FIRST LIGHT

Journal of the South Bay Astronomical Society – August 2009
on line at www.geocities.com/sbas_elcamino

Monthly General Meeting: Friday, August 7th, 7:30 PM

Guest Speaker: Greg Benecke

"Astrophotography"

The July 11 Meeting

The meeting began at 7:36 with visitors Charlene Turner, Marissa Anderson and David Anderson introducing themselves. A couple of members discussed their recent observing sessions from dark sites, and a few upcoming events were described. President Ken Rossi then presented a plaque in honor of Bill Whiddon (one of the founding members of the SBAS) to Vincent Lloyd of El Camino College. The plaque will be displayed at El Camino to recognize Bill Whiddon's service to astronomy. President Rossi then discussed the benefits the SBAS would gain if it incorporated as a non-profit organization, and suggested that members contact him if they have any questions before next month's vote on the issue.

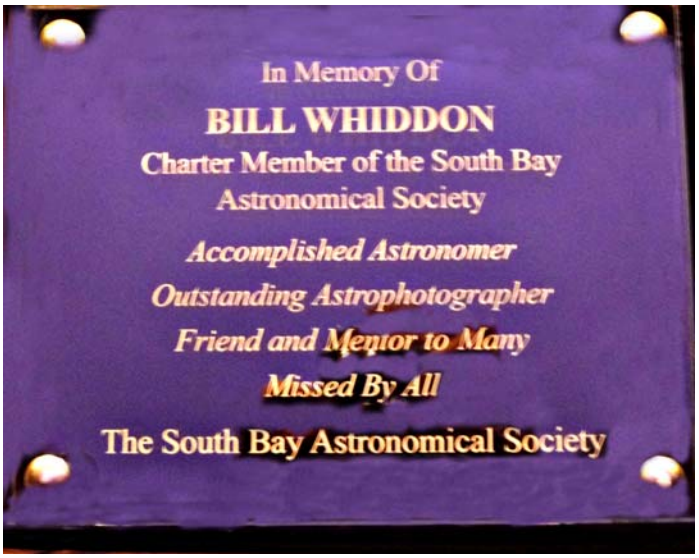
SBAS Pres Ken Rossi Displays The Placque Honoring The Memory Of Bill Whiddon

After a fifteen-minute social break, President Rossi introduced the evening's speaker, Michael Harrison, who spoke on the "LCROSS Mission". Mr. Harrison began by noting that although he has worked at TRW for many years and has worked on spacecraft such as the James Webb Space Telescope, he hasn't worked on LCROSS but instead put together this presentation from resources that are publicly available. Let us hope that more members follow his lead, and volunteer to deliver well-researched lectures such as Michael's in the future.

The LCROSS (Lunar CRater Observing and Sensing Satellite) mission was launched on Thursday, June 18 of this year, and reached the Moon four days later. It didn't go alone, however; it was accompanied by a Centaur upper stage rocket and the LRO (Lunar Reconnaissance Orbiter). This orbiter's primary objective is to conduct investigations that prepare for future lunar exploration. For example, its laser altimeter will record the Moon's topography, its cosmic ray telescope will determine radiation near the Moon while measuring the potential biological damage this radiation can inflict on astronauts, and its cameras will photograph the surface to a resolution of 100 meters for the entire surface, and to a resolution of 1 meter (or better) for selected areas, such as the six Apollo landing sites. Photographing the Apollo landing sites is probably not scientifically valuable, but it is too tempting to resist. LRO will orbit so close to the lunar surface that its orbit will be unstable, requiring correction every thirty days. After a year, LRO's mission will end and it will crash onto the Moon's surface.

For both LRO and LCROSS, a major task will be the search for water. If humans are to stay on the Moon for extended periods of time, they will need water and lots of it. Unfortunately, the rocks brought back by the Apollo astronauts were bone-dry, due to the high temperatures reached over most of the Moon, and the vacuum of space. But there are some craters at both poles, whose interiors never see the Sun and may still contain water ice mixed in with the regolith (the lunar soil). The LRO's Lyman Alpha Mapping Project (LAMP) will search these permanently-

shadowed regions by the light of interstellar hydrogen-alpha radiation, and the Lunar Exploration Neutron Detector (LEND) will map the lunar neutron emission, which is affected by the presence of hydrogen associated with water.



