

The SAN MATEO COUNTY ASTRONOMICAL SOCIETY

May, 2009 561st General Meeting Notice



EVENT HORIZON

Founded in 1960, the San Mateo County Astronomical Society is a non-profit organization for amateur astronomers. Family memberships are open to the public, and visitors are cordially invited to the Society's meetings, which are held on the first Friday of the month, September through June. Detailed information about our events and membership can be found at www.smcas.com

Membership includes a monthly bulletin, discounted subscriptions to calendars and magazines, monthly star parties, use of our loaner telescopes, tours, field trips and guest speakers, plus an invitation to join our online discussion group. To receive additional information, send a note to SMCAS@live.com or call (650) 862-9602.

GOOGLE BEATS NASA TO MARS!!

(Entire planet mapped, subdivided for investment.)

Actually, as Dr. Ross Beyer will explain, Google and NASA collaborated on this project. Dr. Beyer, a Research Scientist with SETI Institute and NASA/AMES, worked with other scientists alongside engineers from Google, to collect, parse, and organize the vast store of Mars geospatial data available to the public into a form that could be used by Google Earth. His discussion will cover a brief history of the project, take you on a detailed tour of all of the features, and answer your questions about using Mars mode for science, education, or fun, as well as answering questions about how to view your own data in the client. As far as investing in Martian real estate goes, the best advice is to look for water access.

To learn more about navigating the Martian landscape, come to the Planetarium Dome on Friday, May 1, at 7:30.
(See p 9 for directions)

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MONTHLY STAR PARTIES

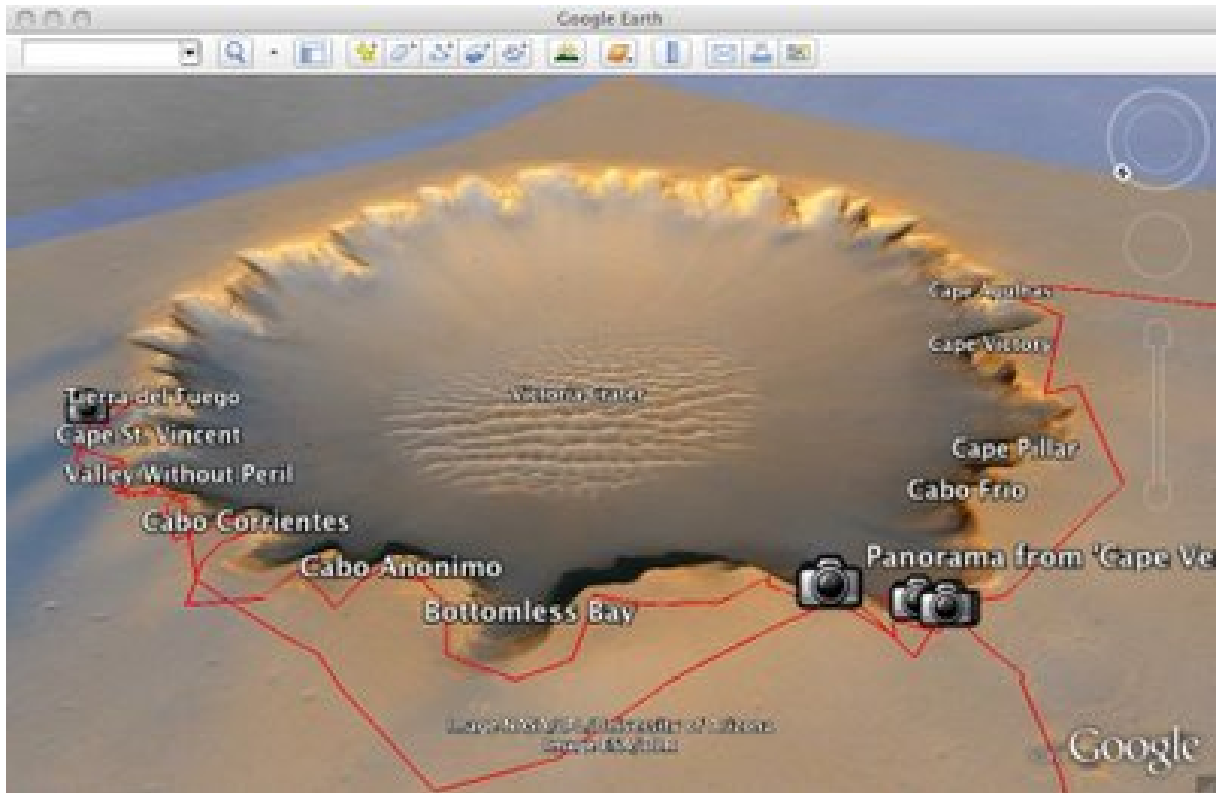
Crestview Park in San Carlos
Saturday May 16 and 23

