment while camping or attending star parties. This kind of imaging has special needs. Equipment, power supplies, storage and transportation, quick setup and polar aligning, weather planning, target selection and scheduling, session planning and execution, cabling, software and computer equipment all change when the imager is away from home and an observatory. We will bring together a few experienced experts who will work with you on what you need to plan and do for a successful night of imaging. Whether you are just starting out, or have some experience, you will want to see what these folks do to make their camping trips more productive. This four hour workshop will have demonstrations, displays, and discussion about what you will need to make beautiful images of the sky far from home. Workshop is for Sunday, Sept 22nd from 9am—2pm. (Separate fee to attend, see registration form.)





# San Diego Astronomy Association



## Location

Longitude 116° 45' 21" West

Latitude 34° 13' 45" North

Altitude 7228 feet (2203 meters)

## Moonrise (PDT); Moonset in daylight

Thurs, Sept 19: rise 10:14PM - set 11:29AM

Fri, Sept 20: rise 10:56PM - set 12:28PM

Sat, Sept 21: rise 11:45PM - set 1:28PM

Sun, Sept 22: rise 12:00AM - set 2:27PM

## Contact Information

Registration: [registrar@rtmcastronomyexpo.org](mailto:registrar@rtmcastronomyexpo.org)

Vendor Chairman: [vendor@rtmcastronomyexpo.org](mailto:vendor@rtmcastronomyexpo.org)

Merit Awards: [rozer@pacbell.net](mailto:rozer@pacbell.net)

Speaker Chairman:

[program@rtmcastronomyexpo.org](mailto:program@rtmcastronomyexpo.org)

<http://www.rtmcastronomyexpo.org/>

## RTMC Sponsor

A proud supporter of the RTMC for over 40





# San Diego Astronomy Association



NAME \_\_\_\_\_ Phone# \_\_\_\_\_

Note: Vendors, please use the form at <http://rtmcastronomyexpo.org/vendors/>

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

EMAIL ADDRESS: \_\_\_\_\_

Expo dates are  
Thurs. Sept 19th to Sun. Sept. 22nd

## TO REGISTER

1. Complete the registration form.
2. Make checks payable to:  
**Riverside Telescope Makers Conference.**
3. Mail your Registration to:  
**Riverside Telescope Makers Conference  
P.O. Box 20243  
Riverside, CA 92516**

OR



You may use

PayPal to register online at:

<http://rtmcastronomyexpo.org/registration/>

**Pre-registration closes August 31st**

**Do not mail or use PayPal/website  
registration after August 31, 2019**

**Your request will not be processed.**

**You may register on-site when you arrive.**

*Please remember, NO DOGS allowed. Thank you!*

Refunds: Notify the conference via email by **Sept 9th.**

PayPal Service Fees are not refundable.

**No refunds for weather-related causes.**

*We reserve the right to refuse any application.*

<b>Weekend Admission</b> (Includes Up to 3 Nights Camping)	<b>Cost Before Aug 31</b>	<b>Cost After Aug 31</b>	<b>Times # of People</b>	<b>Equals Amount</b>
Adults, per person	\$45	\$50		
Children Ages 0 to 17 Please note how many	Free	Free		
Dorms— Adults (does not include admission)	\$18	\$20		
Dorms— ages 0-17 Please note how many	Free	Free		
<b>RTMC T-shirt</b>		Small		
Select size and quantity		Medium		
\$18 each, prepaid		Large		
Will be \$21 at the booth		X Large		
		XX Large		
		XXX Large		

<b>DAY USE ONLY</b> No Camping or Dorms Included in Price	<b>Before Aug 31</b>	<b>After Aug 31</b>	<b>Times # of People</b>	<b>Equals Amount</b>
Adults, per person	\$25/Day	\$30/day		
Children Ages 0 to 17	Free	Free		

<b>Sunday, Sept 22, 9am-2pm</b>	Times _____	
<b>Mobile Astro-Imaging Workshop</b>	# of People _____	
\$50 per person (In addition to Camping or Day Use Admission)		
<b>TOTAL</b>		

**CAR PASSES: How many vehicles: \_\_\_\_\_**

**How many people in each vehicle: \_\_\_\_\_**



# San Diego Astronomy Association

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## *The Dark Sky of Joshua Tree National Park*

