

The SAN MATEO COUNTY ASTRONOMICAL SOCIETY

October 2017 — 646th General Meeting Notice



EVENT HORIZON

Founded in 1960, the San Mateo County Astronomical Society is a 501(c)(3) non-profit organization for amateur astronomers and interested members of the public. Visitors may attend Society meetings and lectures on the first Friday of each month, September to June, and star parties two Saturdays a month. All events are free for visitors and guests. Family memberships are offered at a nominal annual cost. Detailed info is found at www.smcasastro.com, where those who want can join via Paypal. Membership includes access to this monthly Event Horizon newsletter, discounted costs and subscriptions to calendars and magazines, monthly star parties of the Society and the College of San Mateo, use of loaner telescopes, field trips, social occasions and general meetings presenting guest speakers and programs. For additional information, please email us at SMCAS@live.com, or call us at (650) 678-2762.



Great American Eclipse August 21 2017
Independence Oregon, Images by Chanan Greenberg
Composite Image

THE TOTAL SOLAR ECLIPSE of August 21, 2017 was witnessed and in some cases photographed by many SMCAS members who traveled to Oregon and other states to be within the path of totality. The image above by SMCAS member Chanan Greenberg is a composite based on several photographs he took. See page 4 for other member photos and Chanan's report of his experience.

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DATES TO SAVE

Oct 6: General meeting, pizza, and presentation at the CSM Planetarium. Details on page 3.

Oct 14: SLAC/KIPAC Kids Night. **Volunteers needed!** Page 2.

Oct 17: SMCAS Board Meeting, CSM ISC room.

Oct 21: Crestview star party, heavy attendance expected.
Volunteers needed! Page 2.

More events and further details on page 6.

President's Corner

All Hands On Deck!

We are coming up on our busiest time of the year over the next few weeks, and we need “all hands on deck!” If you can help at any of our upcoming events, it will be much appreciated, please contact myself or Ed Pieret. We need members to operate telescopes, run astronomy related activities, staff our membership table, answer questions, and take on other tasks which do not require you to be an astronomer! Volunteering at these events fun and rewarding, a great way to connect with other SMCAS members, others in the astronomy community, and the general public.

The level of activity we have coming up can be seen in our event calendar in this issue. On October 14 we have the **SLAC/KIPAC Kids Night** at SLAC in Palo Alto, which can draw over 1,000 people. One week later, the **San Carlos Charter Learning Center** will visit our **Crestview Star Party on October 21** and we can expect high attendance. These are among the most significant events we are involved in each year, and we need many volunteers to handle the large number of people. We also have a general meeting on the 6th and a normal Crestview party on the 14th.

The Great American Eclipse of August 21, 2017 has come and gone! I hope you all were able to view and appreciate it somewhere! This was my first total solar eclipse, and the whole experience was wonderful. I ended up on the outskirts of Madras, Oregon, in the Day Tripper overnight parking at SolarTown, along with many thousands of other people. I connected with SMCAS members Mary Ann McKay and Frank Seminaro, plus other friends that had journeyed there.

SMCAS had many of our members travel to a wide variety of other locations—Washington, Oregon, Wyoming and more. Everyone's experience and view was different, but one common thread was that, whether a first time or experienced eclipse chaser, everyone had a great time and can't wait for the next eclipse adventure opportunity! On average, a total eclipse occurs somewhere on Earth about every 18 months. For the adventuresome, the next total Solar eclipse is in South America, the Atacama Desert, on July 2, 2019. Or if you want to hold out for something easier to get to, in the USA on April 8, 2024. I plan to chase that one, and hope to see you there!

Lastly, it is my pleasure to introduce our new SMCAS members who joined over the summer: Ed Mitchell from Belmont, Hayley Feinberg from Hillsborough, Joel Bruxvoort from Pacifica, and Norman Stoddard from Pacifica. Welcome new members!

Marion Weiler
President, San Mateo County Astronomical Society



Colette Rudd and Marion Weiler preparing for the eclipse at SolarFest, Madras, Oregon.