See p 9 for directions
See p 6 bottom of calendar for rise & set times

ANNOUNCEMENTS

GOOGLE EARTH GOES TO MARS

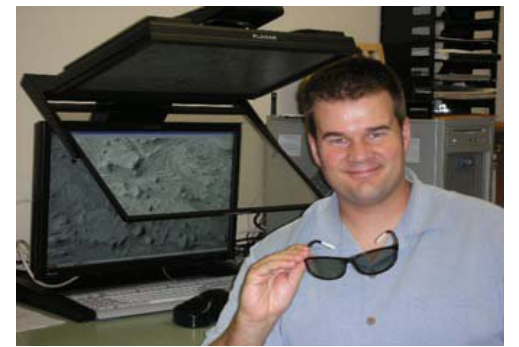
(Turn left at the moon, proceed 35 to 125 million miles. If you pass a large number of asteroids, you've gone too far.)



Good news for Google Earthers: now you can check out the surface of Mars through the same program. A collaborative effort by Dr. Ross Beyer and other scientists from NASA/AMES and Google engineers has launched this new tool for exploring the surface of Mars without the need for oxygen masks, pressure suits or that annoying two-year exposure to cosmic rays.

Dr. Beyer will discuss the history of this project and demonstrate some of the places you can go and things you can see. Explorers hoping to turn up evidence of life on Mars, such as scum-covered ponds, ancient artifacts, or suburban sprawl complete with strip-malls and Starbucks stores will have to wait, though. Scientists estimate those things will take at least ten years once we've established outposts.

In the meantime, you can visit a large assortment of unusually shaped rocks with clever names like Bread-Basket, Humphrey, Sashimi, Kettlestone, Carousel, Escher, Snout and Flatrock. (Some names are more clever than others.)



Dr. Ross Beyer in front of his SD2420W 3D/Stereoscopic Monitor

From the Prez:

Our officers and board members are always looking for ways to make our meetings and activities more meaningful for our members. We have decided to change the meeting format back to meeting **in the Planetarium at 7:30 p.m.** From 7:30 to 8:00 we will cover announcements and other subjects and possibly a short presentation by one of our members. The speaker will still be scheduled for 8:00 p.m. We will no longer have refreshments in the ISC, and refreshments are not permitted in the Planetarium. There are a number of reasons we have decided to take this approach:

- Our speakers are getting more popular and the planetarium is getting fuller. At the March meeting some of our members were unable to find seats for the lecture.
- The number of members who go directly to the Planetarium and do not come to the ISC has been increasing, and they are missing important society announcements.
- We have been unable to find any members who are willing to help out with purchase and preparation of refreshments.

Our May speaker is Dr. Ross Beyer who will be talking about Google Mars. Google Mars is part of Google Earth, and you can get it by downloading Google Earth. The program is free and, if you haven't seen it, you will find it amazing.

Our June meeting is going to be important because we will elect all of the officers and directors for the coming year. We have a number of open board positions for members who would like to get involved in running the society. If you think you might be interested, contact me directly or enter your information under the "Get Involved" tab on our webpage, <http://www.smcas.com>.

I would like to thank all of you who volunteered to help with Astronomy Family Fun Day. It was the most successful event we have had in several years with around 120 visitors to our exhibits during the day and about 150 visitors for the evening observing portion.

Our summer schedule will be light as it has been in previous years. We will not have meetings July or August but Crestview Star Parties will continue. We are also planning a joint Star-B-Que party with the Peninsula Astronomical Society on August 29th at Hidden Villa. This is a great event for the entire family and the speaker will be Dave Rodrigues (the Astro Wizard) which is always a great time for the kids.