In 1999, the Lunar Prospector was sent crashing into the lunar South Pole and the resulting plume of debris was studied for evidence of water ice, but none was observed. On October 9, 2009 at 4:30 am PDT, the Centaur rocket will be sent crashing into the interior of South Pole crater, and is expected to raise a plume 230 times greater that Prospector's. LCROSS will pass through this plume, analyze it, and then plunge into a different crater, creating a smaller plume. Both plumes will be analyzed by LRO as it passes overhead. These two events will also be observed by the Canada-France-Hawaii telescope, the Keck telescope and the Hubble telescope, among others. If there's water, we should be able to find it.

Michael Harrison ended his lecture by pointing out that the impact will also be visible from the South Bay, although seeing it would be a challenge. He then answered several questions and was thanked by the audience of forty people. The meeting ended at 9:30.

- ***Dr. Steven Morris***

Observing the Lunar Plumes

As mentioned in the previous article, NASA will be sending a Centaur upper-stage rocket crashing into the interior of one of the Moon's South Pole craters on Friday, October 9, 2009 at 4:30 am PDT. The resulting explosion will raise a plume of debris well above the surface, where it will catch the Sun's rays and be visible from Earth. Soon after, the LCROSS satellite will crash into another crater and create a smaller plume.

Each plume should be visible for several seconds, and amateur astronomers with a 12-inch or larger telescope have a reasonable chance of observing the first plume, and possibly the second plume as well. As seen from the South Bay, the waning gibbous Moon (20 days old) will be at an altitude of 78 degrees, which is only 12 degrees from the zenith. The Sun will be 30 degrees below the horizon, so conditions will be ideal for local amateurs.

NASA has not yet chose which craters will be targeted, but Sky & Telescope will post updates on its Web site. Dust off your Moon maps, and prepare for a unique experience.

- Dr. Steven Morris

SARSAT to the Rescue

If a plane crashes in the woods and nobody hears it, does it make a sound?

Never mind contemplating this scenario as a philosophical riddle. This can be a real life or death question. And the answer most of the time is that, even if no people are nearby, something is indeed listening high above.

That something is a network of satellites orbiting about 450 miles overhead. The "sound" they hear isn't the crash itself, but a distress signal from a radio beacon carried by many modern ships, aircraft, and even individual people venturing into remote wildernesses.

In the last 25 years, more than 25,000 lives have been saved using the satellite response system called Search and Rescue Satellite-aided Tracking (SARSAT). So what are these life-saving superhero satellites?

Why they are mild-mannered weather satellites.

“These satellites do double duty,” says Mickey Fitzmaurice, a National Oceanic and Atmospheric Administration (NOAA) systems engineer for SARSAT. “Their primary purpose is to gather continuous weather data, of course. But while they’re up there, they might as well be listening for distress signals too.”

In February, NASA launched the newest of these Polar-orbiting Operational Environmental Satellites (or POES) into orbit. This new satellite, called N-Prime at launch and now dubbed NOAA-19, prevents a gap in this satellite network as another, aging NOAA satellite reached the end of its operational life.

“The launch of N-Prime was a big deal for us,” Fitzmaurice says. With N-Prime/NOAA-19 in place, there are now six satellites in this network. Amongst them, they pass over every place on Earth, on average, about once an hour.

