FIRST LIGHT

Journal of the South Bay Astronomical Society – July 2008
on line at www.geocities.com/sbas_elcamino

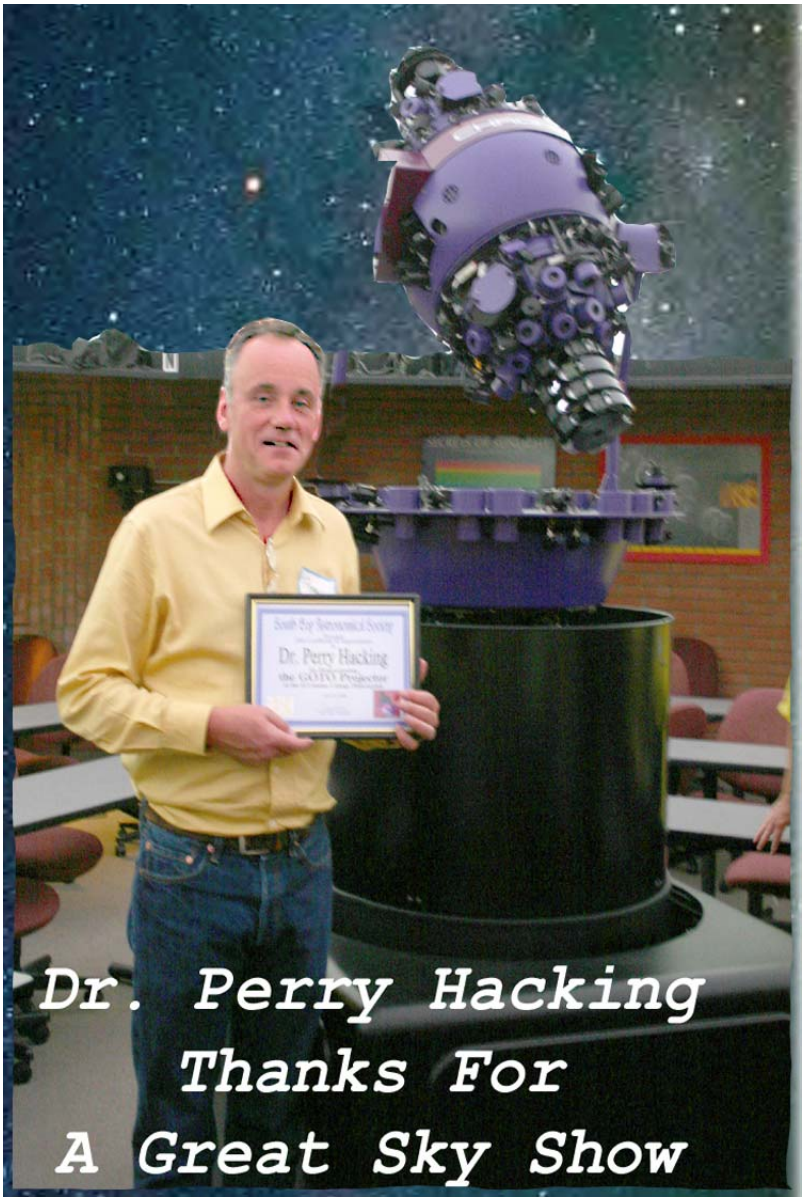
Monthly General Meeting: Friday, July 11th, 7:30 PM

Guest Speaker: Matthew Ota

Ring World 2: Cassini-Huygens Mission to Saturn

The June 6 Meeting

The meeting was gaveled to order at 7:33 by President Ken Rossi, who thanked Doug Loop for donating the gavel to the Society a few months ago. Ed Malewitz introduced himself as a visitor who recently moved here from Texas, and was welcomed. Ken Munson reported on his observations at Red Rock Canyon, and the contrasting views of the same object that he obtained through his 11-inch Celestron and his 80-mm (3-inch) refractor. Greg Benecke reported on the Riverside Telescope Makers Conference, which began in snow flurries and remained cold throughout, but did have clear nights for observing. Attendance was down this year for both participants and vendors, perhaps due to the dismal weather forecasts, and perhaps due to rising gasoline prices.