As always, if you disagree with any of the decisions made by the board, let us know. We would be glad to have you help us make better decisions in the future.

Ed Pieret, President - San Mateo County Astronomical Society



The Swiss Army Knife of Weather Satellites

Spotting volcanic eruptions, monitoring the health of crops, pinpointing distress signals for search and rescue teams.

It's not what you might expect from a weather satellite. But these are just a few of the abilities of NOAA's newest polar-orbiting weather satellite, launched by NASA on February 6 and turned over to NOAA for full-time operations on February 26.

Formerly called NOAA-N Prime and now renamed NOAA-19, it is the last in its line of weather satellites that stretches back almost 50 years to the dawn of the Space Age. Over the decades, the abilities of these Television Infrared Observation Satellites (TIROS) have gradually improved and expanded, starting from the grainy, black-and-white images of Earth's cloud cover taken by TIROS-1 and culminating in NOAA-19's amazing array of capabilities.

"This TIROS series has become quite the Swiss army knife of weather satellites, and NOAA-19 is the most capable one yet," says Tom Wrublewski, NOAA-19 Satellite Acquisition Manager at NASA's Goddard Space Flight Center in Greenbelt, Maryland.

The evolution of TIROS began in 1998 with NOAA-K. The satellites have carried microwave sensors that can measure temperature variations as small as 1 degree Celsius between Earth's surface and an altitude of 40 kilometers—even through clouds. Other missions have added the ability to track large icebergs for cargo ships, monitor sea surface temperatures to aid climate change research, measure the amount of ozone in Earth's protective ozone layer, and even detect hazardous particles from solar flares that can affect communications and endanger satellites, astronauts in orbit, and city power grids.

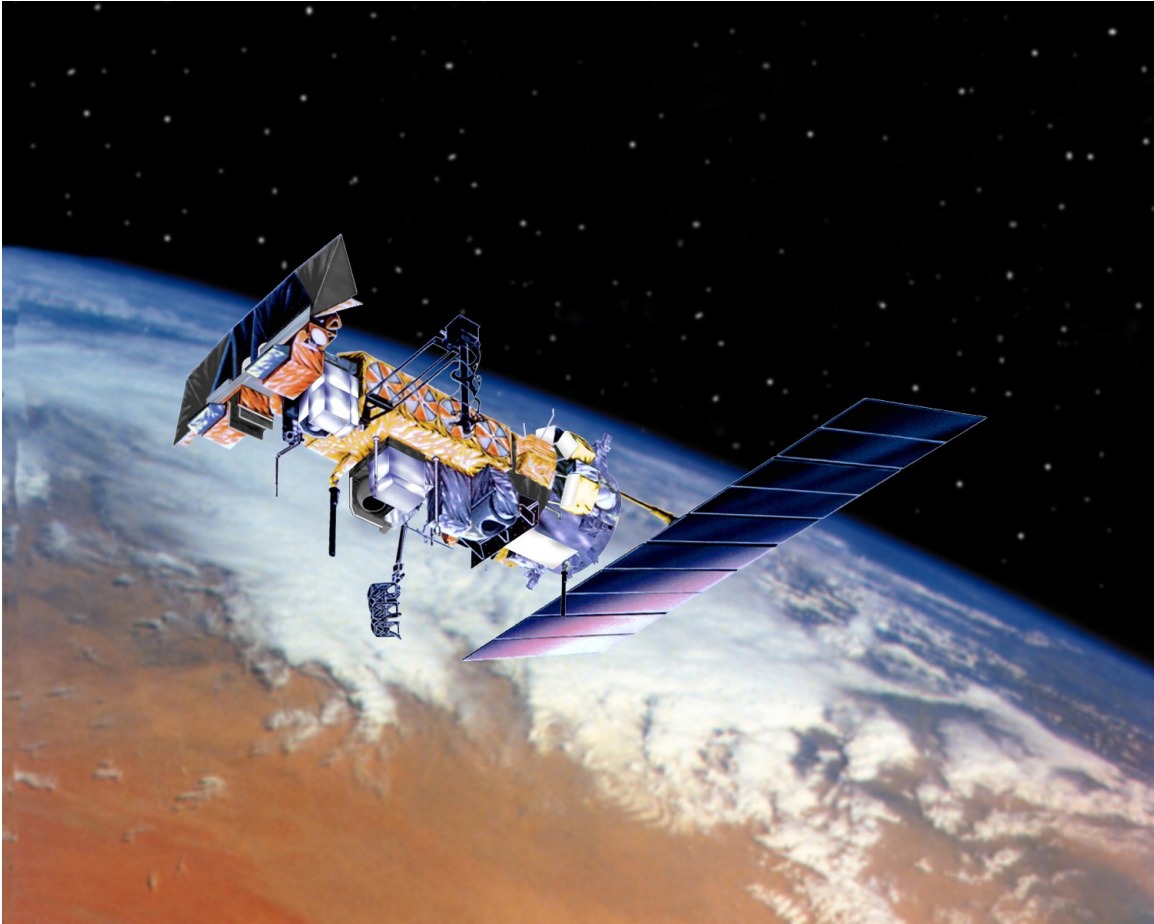
NOAA-19 marks the end of the TIROS line, and for the next four years it will bridge the gap to a new series of satellites called the National Polar-orbiting Operational Environmental Satellite System. NPOESS will merge civilian and military weather satellites into a single system. Like NOAA-19, NPOESS satellites will orbit Earth from pole to pole, circling the planet roughly every 100 minutes and observing every location at least twice each day.