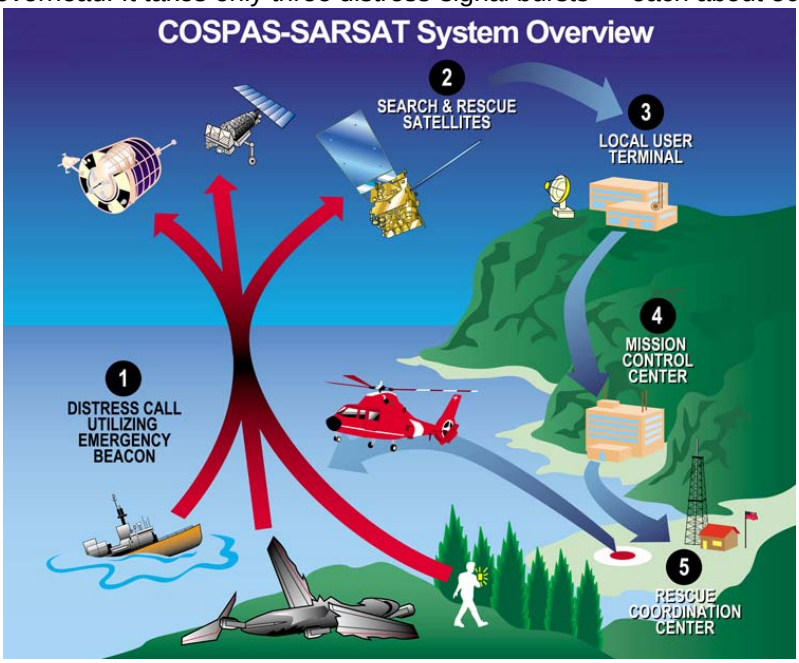
To pinpoint the location of an injured explorer, a sinking ship, or a downed plane, POES use the same Doppler Effect that causes a car horn to sound higher-pitched when the car is moving toward you than it sounds after it passes by.

In a similar way, POES “hear” a higher frequency when they’re moving toward the source of the distress signal, and a lower frequency when they’ve already passed overhead. It takes only three distress-signal bursts — each about 50 seconds apart — to determine the source’s location.

Complementing the POES are the Geostationary Operational Environmental Satellites (GOES), which, besides providing weather data, continuously monitor the Western Hemisphere for distress signals. Since their geostationary orbit leaves them motionless with respect to Earth below, there is no Doppler effect to pinpoint location. However, they do provide near instantaneous notification of distress signals.

In the future, the network will be expanded by putting receivers on new Global Positioning System (GPS) satellites, Fitzmaurice says. “We want to be able to locate you after just one burst.” With GPS, GOES will also be able to provide the location of the transmitter.

Philosophers beware: SARSAT is making “silent crashes” a thing of the past.



NOAA's polar-orbiting and geostationary satellites, along with Russia's Cospas spacecraft, are part of the sophisticated, international Search and Rescue Satellite-Aided Tracking System.

Download a two-page summary of NOAA-19 at www.osd.noaa.gov/POES/NOAA-NP_Fact_Sheet.pdf. The Space Place gives kids a chance to rescue stranded skiers using their emergency rescue beacons. The Wild Weather Adventure game awaits them at spaceplace.nasa.gov/en/kids/goes/wwa.

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

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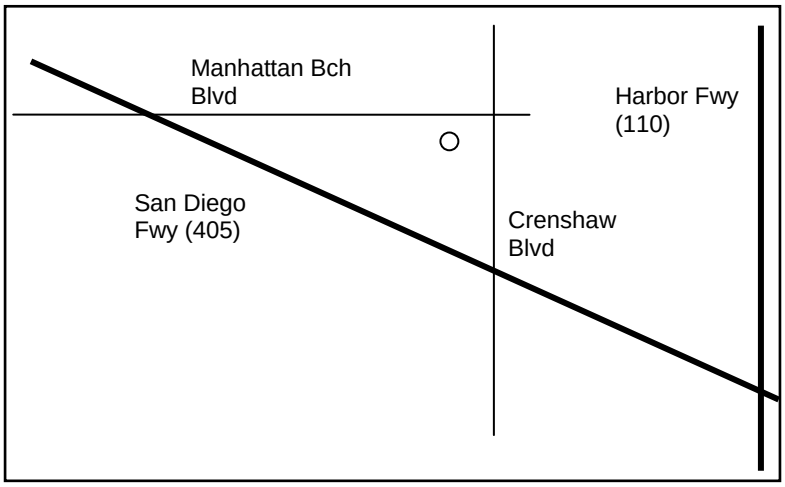
Monthly General Meetings



We normally meet on the first Friday of each month at 7:30 p.m. in the Planetarium at El Camino College (16007 Crenshaw Bl. In Torrance). If the first Friday is on or close to a holiday, we usually defer the meeting until the second Friday of the month. The Planetarium is on the south side of Manhattan Beach Blvd., one block west of Crenshaw Blvd. (near the center of the map at left).