By Hunter Harling



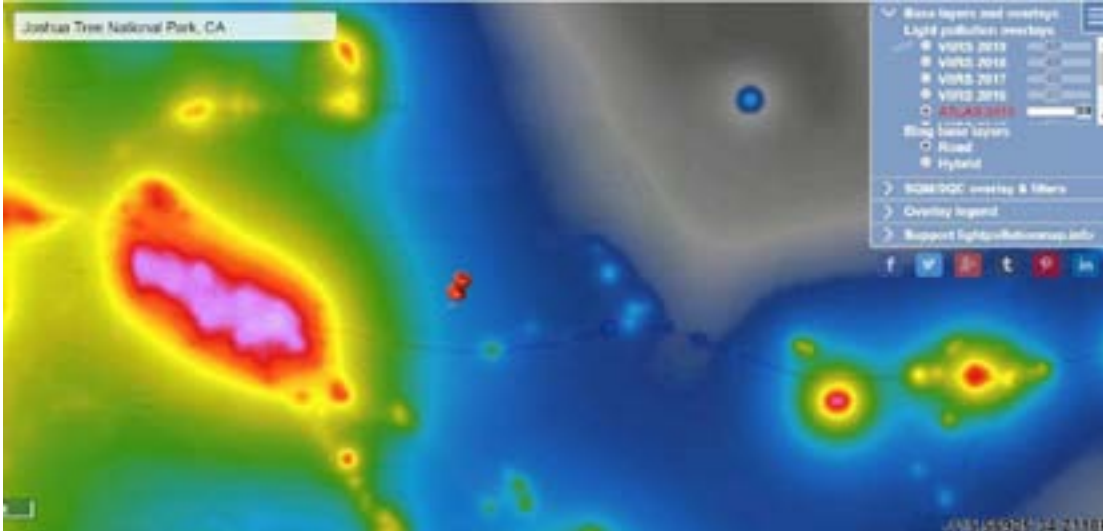
Just a few hours from San Diego lies Joshua Tree National Park, one of the darkest skies in the country. Joshua Tree is designated as an International Dark-Sky Park by the International Dark-Sky Association. This protects the quality of Joshua Tree's night sky by reducing the light pollution within and around the park and is a distinction that few national parks have received.



# San Diego Astronomy Association

## Where to Stargaze in the Park

The eastern side of the park has the darkest skies, as can be seen on light pollution maps:



Credit: Lightpollutionmap.info

Along the Pinto Basin Road is an ideal location for stargazing, and is where I captured the milky way photos in this article.

There are also many locations that would make an interesting foreground in milky way shots. These include; Arch Rock, Scorpius Rock, Skull Rock, Key's View, and the Cholla Cactus Garden.



Cholla Cactus Garden by Hunter Harling



# San Diego Astronomy Association

## Milky Way Photography in Joshua Tree National Park

Like all dark sky locations, Joshua Tree is excellent for astrophotography. Also, the good view of the unobstructed horizon makes it perfect for milky way nightscapes.

Here are some of the images I have captured in the park:



6-panel panorama, 30s exposures, ISO3200, f2.8



4x30s stack, ISO3200, f2.8

Joshua Tree National Park is an amazing location for stargazing and astrophotography. With its unobstructed view of the horizon and low light pollution, Joshua Tree has a sky that you will not forget.



# San Diego Astronomy Association

## SDAA Contacts

### Club Officers and Directors

President	Dave Wood	<a href="mailto:President@sdaa.org">President@sdaa.org</a>	(858) 735-8808
Vice President	Steve Hallman	<a href="mailto:VicePresident@sdaa.org">VicePresident@sdaa.org</a>	
Recording Secretary	Brian McFarland	<a href="mailto:Recording@sdaa.org">Recording@sdaa.org</a>	(619) 462-4483
Treasurer	Gene Burch	<a href="mailto:Treasurer@sdaa.org">Treasurer@sdaa.org</a>	(858) 926-9610
Corresponding Secretary	Bill Nguyen	<a href="mailto:Corresponding@sdaa.org">Corresponding@sdaa.org</a>	(619) 751-6621
Director Alpha	Dave Decker	<a href="mailto:DirectorAlpha@sdaa.org">DirectorAlpha@sdaa.org</a>	(619) 972-1003
Director Beta	Jeff Herman	<a href="mailto:DirectorBeta@sdaa.org">DirectorBeta@sdaa.org</a>	(619) 846-4898
Director Gamma	Pat Boyce	<a href="mailto:DirectorGamma@sdaa.org">DirectorGamma@sdaa.org</a>	(619) 227-9614
Director Delta	Mike Chasin	<a href="mailto:DirectorDelta@sdaa.org">DirectorDelta@sdaa.org</a>	(858) 210-1454