SMCAS General Meeting and Presentation on Friday October 6, 2017

Dr Monika Kress

**Professor, Physics & Astronomy
San Jose State University**

Finding Meteorites in Antarctica

Friday, October 6, 2017 , College of San Mateo, Building 36
SMCAS General meeting at 7:00 p.m. ISC Room, room 110
Presentation at 8:00 p.m. in the CSM Planetarium
Free and open to the public, free parking (lots 5 and 6 recommended)

Meteorites fall on the Earth at a rate of 30,000 kg per year. Antarctic meteorite searches are one of the most important sources of extra-terrestrial material and information for planetary research.

Antarctica is an ideal hunting-ground for these precious samples of other worlds, so each year, the National Science Foundation funds a handful of scientists to search the icy wastelands to recover as many meteorites as possible. In this talk, Dr. Kress will discuss the science of meteorites and what it was like to camp out for two months in the most inhospitable place on Earth.



Dr. Monika Kress is a Professor and acting Chair of the Physics and Astronomy Department at San Jose State University. She conducts research in computational astrophysics. Her research team is investigating the stability of planetary systems around low-mass main sequence stars. She is a co-investigator of the Virtual Planetary Laboratory, one of the NASA Astrobiology Institute lead teams. She served on the Antarctic Search for Meteorites (ANSMET) as a member of their reconnaissance team for the 2003-04 field season.

She received her BS in 1991 and her PhD in 1997, both degrees in Physics and both from Rensselaer Polytechnic Institute. Her PhD thesis topic was in computational astrochemistry and was conducted jointly at NASA Ames Research Center. Before landing at San Jose State University, she was a Postdoctoral Research Associate conducting research in planetary science with Dr Chris McKay, and at the University of Washington in Seattle, carrying out research in astrobiology with Dr. Don Brownlee.

Dr. Kress has made a habit, if not career, of exploring the furthest corners of the Earth in the name of science (and fun). When not in the classroom, she can usually be found outside. She is into hiking, backpacking, long-distance running, and mountain climbing, including Mt Whitney and Mt Rainier.

[Members Forum](#)

Total Solar Eclipse of August 2017

By Chanan Greenberg

I have been planning to witness this eclipse for 7 years. I read up about eclipse imaging, and started practicing on weekends. My goal was to see the eclipse directly and not mess around with cameras during totality. I needed automation and a well-rehearsed routine allowing me to take images without taking my eyes off the sun. My SMCAS colleague Ken Lum shared some improvements he had come up with for his equipment—very happy he did.

We saw the eclipse from Independence, Oregon, near Salem. Tension started to build as the last sliver of sun disappeared, then we took off the glasses to stare directly at the sun. People's reaction was incredible. They were hollering, mostly saying "oh my god." I was completely gob-smacked. All of my reading, viewing videos and images, and previous experience with partial and clouded-out eclipses did not prepare me for what my eyes were now looking at. A dark moon (still could see some of its details thanks to earth-shine



The pre-eclipse sun on August 21, 2017.

light), a very dark blue sky, with stars and planets visible in mid-day, sunsets on every horizon and the most un-earthly beautiful light which surrounded the moon and a fainter light gently flowing away was so unnatural, so beautiful that my brain was having a hard time processing it all. The sun's corona is one of the more beautiful sights I have ever seen. In addition to this beautiful light, we saw prominences (plasma shooting out from the surface of the sun) and bits of the sun peeping through lunar mountains, known as Bailey's Beads, as little red dots appearing and disappearing around the moon.

In the excitement I forgot at first to remove the protective filters off the cameras. However, I recovered quickly and returned to my well practiced routine. I viewed the entire totality not taking off my eyes of the amazing view, which is now etched in my mind, and was still able to image over 50 images during totality which



The inner corona (white) with prominences (red).

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Eclipse, continued from p. 4

produced some very decent pictures.

We are already talking about how we are going to get to our next eclipse. This whole event was wonderful, marked by a lot of kindness and goodwill. A million things could have gone wrong but none of them did. It was simply perfect.

High resolution versions of these images, this issue's cover image, and others, plus a longer version of this article, are available on Chanan's website:

www.greenhawkobservatory.com/solareclipse2017.



Partial stages of the eclipse.

Partial and total eclipse at Madras, OR. Photos contributed by Ed Pease.