The planetarium is the only round, domed building on campus. There is on-street parking, and we can often use campus parking: check inside to see if you need a FREE parking permit for your car.

We enjoy the planetarium facilities through the courtesy of the El Camino College Administration, and have several faculty members of the Astronomy Department as members of our Club. Our meetings always include an informal opening, when new attendees are invited to introduce themselves and let us know about their interests in astronomy. Members share their latest news and observations at this time. The rest of the evening is devoted to guest speakers, who range from amateur astronomers to professional astronomers to representatives from local aerospace companies to college professors. We are fortunate to have all these talented people in our area, willing to come and talk to us.

Monthly Planning Meeting

Committee members (and anyone else with an interest in Society activities) meet each month, usually on the Monday following the general meeting. Meetings are sometimes rescheduled due to travel and other circumstances. Exact date and time of each month's meeting will be announced in the schedule of events in FIRST LIGHT each month, and should also be verified with a committee member. The August 10th planning meeting will be held at the home of *to be announced*.

Membership Dues Schedule

Month Join/Due	Member (Family)		Student	Expires
	USMail	Email		
January	$38.50	$33.00	$22.90	12/2009
February	$35.00	$30.00	$20.85	12/2009
March	$31.50	$27.00	$18.75	12/2009
April	$28.00	$24.00	$16.70	12/2009
May	$24.50	$21.00	$14.60	12/2009
June	$21.00	$18.00	$12.50	12/2009
July	$17.50	$15.00	$10.45	12/2009
August	$14.00	$12.00	$8.40	12/2009
September	$10.50	$9.00	$6.25	12/2009
October	$49.00	$42.00	$29.20	12/2010
November	$45.50	$39.00	$27.10	12/2010
December	$42.00	$36.00	$25.00	12/2010

To simplify the dues, we suggest that all membership expire in December. Dues are $42.00/year for FirstLight via US Mail, or $36.00 via Email notification ($25.00/year for students) and expire on December 31, of the current year. New members use Month Join, and current members select your expiring Month to calculate the amount. Members that expire in October or November may wish to write one check and include next years membership. Make checks payable to the South Bay Astronomical Society. Dues may be paid at the general meeting or mailed to:

South Bay Astronomical Society

Attn: Arnie Stodolsky

P.O. Box 1937

Redondo Beach, CA 90278

SBAS Membership Benefits

Contact Arnie Stodolsky for magazine subscriptions at club rates: “Sky & Telescope” $32.95 and “Astronomy” $34.00/1 year or $60.00/2 years!
Note: S&T subscribers at the club rate renew their subscriptions by mailing their renewal notice and check or calling the 800# on the renewal notice.
Only new subscribers or subscribers converting their subscription to the club rate need to contact Arnie or send a check to the PO Box. Astronomy subscriptions and renewals still go through Arnie or via the PO Box.

Astronomical League Observing Clubs

All SBAS members in good standing are also members of the Astronomical League and are eligible to participate in the League’s Observing Clubs. The Astronomical League provides many different observing programs (clubs). These programs are designed to provide a direction for your observations and to provide a goal. The programs have certificates and pins to recognize the observers’ accomplishments and for demonstrating their observing skills with a variety of instruments and objects. For more information go to:
http://www.astroleague.org/observing.html.

Observing Reports

Ridgecrest School – Saturday evening, the 18th, was an excellent night for some stargazing. The weather was nice and warm after sunset and the sky was clear. Seeing conditions were very good in the early evening degrading a bit as the night wore on, There was a huge turn out of scopes and club members, including Joe Locasio, Tim Moore, Gerry Stowe, Ann Koons, Dr. Michael Harrison, Steve Pedersen, Larry Kinney and his brother-in-law who was visiting from his home in France, Freddy Limas and his son, Joe Fierstein, Shawn Belveal and his daughter, and George Nestojko as well as myself and my nephew, Dane Johnson..

We also had a visit from the boys of Boy Scout Troop 378 who were working to earn their astronomy badges. The boys were very enthusiastic as they set about trying to find constellations as the sky darkened. They were even more thrilled to be able to look beyond the constellations at the wonders that were hidden beyond naked-eye visibility.