### Committees

Site Maintenance	Bill Quackenbush	<a href="mailto:TDS@sdaa.org">TDS@sdaa.org</a>	(858) 395-1007
Observatory Director	Ed Rumsey	<a href="mailto:Observatory@sdaa.org">Observatory@sdaa.org</a>	(858) 722-3846
Private Pads	Mark Smith	<a href="mailto:Pads@sdaa.org">Pads@sdaa.org</a>	(858) 484-0540
Outreach	Dave Decker	<a href="mailto:Outreach@sdaa.org">Outreach@sdaa.org</a>	(619) 972-1003
N. County Star Parties	-Vacant-	<a href="mailto:NorthStarParty@sdaa.org">NorthStarParty@sdaa.org</a>	
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E. County Star Parties	Dave Decker	<a href="mailto:EastStarParty@sdaa.org">EastStarParty@sdaa.org</a>	(619) 972-1003
Central County Star Parties	Dennis Ammann	<a href="mailto:CentralStarParty@sdaa.org">CentralStarParty@sdaa.org</a>	(619) 247-2457
Camp with the Stars	-Vacant-	<a href="mailto:CampWiththeStars@sdaa.org">CampWiththeStars@sdaa.org</a>	
K.Q. Ranch Coordinator	Dennis Ammann	<a href="mailto:KQ@sdaa.org">KQ@sdaa.org</a>	(619) 247-2457
Newsletter	Andrea Kuhl	<a href="mailto:Newsletter@sdaa.org">Newsletter@sdaa.org</a>	(858) 547-9887
New Member Mentor	Dan Kiser	<a href="mailto:Mentor@sdaa.org">Mentor@sdaa.org</a>	(858) 922-0592
Webmaster	Jeff Stevens	<a href="mailto:Webmaster@sdaa.org">Webmaster@sdaa.org</a>	(858) 566-2261
AISIG	Scott Dixon	<a href="mailto:AISIG@sdaa.org">AISIG@sdaa.org</a>	(858) 673-9588
Site Acquisition	-Vacant-	<a href="mailto:SecondSite@sdaa.org">SecondSite@sdaa.org</a>	
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Merchandising	-Vacant-	<a href="mailto:Merchandising@sdaa.org">Merchandising@sdaa.org</a>	
Publicity	Jeff Flynn	<a href="mailto:Publicity@sdaa.org">Publicity@sdaa.org</a>	(619) 806-6505
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Amateur Telescope Making	-Vacant-		
ALCOR (Astronomical League Correspondent) Mary Todd		<a href="mailto:ALCOR@sdaa.org">ALCOR@sdaa.org</a>	(858) 560-2052

#### SDAA Editorial Staff

Editor - Andrea Kuhl  
[newsletter@sdaa.org](mailto:newsletter@sdaa.org)

Assistant Editor: Craig Ewing

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# San Diego Astronomy Association

NASA Night Sky Notes

August 2019



**This article is distributed by NASA Night Sky Network**

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## **Chill Out: Spot an Ice Giant in August**

By David Prosper

Is the summer heat getting to you? Cool off overnight while spotting one of the solar system's ice giants: **Neptune!** It's the perfect way to commemorate the 30th anniversary of Voyager 2's flyby.

Neptune is too dim to see with your unaided eye so you'll need a telescope to find it. Neptune is at opposition in September, but its brightness and apparent size won't change dramatically as it's so distant; the planet is usually just under 8th magnitude and 4.5 billion kilometers away. You can see Neptune with binoculars but a telescope is recommended if you want to discern its disc; the distant world reveals a very small but discernible disc at high magnification. Neptune currently appears in Aquarius, a constellation lacking in bright stars, which adds difficulty to pinpointing its exact location. Fortunately, the Moon travels past Neptune the night of August 16<sup>th</sup>, passing less than six degrees apart (or about 12 Moon widths) at their closest. If the Moon's glare overwhelms Neptune's dim light, you can still use the its location that evening to mark the general area to search on a darker night. Another Neptune-spotting tip: Draw an imaginary line from bright southern star Fomalhaut up to the Great Square of Pegasus, then mark a point roughly in the middle and search there, in the eastern edge of Aquarius. If you spot a blue-ish star, swap your telescope's eyepiece to zoom in as much as possible. Is the suspect blue "star" now a tiny disc, while the surrounding stars remain points of white light? You've found Neptune!