Upcoming SMCAS Meetings and Events

We have many fun and interesting activities planned in the coming months. See the web site (www.smcasastro.com) or contact Marion Weiler (mgwe@pacbell.net) for more information or to volunteer at any of these events. Please contact Ed Pieret (epieret@comcast.net) if you are available to help out with Star Parties at Crestview Park and other locations.

Fri, Oct 6	7:00 pm	General Meeting, Pizza Social and Presentation
Sat, Oct 14	4:00 pm	SLAC/KIPAC Kids Night at SLAC, Palo Alto — Volunteers needed!
Sat, Oct 14	6:30 pm	Crestview Park Star Party
Tue, Oct 17	7:00 pm	SMCAS Board Meeting
Sat, Oct 21	6:15 pm	Crestview Park Star Party — High attendance expected
Fri, Nov 3	7:00 pm	General Meeting, Pizza Social and Presentation
Sat, Nov 11	5:00 pm	Crestview Park Star Party
Sat, Nov 18	5:00 pm	Crestview Park Star Party
Tue, Nov 21	7:00 pm	SMCAS Board Meeting
Sat, Dec 2	6:00 pm	Holiday Party, Crystal Springs Methodist Church, San Mateo
Sat, Dec 9	5:00 pm	Crestview Park Star Party
Tue, Dec 19	7:00 pm	SMCAS Board Meeting
Sat, Dec 23	5:00 pm	Crestview Park Star Party

General meetings and board meetings are held in the ISC Room (room 110) in building 36 at the College of San Mateo. For directions to the building or to the star party site at Crestview Park in San Carlos, see page 10. All SMCAS members are welcome at board meetings.

Crystal Springs Methodist Church is located at 2145 Bunker Hill Drive, San Mateo. The Holiday Party will be in the Fireside Room.

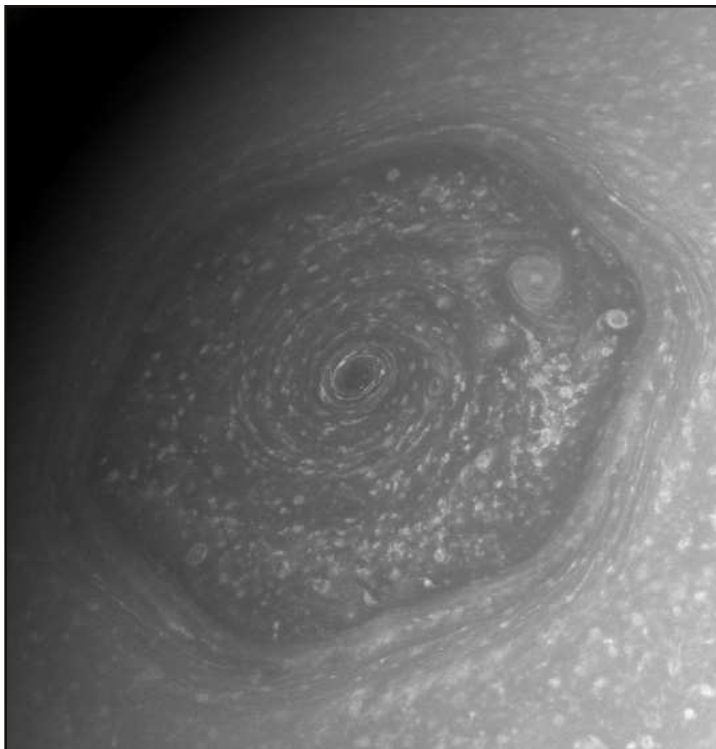
The times given for the star parties are approximately at sunset. Arrive then to set up a telescope or if you want to learn about telescopes. If you would like to merely see the wonders of the night sky through our telescopes, observing starts about an hour later and usually continues for about two hours.

Cassini Says Goodbye

By Teagan Wall

On September 15th, the Cassini spacecraft will have its final mission. It will dive into the planet Saturn, gathering information and sending it back to Earth for as long as possible. As it dives, it will burn up in the atmosphere, much like a meteor. Cassini's original mission was supposed to last four years, but it has now been orbiting Saturn for more than 13 years!