NPOESS will have yet more capabilities drawn from its military heritage. Dim-light sensors will improve observations of the Earth at night, and the satellites will better monitor winds over the ocean — important information for ships at sea and for weather and climate models.

"A lot more capability is going to come out of NPOESS, improving upon the 161 various environmental data products we already produce today," Wrublewski says.

Not even a Swiss army knife can do that many things, he points out. For more on the NPOESS, check out <http://www.npoess.noaa.gov>. Kids can find out about another NOAA satellite capability—tracking endangered migrating species—and play a fun memory game at http://spaceplace.nasa.gov/en/kids/poes_tracking.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



The new NOAA-19 is the last and most capable in the long line of Television Infrared Observation Satellites (TIROS).

NOTE: for their bimonthly newsletter, go to: <http://spaceplace.nasa.gov/en/educators> The newsletter is all about the many useful and free resources on The Space Place website that can be helpful to classroom and home school teachers, after-school program directors, museum and library program directors, and other informal educators.

Solar Eclipse Tour for July 22, 2009

Anyone thinking about chasing this long-duration TSE better jump on it. Tours are booking up. One tour of interest in terms of itinerary and price, has the following website: <http://www.eclipse-chasers.com/esafari/default.htm>. Rick Brown has been an eclipse chaser since 1991. Other tours can be found by Googling China Eclipse 2009 Tours. NOTE: Anyone interested in booking with Rick needs to contact him. He has very few spaces left. Your editor and his wife have paid all their required amounts, and are hoping for clear skies and breathable air.

Scope City, 350 Bay Street, San Francisco, offers a huge selection of telescopes, accessories and more. They also offer a \$25 merchandise discount to new SMCAS members. Obtain a receipt from SMCAS Treasurer showing you have paid your dues for the current year. To arrange for your discount, contact Sam Sweiss at Scope City, in the store, at 415-421-8800, or email sanfrancisco@scopecity.com. Check them out at <http://www.scopecity.com>



San Mateo County
Astronomical Society

May 2009

Pacific Daylight
Saving Time

<i>Sunday</i>	<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	<i>Saturday</i>
					1 FQ 1:44 PM	2 Jazz Under the Stars @ CSM!
3	4	5	6 Eta Aquarid meteors.	7	8 Planetarium Show @ CSM! FM 9:01 PM	9 Eta Lyrid meteors.
10	11	12	13	14	15	16 Star Party @ Crestview!
17 LQ 12:26 AM	18	19	20	21	22	23 Star Party @ Crestview!
24 NM 5:11 AM	25	26	27	28	29	30
31						