Neptune and Uranus are ice giant planets. These worlds are larger than terrestrial worlds like Earth but smaller than gas giants like Jupiter. Neptune's atmosphere contains hydrogen and helium like a gas giant, but also methane, which gives it a striking blue color. The "ice" in "ice giant" refers to the mix of ammonia, methane, and water that makes up most of Neptune's mass, located in the planet's large, dense, hot mantle. This mantle surrounds an Earth-size rocky core. Neptune possesses a faint ring system and 13 confirmed moons. NASA's Voyager 2 mission made a very close flyby on August 25, 1989. It revealed a dynamic, stormy world streaked by the fastest winds in the solar system, their ferocity fueled by the planet's surprisingly strong internal heating. Triton, Neptune's largest moon, was discovered to be geologically active, with cryovolcanoes erupting nitrogen gas and dust dotting its surface, and a mottled "cantaloupe" terrain made up of hard water ice. Triton is similar to Pluto in size and composition, and orbits Neptune in the opposite direction of the planet's rotation, unlike every other large moon in the solar system. These clues lead scientists to conclude that this unusual moon is likely a captured Kuiper Belt object.

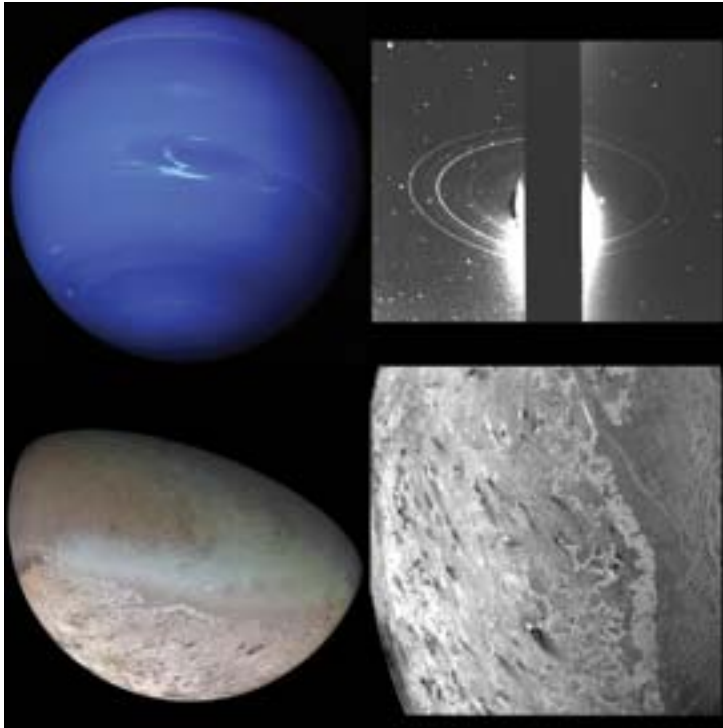
Discover more about Voyager 2, along with all of NASA's past, present, and future missions, at [nasa.gov](http://nasa.gov)