The spacecraft has seen and discovered so many things in that time. In 2010, Cassini saw a massive storm in Saturn's northern hemisphere. During this storm, scientists learned that Saturn's atmosphere has water vapor, which rose to the surface. Cassini also looked at the giant storm at Saturn's north pole. This storm is shaped like a hexagon. NASA used pictures and other data from Cassini to learn how the storm got its six-sided shape.



This image of the hexagonal storm on Saturn's north pole was taken by Cassini in 2013. Credit: NASA/JPL-Caltech/Space Science Institute.

Cassini also looked at some of Saturn's moons, such as Titan and Enceladus. Titan is Saturn's largest moon. Cassini carried a lander to Titan. The lander, called



Huygens, parachuted from Cassini down to the surface of the moon. It turns out, Titan is quite an exciting place! It has seas, rivers, lakes and rain. This means that in some ways, Titan's landscape looks a bit like Earth. However, its seas and rivers aren't made of water—they're made of a chemical called methane. Cassini also helped us learn that Saturn's moon Enceladus is covered in ice. Underneath the ice is a giant liquid ocean that covers the whole moon. Tall geysers from this ocean spray out of cracks in the ice and into space, like a giant sneeze. Cassini flew through one of these geysers. We learned that the ocean is made of very salty water, along with some of the chemicals that living things need.

If there is life on Enceladus, NASA scientists don't want life from Earth getting mixed in. Tiny living things may have hitched a ride on Cassini when it left Earth. If these germs are still alive, and they land on Enceladus, they could grow and spread. We want to protect Enceladus, so that if we find life, we can be sure it didn't come from Earth. This idea is called planetary protection.

Scientists worry that when Cassini runs out of fuel, it could crash into Titan or Enceladus. So years ago, they came up with a plan to prevent that from happening. Cassini will complete its exploration by diving into Saturn—on purpose. The spacecraft will burn up and become part of the planet it

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October Rise and Set Chart

SMCAS 2017 (PDT)	Oct 14 Rise	Oct 14 Set	Oct 21 Rise	Oct 21 Set	Oct 28 Rise	Oct 28 Set
Sun	7:17 AM	6:32 PM	7:24 AM	6:22 PM	7:31 AM	6:14 PM
Moon	1:57 AM	3:59 PM	9:04 AM	7:58 PM	2:44 PM	12:33 AM
Mercury	7:37 AM	6:45 PM	8:07 AM	6:45 PM	8:36 AM	6:45 PM
Venus	5:32 AM	5:45 PM	5:47 AM	5:39 PM	6:02 AM	5:33 PM
Mars	5:06 AM	5:30 PM	5:00 AM	5:13 PM	4:54 AM	4:56 PM
Jupiter	8:03 AM	7:00 PM	7:43 AM	6:36 PM	7:23 AM	6:13 PM
Jupiter's moons at set, East on left	e g J i c		c e g J i		e J i c (g behind J)	
	J=Jupiter, c=Callisto, e=Europa, g=Ganymede, i=Io					
Saturn	12:15 PM	9:54 PM	11:50 AM	9:29 PM	11:25 AM	9:04 PM
Uranus	6:41 PM	7:49 AM	6:12 PM	7:20 AM	5:44 PM	6:51 AM
Neptune	4:51 PM	4:09 AM	4:23 PM	3:41 AM	3:55 PM	3:13 AM
Pluto	1:56 PM	11:38 PM	1:29 PM	11:11 PM	1:02 PM	10:44 PM

- Star parties are at Crestview on the 14th and 21st.
- Jazz Under the Stars is at CSM on the 28th.

- *courtesy of Ron Cardinale*

Fundraising for the Group: SMCAS Participates in AmazonSmile and Receives a Percentage of Your Purchase

SMCAS is now enrolled in AmazonSmile, a program that enables certified 501(c)(3) non-profit organizations to receive donations from eligible purchases at Amazon.



To enroll in the program, go to smile.amazon.com. On your first visit to this site, you can select a charitable organization – San Mateo County Astronomical Society (SMCAS) – that will receive 0.5% of the purchase price of eligible items on Amazon. How will you know if an item is eligible? Items are clearly and literally marked on the product detail pages with “Eligible for AmazonSmile donation.” For more information, go to smile.amazon.com/about.