<u>Object</u>		<u>May 16 Rise</u>	<u>May 16 Set</u>	<u>May 23 Rise</u>	<u>May 23 Set</u>
Sun		5:59 AM	8:13 PM	5:54 AM	8:18 PM
Moon		1:30 AM	12:18 PM	4:52 AM	7:59 PM
Mercury	Conjunction with sun on 18th	6:07 AM	8:20 PM	5:36 AM	7:29 PM
Venus	Before sunrise	4:00 AM	4:30 PM	3:49 AM	4:30 PM
Mars	Before sunrise	4:17 AM	5:02 PM	4:03 AM	5:01 PM
Jupiter	In the wee hours	2:01 AM	12:40 PM	1:35 AM	12:15 PM
	9 PM, E on left		g c i J e		g i J e c
	red spot transit		11:47 PM		12:33 AM/24th
Saturn	Well placed	2:07 PM	3:03 AM	1:39 PM	2:36 AM
Uranus	In the wee hours	3:18 AM	3:08 PM	2:51 AM	2:41 PM
Neptune	In the wee hours	2:02 AM	12:44 PM	1:34 AM	12:17 PM
Pluto	Late at night	10:34 PM	8:46 AM	10:06 PM	8:18 AM

- It was brought to my attention that last month's calendar had an error for the moon times on April 18. I had the rise,set as 1:30AM,3:02PM but it should have been 3:02AM,1:30PM. My apologies.--RC

Amateur Digital Astrophotography: the affordable end of the spectrum

A practical guide on how to see beyond what meets the eye(piece) without being a zillionaire

By Chanan Greenberg

VP San Mateo County Astronomical Society
Member of Fremont Peak Observatory Association

Leveling and Balancing your Mount

Regardless of which mount you select, leveling your mount and balancing are critical for good imaging.

Even if you are properly polar aligned and your tracking is accurate, a non-leveled scope will produce field rotation and deteriorating tracking during your session as you are not truly tracking in RA. Most mounts have a built in bubble that makes leveling the mount an easy and fast task.

A non balanced mount means that your mount is heavier on one axis. This will press your gears tighter against each other when pointing the scope in one direction and may cause them not to mesh well when pointing in another direction. Overall this strains the motors, is unhealthy for the gears and will make your tracking and guiding efforts more difficult.



The Orion Atlas EQ-G Mount

Selecting a CCD Camera

Let me start by making a quick note about DSLR cameras. I have seen some astrophotographers use various DSLR cameras and produce very impressive results. DSLR cameras probably out-perform many small chip and cheap astrophotography CCD cameras. I have very limited experience using DSLR cameras. Overall a true dedicated camera for astrophotography should give better performance when used with cooling.

The key considerations when selecting a camera:

1. Camera / Scope combination – different chip sizes and scopes with different apertures and focal lengths create different imaging systems which impact the type of objects you can image and the field of view you have. As a rule the smaller the chip and the larger the aperture of the scope the more limited the field of view will be and the higher the magnification. Larger chip and small aperture produce wide fields of view and lower magnification. Additionally, the scope's focal length is a determining factor impacting exposure time. For 2 scopes of the same aperture but different focal lengths, the shorter focal length will require shorter exposures.
2. Sensitivity – different chips used by different manufacturers have different levels of sensitivity and other related parameters. Quantum efficiency basically is a good indicator for how sensitive the chip is. Generally the more sensitive the better. The Kodak chips used in SBIG cameras boasts an 85% quantum efficiency. While Orion cameras using Sony made chips have 60% quantum efficiency and are therefore less sensitive. Full-well capacity is another parameter. Each pixel on the chip has a full-well capacity, after a certain amount of photons have hit that pixel it can no longer “contain” them and spills over to adjacent pixel making them bright too.

3. Cooling – cooling the chip below ambient temperature is very effective in reducing the amount of ‘noise’ the camera detects and the less noise will make its way into your image. Additionally, some cameras not only cool the chip but allow you to set the temperature the chip is cooled to. This is very helpful when imaging over several days and using Dark Frames (to be explained in next month’s chapter) when it is important to make sure the images are being captured by the chip at the same temperature.

4. Blooming Vs Anti-Blooming – blooming is what happens with the full-well capacity is exceeded and adjacent pixels appear bright to the point that a star is burnt out and lines appear in the image. Some cameras ‘bloom’ while others introduce a cut-off point that prevents blooming. Generally, anti-blooming camera’s are less sensitive and require longer exposures than blooming cameras.