For myself, I set up in my usual spot, where I've parked for many years. After a quick alignment I noticed that object were drifting out of the eyepiece too rapidly for my liking so I decided to stop and do a polar alignment. Once completed I got back to showing the Boy Scouts various sky objects, only to get "rained out" as the school's sprinkler system suddenly came on and decided that the playground area needed watering more than the playing field! Thanks to Ron Rennie, my nephew, we managed to pick up and move my entire telescope setup without having to disconnect a single cable.

Since this was my first time setting up the scope in months, I decided to devote it entirely to visual observing. It was a good decision, too, as the seeing was very spectacular early on. M13 was really awesome in my 20mm Nagler eyepiece. M8, the Lagoon Nebula, was also amazing with the O3 filter in the Nagler. That Nagler is a truly magnificent eyepiece for viewing globular clusters. I went through a number of globulars in the Scorpio-Sagittarius area and they were all very nice and easy to resolve into individual stars in most cases.

As the seeing deteriorated, though, I decided to hunt up some carbon stars and used my Nexstar Observing List program to drive the scope to the various stars. Carbon stars tend to be variable and, this time around, many were at the faint part of the cycle. Still, a good number of them were nice, cherry red or fiery red in color which added a nice contrast to the mostly white stars around them. T Lyra was one of the really spectacular ones showing a very bright red color.

Of course, the biggest thing in the sky was Jupiter. Once it cleared the trees, I switched over to it. The seeing was quite good and I was able to make out a lot of detail with my 15mm eyepiece and a #12 yellow filter. Only 3 moons, Callisto, Ganymede and Europa were visible initially. Around 12:30 AM Io finally came out from behind the planet.

Having had a rather long day, I decided to pack things up after that and headed home. But not before taking a look through Gerry Stowe's huge Dob at Neptune which was a small, pale blue dot.

- ***Ken Munson***

Inyokern Road – I made the trek out to Redrock/Inyokern Road for my dark sky observing session. Turned out to be a solitary expedition as no one else was out there. The sky was mostly clear and the clear sky clock website had predicted good seeing conditions for the night. It was 105^{o} F when I arrived but the wind chill factor dropped that to a much more comfortable 104^{o}. The breeze was going to be a problem so I reconfigured my scope for alt/az mode and waited for sunset.

Early on the sky conditions were very good. I was able to get a really good look at the moon and was able to study craters Messier A & B with high magnification (280x). Usually I see these two long after local sunrise and they always look like a comet. Seeing them at a low sun angle brought out a lot of detail and I could see how much more oblong the craters were than most. The ejecta pattern spreading westwards was just beginning to show up in the low sunlight. Seen this way, it's obvious that a couple of objects, possibly a small pair of binary asteroids, impacted at a low angle.

This evening I got really daring and tried something I'd never done before. I had checked on Heavens-Above to see that the ISS was making a good pass over the site So moments before it rose, I aimed my scope in the direction I figured it was going to show up at and watched both the sky and my Starry Night program. As soon as I spotted it on SN, I clicked it to do a GoTo. I was able to catch it in the eyepiece and manually guided the scope to track the ISS across over half the sky! For the first time, I actually saw detail on the space station! It looked like an H with double vertical bars which must have been the huge solar arrays. It was like playing a really intense video game trying to push the right buttons fast enough to keep it in the eyepiece but it worked!

The rest of the night was spent with more mundane tasks of hunting down various galaxies, planetary nebulas. globular clusters, open clusters, clusters with nebulosity, etc. M13, M5, and M2 were spectacular. M8, M16, M17, and M20 were really beautiful in the 35mm Panoptic eyepiece with the OIII filter. Among the more obscure objects I tracked down were the Coma Galaxy Cluster of which, it turns out, I saw only the three brightest members. In the early part of the evening, I was able to locate a number of small planetary nebulae but, as the evening progressed, the seeing deteriorated, and it got too difficult to distinguish them from surrounding stars. One of the nice little clusters with nebulosity was NGC 7129, the Small Cluster Nebula. I was able to really see the Pacman Nebula, NGC 281, and could finally see why it's called that!