October 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
01 6:54:54 PM Sunset	02	03	04	05	06 7:00 PM General Membership Meetin	07
08 6:44:23 PM Sunset	09	10	11	12	13	14 6:30 PM Crestview Star Party
15 6:34:21 PM Sunset	16	17	18	19	20	21 6:30 PM Crestview Star Party
22 6:24:59 PM Sunset	23	24	25	26	27	28
29 6:16:29 PM Sunset	30	31	01	02	03 7:00 PM General Membership Meetin	04

• observing event • club event • community event

Calendar courtesy of Ed Pieret

Seas of Titan, continued from p. 7

explored. During its final plunge, Cassini will tell us more about Saturn's atmosphere, and protect the moons at the same time. What an exciting way to say goodbye!

To learn more about Saturn, check out NASA Space Place: spaceplace.nasa.gov/all-about-saturn

This article is provided by NASA Space Place. With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology. Visit spaceplace.nasa.gov to explore space and Earth science!

SMCAS Year-End Publication Orders

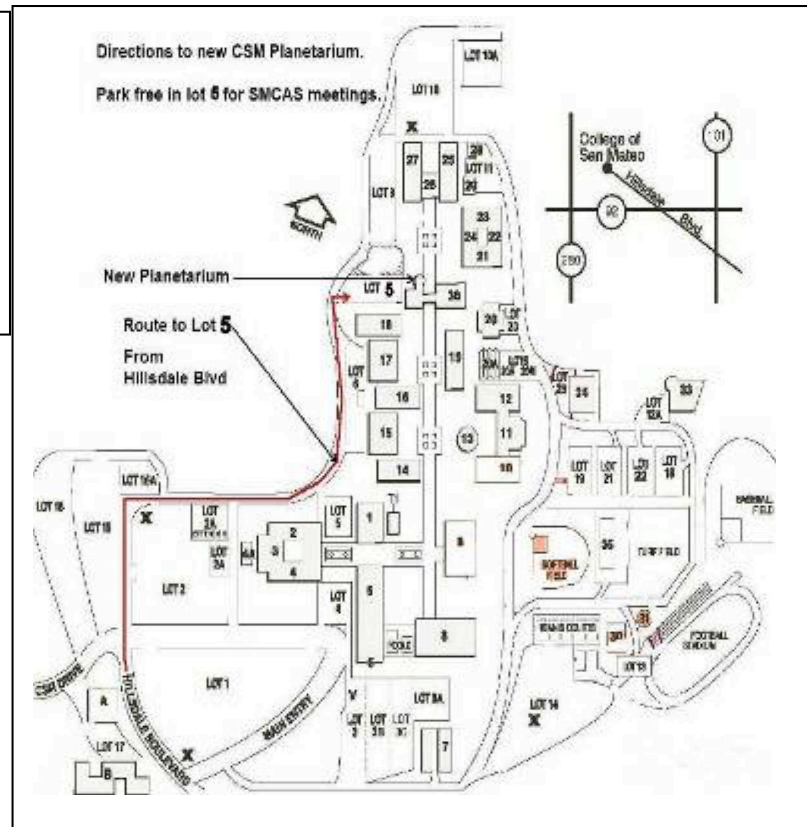
Orders for 2018 *Astronomy Magazine* wall calendars should be submitted by about November 15 to ensure arrival by December. The price should be about \$7 each, vs. \$12.99 list. Similarly, RASC 2018 *Observer's Handbooks* will be about \$25 (list \$39.95 Canadian, US ~\$32.16). A new offering will be the RASC *Explore the Universe Guide*, which is a new beginner's observing guide introducing proper practices and techniques including stars, constellations, lunar, planetary, deep sky, and other target objects, requiring only binoculars. Pricing about \$21 (list \$28). Contact Ed Ching at chinged@gmail.com before the order date to pay for and reserve your order.