President Rossi reviewed upcoming events, then Michael Harrison gave an excellent Powerpoint presentation on his experience in the Astronomy 13 "Optics for Astronomy" class at El Camino College. Michael ground his own 6-inch f/9 mirror, and built a Newtonian telescope for it. His first observation with this telescope was of the Moon, which quite fortuitously included an observation of the International Space Station crossing the lunar disk! Michael now plans to build a 12.5-inch telescope, aiming for completion in January 2009.

After a 13-minute social break, Dr. Perry Hacking gave us a planetarium show, using El Camino College's new Chronos GOTO Space Simulator. This up-to-date planetarium projector images 8,500 stars and 26-non-stellar objects, as well as several constellation figures. Dr. Hacking started with the

constellation figures of Cygnus, Hercules, Draco, Scorpius and Sagittarius, describing the Greek legends associated with some of these mythical figures. Heading into the southern sky, the Magellanic Clouds were shown, along with alpha and beta Centauri.

Dr. Hacking then asked for the date of birth of someone in the audience, and set up the sky for that date. The astrological Sun sign for that date no longer matches the constellation containing the Sun on that date, due to the shift of astrological signs caused by precession. Apparently, astrology cannot get even the simplest things right, let alone perform the complex magic of predicting the future.

Dr. Hacking then precessed the sky to its appearance 7000 years ago, and noted that alpha and beta Centauri were visible from Los Angeles back then. Taking us 7000 years into the future, the Small Magellanic Cloud will be visible from here. A few special effects were demonstrated, such as a meteor storm, an asteroid passing by, some aurorae, and a view of the Solar System from the outside looking in. After the show was over, President Rossi presented Dr. Hacking with a plaque of appreciation, and the Society's annual gift to El Camino from the Bill Whiddon Memorial Fund. The 35 audience members applauded Dr. Hacking for his efforts, and the meeting ended at 10:18.

- Dr. Steven Morris

Space Buoys

By Dr. Tony Phillips

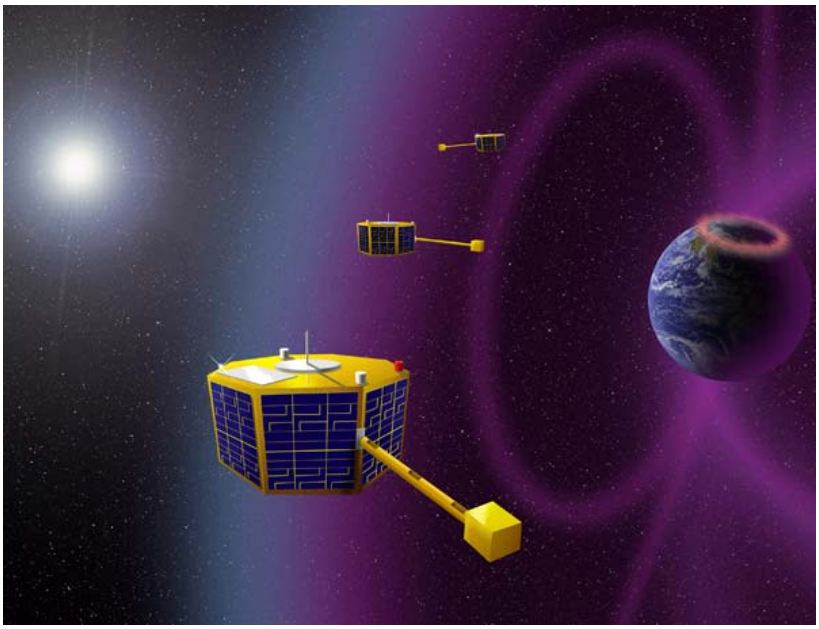
Congratulations! You're an oceanographer and you've just received a big grant to investigate the Pacific Ocean. Your task: Map the mighty Pacific's wind and waves, monitor its deep currents, and keep track of continent-sized temperature oscillations that shape weather around the world. Funds are available and you may start immediately.