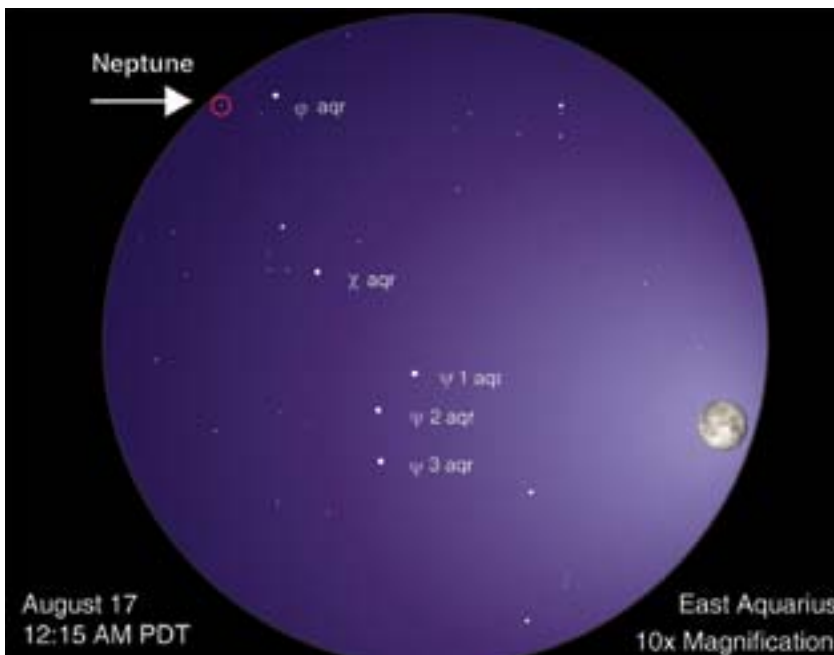
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Clockwise from top left: Neptune and the Great Dark Spot traced by white clouds; Neptune's rings; Triton and its famed icy cantaloupe surface; close of up Triton's surface, with dark streaks indicating possible cryovolcano activity. Find more images and science from Voyager 2's flyby at [bit.ly/NeptuneVoyager2](http://bit.ly/NeptuneVoyager2) Image Credit: NASA/JPL

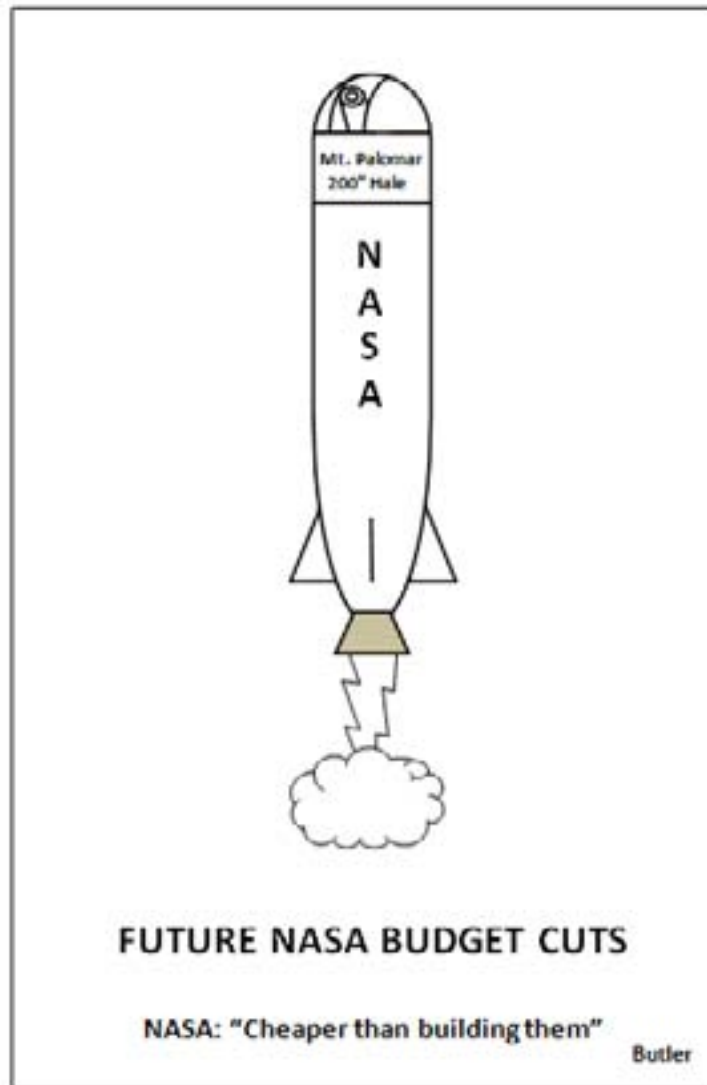


Finder chart for Neptune. This is a simulated view through 10x50 binoculars (10x magnification). Please note that the sizes of stars in this chart indicate their brightness, not their actual size. *Moon image courtesy NASA Scientific Visualization Studio; chart created with assistance from Stellarium.*





# San Diego Astronomy Association



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