Directions to SMCAS Meetings at CSM, and to Star Parties

Star Parties are Free to Members and Visitors and are Held Regularly, Weather Permitting

Directions to the CSM Planetarium for Meetings

After exiting Hwy 92 at Hillsdale Blvd, climb the hill towards CSM, passing two traffic lights to the stop sign at the top. Continue straight, bear right then, after the 2nd stop sign, bear left over the rise. Enter the next parking lot on the right, called Lot 5, "Marie Curie". Science Bldg 36 and the planetarium lie straight ahead. Enter Bldg. 36 thru the door facing the lot, or walk around the dome to the courtyard entrance.



Crestview Park

Come on out, and bring the kids, for a mind-blowing look at the Universe!

Bring your binoculars, telescopes, star guides, and lounge chairs for some informal star gazing at Crestview Park.

Dress warmly and wear a hat. Only visitors with telescopes should drive in. Others should park on the street and walk in, or arrive before dark so that car headlights don't affect the observers' dark adaptation. Bring small flash-lights only, covered with red cellophane or red balloon.

These measures avoid safety issues of maneuvering in the dark, as well as ruining the night vision of the viewers.

Please don't touch a telescope without permission. And, parents, please don't let children run around in the dark.

From Hwy 101 or El Camino, take Brittan Avenue in San Carlos, west (to the hills). Follow Brittan 2.3 miles (from El Camino) to Crestview Drive. Turn right on Crestview. In half-a-block, you will see a small blue posted sign with an arrow, indicating the entry road into Crestview Park. It lies between houses with addresses #998 and #1000 Crestview Drive.

From Highway 280, take Edgewood Road exit. Go east (toward the Bay) about 0.8 miles. Turn left at Crestview Drive. Go 0.5 mile uphill to where Crestview meets Brittan. Again, drive the half-block, to the sign on the right, and the entry road on the left.

Directions to Crestview Park for Star Parties

Note: If bringing a telescope and arriving after dark, please enter the Park with your headlamps and white interior lights off. If you aren't bringing a telescope, whether before or after dark, please park along Crestview Drive, and walk in.

2nd Note: Crestview Park is residential, adjacent to homes and backyards. Before inviting potentially noisy groups, please call Ed Pieret at (650) 595-3691 for advice and advisories. Call Ed also to check the weather and 'sky clock', and to see whether the star party is still scheduled.



San Mateo County Astronomical Society Membership Application

rev 04022017

SMCAS@live.com; P.O. Box 974, Station A, San Mateo CA 94403; (650) 678-2762

Date: _____ Please check one: New Member or Renewal

\$30 Regular Family Membership; \$15 Student Membership

All members, please indicate areas of interest below. New members, please complete entire form. Renewing members, please provide your name and any information that has changed in the last year.

We will list your name, address, email address, and phone number(s) in our membership roster unless you have checked the box preceding that information. The membership roster is distributed to active members only.

Each member's name and mailing address must be provided to the Astronomical League (AL), SMCAS' parent organization. If you don't want AL to have your phone number and email address, indicate below.

Name(s) _____ Email Address _____

Address _____

City & Zip Code _____

Phone Number(s): _____ Do not provide my phone number(s) to the AL.

Don't provide my email address to the AL. (Checking this means you can ONLY get **The Reflector** by regular mail)

Please check one: send **The Reflector** by mail, or by email.

Areas of Interest

SMCAS encourages member involvement. We invite you to provide additional information about your interests, skills, occupation and prior experience. Please identify SMCAS projects and functions that you might like to help facilitate.

Please indicate which of the following activities might be of interest to you:

_____ Star Parties - Do you own a telescope you can bring: Yes () No ()

_____ General Meetings - Finding (or being) a Speaker. Official greeter. Set up or take down ISC or refreshments.

_____ Family Science Day & Astronomy Festival (Usually at CSM the first Saturday in October).

_____ Social Events - Equinoctial and Summer Solstice potlucks, Summer Star-B-Que, Holiday Potluck.

_____ SMCAS Membership and Promotional Drives

_____ Communications – 'Event Horizon' Newsletter, Website(s), Facebook page, group email, Publicity posting.

_____ Educational Programs – School, museum and library star parties, Bay Area Astro teacher assistants.

Other/Comments: _____

<http://www.SMCASASTRO.com>