Oh, there's just one problem: You've got to do this work using no more than one ocean buoy.

"That would be impossible," says Dr. Guan Le of the Goddard Space Flight Center. "The Pacific's too big to understand by studying just one location."

Yet, for Le and her space scientist colleagues, this was exactly what they have been expected to accomplish in their own studies of Earth's magnetosphere. The magnetosphere is an "ocean" of magnetism and plasma surrounding our planet. Its shores are defined by the outer bounds of Earth's magnetic field and it contains a bewildering mix of matter-energy waves, electrical currents and plasma oscillations spread across a volume billions of times greater than the Pacific Ocean itself.

"For many years we've struggled to understand the magnetosphere using mostly single spacecraft," says Le. "To really make progress, we need many spacecraft spread through the magnetosphere, working together to understand the whole."



The Space Technology 5 micro-satellites proved the feasibility of using a constellation of small spacecraft with miniature magnetometers to study Earth's magnetosphere.

Enter Space Technology 5.

In March 2006 NASA launched a trio of experimental satellites to see what three "buoys" could accomplish. Because they weighed only 55 lbs. apiece and measured not much larger than a birthday cake, the three ST5 "micro-satellites" fit onboard a single Pegasus rocket. Above Earth's atmosphere, the three were flung like Frisbees from the rocket's body into the magnetosphere by a revolutionary micro-satellite launcher.

Space Technology 5 is a mission of NASA's New Millennium Program, which tests innovative technologies for use on future space missions. The 90-day flight of ST5 validated several devices crucial to space buoys: miniature magnetometers, high-efficiency solar arrays, and some strange-looking but effective micro-antennas designed from principles of Darwinian evolution. Also, ST5 showed that three satellites could maneuver together as a "constellation," spreading out to measure complex fields and currents.

"ST5 was able to measure the motion and thickness of current sheets in the magnetosphere," says Le, the mission's project scientist at Goddard. "This could not have been done with a single spacecraft, no matter how capable."

The ST5 mission is finished but the technology it tested will key future studies of the magnetosphere. Thanks to ST5, hopes Le, lonely buoys will soon be a thing of the past.

Learn more about ST5's miniaturized technologies at nmp.nasa.gov/st5. Kids (and grownups) can get a better understanding of the artificial evolutionary process used to design ST5's antennas at spaceplace.nasa.gov/en/kids/st5/emoticon.

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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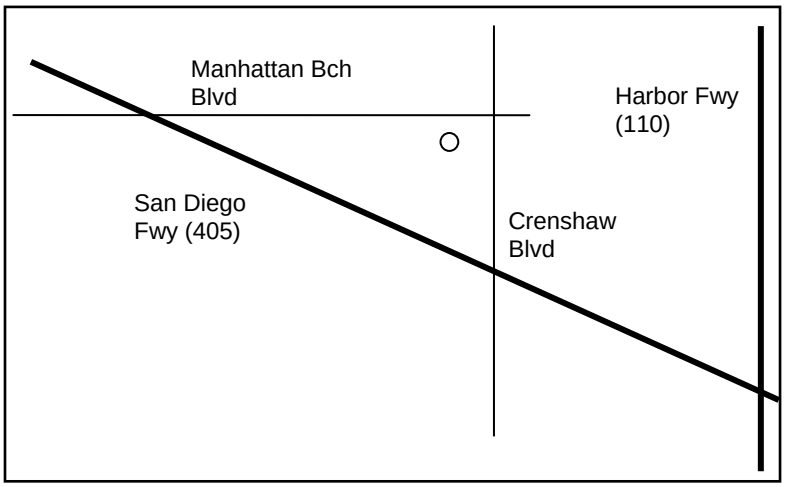
Monthly General Meetings

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.