Planets were a forlorn hope. Early on, I got a good glimpse of Saturn but by the time Jupiter rose the seeing had dropped a lot. I had hoped to possibly spot the recent impact site but Jupiter was too watery to see much of anything. I tried spotting moons around Uranus and Neptune but that was a no-go too. Mars and Venus rose before dawn but were nothing but watery blobs. With a final look at the Veil Nebula in Cygnus around 4 AM, I shut down and took a nap before making the trek back to LA.

- Ken Munson

NON-PROFIT STATUS for the SBAS
Remember: to vote at the August Meeting!

The SBAS Planning Committee would like to solicit the support of the membership to allow the expenditure of the funds from the club treasury necessary to file for incorporation and non-profit status in the State of California.

Pros for Incorporating as a Non-Profit

1. Liability Protection for officers
2. Tax benefits, Federal, State, Local
3. Reduced mailing costs
4. Access to grant money from other non-profit organizations and federal funds
5. Gifts from individuals tax deductible to benefactor

Cons for Incorporating as a Non-Profit

1. Added record keeping
    a. Corporate Meeting Minutes
    b. Yearly Report to State

2. More rigorous book keeping requirements that may require accounting services
3. Annual informational tax returns to State and Federal
4. Effort to do the work of incorporating

Steps to incorporation as a non-profit entity:

1. File for incorporation in the State of California.
2. File for non-profit status with the Internal Revenue Service.

Costs to Incorporate

Cost for California:

- $800 each year.
- $200 filing fee the first year, $20 thereafter.

Cost to file with the IRS is minor.

Attorney fees for filing with the State and the IRS usually runs $1000.00 plus the filing fees for a total of $2000.000

Lorraine Anderson, Attorney at Law, (spouse of President Ken Rossi) has offered to do the paperwork for $250 plus the filing fees, or slightly over $1000.00.
The club treasurer estimates that the yearly fees for incorporation could be absorbed by the club's surplus for approximately the first 3 years before an increase in membership dues would be necessary.

Vote by Club Members

The club officers are requesting a vote by the membership at the August General Membership Meeting.

If any member has questions about the incorporation as a non-profit organization please email your questions to Ken Rossi at ken_a_rossi@yahoo.com.

Schedule of Coming Events

7 August Friday Night 7:30 PM	**Monthly General Meeting** Guest Speaker: Greg Benecke Topic: Astrophotography
10 August Monday Night 7:30 PM	**Monthly Planning Meeting** See directions on Page 4.
15 August Saturday Night 7:00 PM	**In Town Dark Sky Observing Session at Ridgecrest Middle School–** 28915 NortbBay Rd. RPV, Weather Permitting**:** Please contact Greg Benecke to confirm that the gate will be opened! Alternate site: Rancho Del Mar High School -
22 August Saturday Evening	**Out-of-Town Dark Sky Observing Session** Contact Greg Benecke to coordinate a location.
20 August Thursday Evening 7:00 PM	**JPL's Von Karman Lectures: From Legs to Wheels** by Tom Rivellini NASA's next mission to Mars, the Mars Science Laboratory, will be landing with an extremely unusual landing system -- a skycrane invented by the mission team specifically to land a large rover in scientifically exciting locations on Mars. This talk will look at the fascinating history and evolution of how the skycrane landing architecture evolved from simple landing legs used on JPL's Surveyor lunar landers of the 1960s to the current design. Location: Von Karman Auditorium at JPL 3800 Oak Grove Dr. Pasadena
26 August Wednesday Evening 7:30	**Astro Imaging Meeting** New to astrophotography? Experienced at it? Join fellow SBAS members for a meeting to discuss astrophotography and to help each other grow and learn this fun hobby. 902 N. Prospect Ave Redondo Beach Ca. Contact Craig Gates to confirm: 310 779 9737
28 August Friday Night	**Long Beach Star Party at The Pike** The Pike is located at the intersection of Pine Ave and Shoreline Drive.

South Bay Astronomical Society

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General Meeting at El Camino College Planetarium:
Friday, August 7th, at 7:30 P.M.

Guest Speaker: Greg Benecke

"Astrophotography"

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South Bay Astronomical Society
P.O. Box 1937
Redondo Beach, CA 90278