5. One Shot Color Vs Monochrome – generally speaking Monochrome cameras (that shoot in “black and white” and use filters to capture color information) typically produce superior results to One Shot Color imagers. That said, they take at least double the time to capture the same image as each exposure requires 4 sets of exposure (Luminance, Red, Green and Blue) and they are more expensive as in addition to the camera you need a filter wheel and filters. They also require more processing work after imaging is done. For a similar sized chip it can be said that Monochrome provides higher resolution as the entire chip is used for each type of exposure while the One Shot Color is uses a Bayer filter and offers lower resolution.

6. Software Support – make sure your camera works with one of the following software packages: CCDSoft, or MaxIm DL or MaxIm DL Essentials, or Nebulosity. Its not just that these are good application but there is a large community of users who have formed user groups on the Internet that can provide lots of advice and feedback

7. Guiding Cameras – some imaging cameras have a built in second chip that is used for guiding (AKA self guiding). These tend to be available in the higher priced cameras. Other alternatives are dedicated guiding cameras such as Orion’s Auto-guider or using a second imager that is not dedicated to guiding. While some will say it is critical to use a monochrome camera for guiding, I have been using a One Shot Color camera for guiding with very good results.

8. Solar System Vs Deep Space – solar system objects are significantly brighter than deep space objects. The image of the moon below is a 0.08 second exposure while deep space objects require many minutes to start showing up in the image. There are some cameras that are less sensitive and designed for solar system imaging; they are also moderately priced – well below \$200.

9. Budget - it's surprising how many vendors and how many models of astronomy CCD cameras are available. Vendors such as StarlightXPress, FLI, Apogee and the very well respected SBIG provide high quality cameras ranging from \$2,000 to \$35,000. There are other vendors such as the Meade DSI product line but frankly in my limited experience they do not match up in comparison to the vendors listed above or to the Orion product line of cameras. As this series of articles is titled "the affordable end of the spectrum" I have focused on what I believe provides the highest quality within a reasonable level of expense. After doing my own survey of the market to select which products I invest in I selected the Orion StarShoot product line which offers:

- Solar System camera available for \$179
- Deep Space Camera II - \$399
- Deep Space Camera Pro \$1,299

The Orion Start Shoot Deep Space Pro offers the only large format 6.1 Mega Pixel cooled chip camera in the market retailing below \$2K. Most comparable cameras cost double that or more. While its cooling is automatic and not controlled and it has no shutter control that requires covering the front of your scope to do Dark Frames it is by far the best camera on the market today and all comparables cameras cost significantly more.

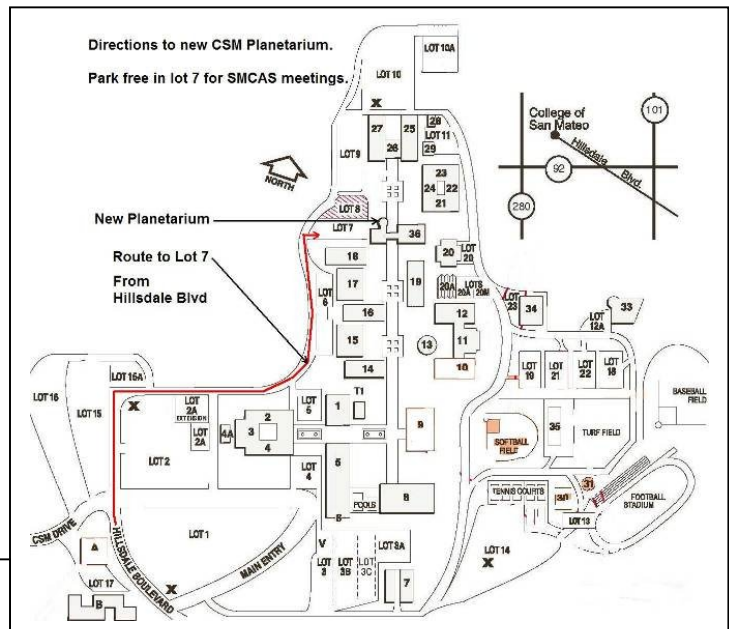
Next Month: Focusing, Software & Budget

Carpe Noctem! (Seize the night)

Reach for the stars
at **CSM**

With its planetarium, variety of astronomy courses, top-notch faculty and special events such as Star Parties when the College partners with the San Mateo County Astronomical Society ...or with CSM's many A.A., A.S. or certificate programs, its scenic and historic campus, the ease with which you can sign-up for classes online as a first-time or returning student...