July general meeting

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 July 14th planning meeting location will be announced at the

Membership Dues Schedule

Month Join/Due	Member (Family) USMail	Email	Student	Expires
January	$38.50	$33.00	$22.90	12/2008
February	$35.00	$30.00	$20.85	12/2008
March	$31.50	$27.00	$18.75	12/2008
April	$28.00	$24.00	$16.70	12/2008
May	$24.50	$21.00	$14.60	12/2008
June	$21.00	$18.00	$12.50	12/2008
July	$17.50	$15.00	$10.45	12/2008
August	$14.00	$12.00	$8.40	12/2008
September	$10.50	$9.00	$6.25	12/2008
October	$49.00	$42.00	$29.20	12/2009
November	$45.50	$39.00	$27.10	12/2009
December	$42.00	$36.00	$25.00	12/2009

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 Yahoo Group

Join our own YAHOO group for up-to-the-minute club news; see astro photos taken by members and be part of the growing online community of the South Bay Astronomical Society. A YAHOO userid is needed (free) then click on GROUPS and search for SBASTRO. Use the JOIN function and you will get notification from the Group's administrator that your application has been accepted. This group is limited to SBAS members. You can specify to have emails sent to your normal email address when you signup. The Executive Board is working to use this vehicle more and more this coming year to deliver information to our members. 25% of our membership has joined. Don't be left out. If you need assistance or have any questions, contact any Board member.

NexStar 8 Available to SBAS Members

All members in good standing (with at least six months of continuous membership) can borrow the club's Nexstar8 for up to 7 days. The fee of $5 for a weekend, or $10 for an entire week, is nonrefundable and will be added to the club's Accessories Fund "Wish List" for future purchases. A fully refundable deposit of $200 cash or check is required. Loss or damage is the responsibility of the borrower. A copy of the complete South Bay Astronomical Society Nexstar 8 Borrowing Rules and Agreement is available upon request. The **Accessories Fund "Wish List"** – Member contributions of any amount or donations will be appreciated, as will any suggestions for new purchases!

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.

New Members

Welcome new club member Edward Malewitz of Carson.

For Sale

A Celestron Classic 8 is up for sale. It is in excellent condition and comes with a set of eyepieces and tripod with equatorial wedge. Call 310-918-1255 for more information.

Observing Reports

All the Pretty Rocket Launches - It may not be amateur astronomy, but I enjoy watching the rocket launches of Vandenberg Air Force Base, as seen from my backyard in south Torrance. The Web site at http://www.spacearchive.info/vafbsked.htm showed a launch was scheduled in the early morning of Friday, June 20, between 12:46 and 12:56 PDT. I pulled up a chair a few minutes early, under a sky decorated by some wisps of cloud, brightly lit by a full Moon and the usual amount of light pollution. My view northwest towards Vandenberg AFB was made somewhat difficult by the twelve brilliant lights of a sports arena a few miles away, pointed horizontally to illuminate the sky, the neighborhood and an empty playing field. Energy crisis, what energy crisis!

Then, a brilliant red dot appeared on the horizon, moving almost vertically upward. It headed south, picking up speed and broadening into a thin streak. The exhaust flame reached an estimated brightness of V = -2, but never appeared longer than about half a degree. As it headed into Scorpius in the south, the flame broadened into a fan shape, then went out. The entire display lasted approximately three minutes.

I found the launch particularly meaningful, as the payload was the OSTM/Jason-2 scientific satellite. The Ocean Surface and Topography Mission's goal is to measure the ocean surface to an accuracy of one inch, tracking changes in ocean circulation and global sea-level. Such spacecraft go virtually unnoticed by the popular culture, but help provide the data that guide us to a better understanding of the Earth, and the changes our planet is experiencing.

- Dr. Steven Morris

Mars and Saturn Get Together

Two bright planets will approach each other in our evening sky during the next couple of weeks. They are Mars, which was so brilliant during the Christmas season of 2007 and has since diminished dramatically in brightness, and Saturn, which has adorned our evening sky since midwinter. Both worlds are now visible about one-third of the way up from the western horizon as darkness falls.

On the evening of June 30, you'll see Mars just above and to the right of Regulus, while Saturn sits above and to the left; the trio will resemble an arrowhead that night with Saturn making the arrow's tip.

On the evening of July 1, Mars will appear perched almost directly above Regulus. The color contrast will be quite striking, especially in binoculars: Mars appears yellow-orange, while Regulus is bluish.