COLLEGE of SAN MATEO
The possibilities are astronomical.
Visit us on the web at <http://gocsm.net>.



Directions to Planetarium

After coming off HW92 at Hillsdale Blvd towards CSM, proceed up hill through the second and third sets of traffic lights until you come to the first stop sign, where you enter the campus, and continue straight. After the third stop sign, turn into the first parking lot on the right. This is Lot 7. The planetarium is directly ahead of you. Enter the building (36) through the door facing the parking lot.

Directions to Crestview Park

Crestview Park

Come out and bring the kids for a mind-expanding 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. Visitors should park on the street or arrive before dark so that headlights don't affect the observers' dark adaptation. Bring small flashlights only, with the lens covered with red cellophane or red balloon. Please don't touch a telescope without permission. And parents, please watch your children.

Take Hwy 101 or El Camino to Brittan Avenue in San Carlos, and turn west (right from El Camino). From El Camino, follow Brittan about 2.3 miles to the intersection with Crestview Drive.

From Alameda, go about 1.4 miles to Crestview. Turn right on Crestview. A small sign saying "Crestview Park" is a half-block ahead on the right. Look to the left for the park entry road, a small street between houses #998 and #1000. If after dark, please park on Crestview near the park entrance and walk in the short distance, to avoid safety issues and disturbing the telescope setup and viewing.

From Highway 280 to Edgewood Road. Go east (toward Bay) about 0.8 miles. Left on Crestview Dr. Go 0.5 miles uphill to the intersection with Brittan Avenue. Go one short block to the park entrance on the left.

Note: The park is residential, and adjacent to homes and backyards. Before inviting noisy groups, please call Ed Pieret or Leroy Amen.

For more information, call:
Leroy Amen: 573-0935
Leroy's cell: 504-5196
Ed Pieret: 595-3691

Membership Dues: Membership annual dues are payable yearly, on your renewal date which is shown on your Event Horizon mailing label. See the back page of the Event Horizon for mailing instructions. Members who are over 3 months past due will be removed from the Event Horizon mailing list until their dues are paid. Members who are over 6 months past due will be removed from the active membership rolls. These members will not be eligible for club privileges but can retain membership in the Yahoo group. We will try to contact the members personally prior to making them inactive.

Membership Application

To join the San Mateo County Astronomical Society or to renew your membership please send dues by check payable to "SMCAS" to the address below. Dues are \$35 for a new member, \$30 for Renewing members and \$25 for students and seniors.

SMCAS, at PO Box 974, Station A, San Mateo, CA 94403

Check one: () New member () Membership renewal () Address or info change

NOTE TO EXISTING MEMBERS: do not fill in address etc. unless it's changed!

Name(s) _____

Address/City/Zip: _____

Phone(s) _____ Email _____

Meetings of the San Mateo County Astronomical Society are held the **first Friday of the month (except in July and August)** in the Planetarium at the College of San Mateo, located at 1700 West Hillsdale Blvd. in San Mateo. Exit Hwy. 92 at West Hillsdale Blvd. and, proceed uphill through the second and third sets of traffic lights until you come to the first stop sign, where you enter the campus, and continue straight. After the third stop sign, turn into the first parking lot on the right. This is Lot 7. The planetarium is directly ahead of you. Enter the building (36) through the door facing the parking lot.

Officers: President: Edmund Pieret; **Vice-President:** Chanan Greenberg; **Secretary:** Helen Asker; **Treasurer:** Bob Franklin

Board Members-At-Large: Bob Frommer, Ken Lum, Mike Ryan., Marion Weiler, and John Fiske.

Membership: Hank Washauer. **Newsletter:** Dave Wolf, Ron Cardinale, Darryl Stanford, John Garis, Bob Fies.

Program: Marion Weiler, **Publicity:** Helen Asker; **Reporter:** open position

Event Horizon Editor: Dave Wolf **NOTE:** We welcome articles and photos submitted by the 15th of the month prior to publication.

Contacts:

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