On July 5 looking low in the western sky about an hour after sundown, you'll see a waxing crescent moon, with Regulus, Mars and Saturn all oriented in a straight line in that order, from lower right to upper left. Mars will be situated almost exactly in between Regulus and Saturn. On the following night, the moon will have shifted eastward, forming a broad triangle with Regulus and Saturn, while Mars will have moved noticeably closer to Saturn.

Saturn, at a mean distance of 886.2 million miles (1.4 billion km.) from the sun, takes 29.46 years to move once around the sun. Mars, at a mean distance of 141.6 million miles (227.9 million km.) from the sun, requires only 1.88 Earth-years to complete one journey around the sun. As a result, Mars' normal eastward motion among the stars is considerably faster than that of Saturn. So from our vantage point here on the Earth, Mars will periodically seem to overtake Saturn in the sky.

During the evenings of July 9 through 11, watch how the faster-moving Mars closely interacts with the much slower Saturn. Despite the difference in brightness, they still should make for a rather eye-catching pair in the western twilight glow about an hour after sundown. On the 9th, Mars is situated about one degree below Saturn. On the 10th, they are closest together, separated by 0.7 degree; Mars now appears just below and to the left of Saturn. On the 11th, Mars has moved noticeably farther away to Saturn's left.

Interestingly, when we combine the motions of Earth, Mars and Saturn, we find that the interval between conjunctions of Mars and Saturn average about every 2 years and 20 days. The last time Mars and Saturn got together was June 17, 2006. Their next meeting is set for July 30, 2010.

- Reprinted from Space.Com.

Schedule of Coming Events

28 June Saturday Evening	**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! Take Hawthorne Blvd. south across Pacific Coast Hwy.; continue up the hill past Silver Spur and turn left at Highridge. Go one mile and turn left on Whitley Collins (3rd stop sign from Hawthorne Blvd.), up one block and turn left on Northbay Rd., the new parking lot is at the end on the left. Enter parking lot and turn left, the gate is at the east end (it should be open about 15 minutes before sunset) and a paved road leading into the playground where we have traditionally set up. If at all possible, drop your equipment off and park your car in the new parking lot (less than 200 feet away). If you are absolutely certain that your vehicle does not drip anything you can park with your equipment. Drive with care to avoid steel pillars supporting basketball nets. Note: If you a visitor, not bringing a scope, it is requested that you park in the small parking lot on Northbay Rd.
5 July Saturday Evening	**Out-of-Town Dark Sky Observing Session** Contact Greg Benecke to coordinate a location.
10 July Saturday Evening	**Mars and Saturn in Same FOV** Mars will pass within approximately 40 arcminutes of Saturn in the early evening. A small telescope will show them both in the same Field-of-View.
11 July Friday Night 7:30 PM	**Monthly General Meeting** Matthew Ota – Ring World 2: Cassini-Huygens Mission to Saturn
14 July Monday Night 7:30 PM	**Monthly Planning Meeting** See directions on Page 4.
24 July Thursday Night 7:00 PM	**Von Karman Auditorium at CalTech (Thursday) & Vosloh Forum at Pasadena City College (Friday)** **Cassini Mission to Saturn Highlights** Bob Mitchell, Cassini Project Manager This lecture will cover the highlights of some of the discoveries that have been made, will show and discuss some of the amazing images that have been returned, and will provide some insights into the behind-the-scenes experiences and interactions of the team members that have occurred in the course of making these results a reality.
26 July Saturday Night	**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!
1 August Friday Night 7:30 PM	**Monthly General Meeting** John Valrjen – Satellite Applications for Military Space
2 August Saturday Evening	**Out-of-Town Dark Sky Observing Session** Contact Greg Benecke to coordinate a location.
4 August Monday Night 7:30 PM	**Monthly Planning Meeting** See directions on Page 4.

South Bay Astronomical Society

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General Meeting at El Camino College Planetarium:
Friday, July 11th, at 7:30 P.M.

Matthew Ota

Ring World 2: Cassini-Huygens Mission to Saturn

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South Bay Astronomical Society
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