FIRST LIGHT

Journal of the South Bay Astronomical Society – May 2007
on line at www.geocities.com/sbas_elcamino

Monthly General Meeting: Friday, May 4th, 7:30 PM

Guest Speaker: Ken Munson

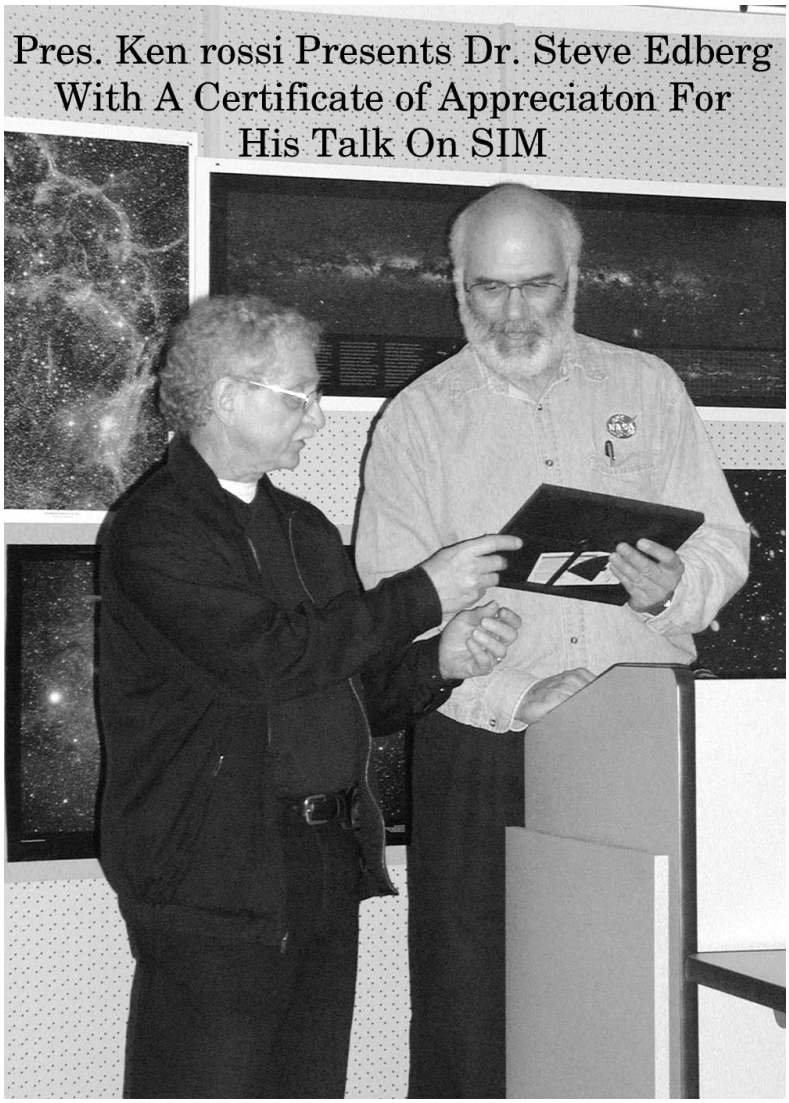
"Introduction to Geostationary Space Operations 101"

The April Meeting

President Ken Rossi opened the meeting at 7:35 and ran through the club's business, announcements, and reviewed upcoming observing events.

Interest in pursuing an observing trip to Mt. Wilson was expressed by the membership and will be organized by Ken Rossi. All of the weekends for this year have been reserved. The next season for Mt. Wilson begins in March of 2008. Suggested dates will be proposed to those interested in participating.

After a 15 minute social break, President Rossi introduced Dr. Stephen Edberg of JPL who is involved in the management and development of the SIM PlanetQuest program at JPL, a program/mission planned to explore the universe with a precision that will surpass anything that has or will go before it. This is a very interesting and exciting mission. The space craft, shown in the photo (artists conception), has a single instrument with several unique and ground breaking tasks: 1) Identify Earth size exo-solar planets, 2) make accurate measurements of distances to other stars, 3) measure the mass of stars. It does this by using an Interferometer to make measurements of distance.



It is well known that the resolution of a mirror is determined primarily by its diameter. Also, two smaller mirrors separated by a distance called the baseline can achieve resolution comparable to a single mirror with the diameter of the

baseline. SIM will use two 32cm (12in) mirrors with a baseline of 9m (29.5ft). The baseline is controlled to an accuracy of the thickness of a Hydrogen atom.

The SIM Planet Quest Mission will fly 3 parallel visible-light Michelson interferometry telescopes mounted on a Northrup Grumman built Precision Stable Platform. Light waves collected by 2 or more telescopes will be combined to achieve far greater resolution than a single telescope. In 1830 Bessel and Struve used the diameter of the Earth's orbit as a baseline to measure astronomical distances, a technique still used today. In 1919 Michelson set up the first interferometer on Mt Wilson and achieved 20 arc min accuracy. Ground based telescopes in the 20th century have obtained 0.5 to 0.05 arc sec. accuracies with errors of +/- 10 to 20%. For comparison the disk of Saturn is 2 arc sec and the nearest star is 0.8 arc sec.

SIM is expected to make measurements of stars within our galaxy (100 light years across) to within an error of 4 micro arc sec. Do the math; a circle contains 1,296,000 arc sec. A micro arc sec. is one millionth of an arc sec. This accuracy will allow SIM to determine stellar distances (\called parallaxes) to 10% accuracy out to distances of 482,000 million miles (25,000 Parsecs - a Parsec = 3.26 light years). SIM will be able to measure the distance to any sufficiently bright object in our galaxy which will be an improvement of several hundred times over what is possible today.

A news release by Northrop Grumman & JPL NASA said that they had finished its design review and had met all criteria set by NASA for the stable platform. The rest is up to engineering. Unfortunately due to budget cuts and other priorities it will be a while before SIM flies.

At the conclusion of the presentation, President Rossi presented Dr. Edberg a plaque in appreciation for his efforts in sharing his work and knowledge of astronomy with the general public.

The meeting was adjourned at 9:45 PM.

- Joe Fierstein & Ken Rossi

Clouds from Top to Bottom

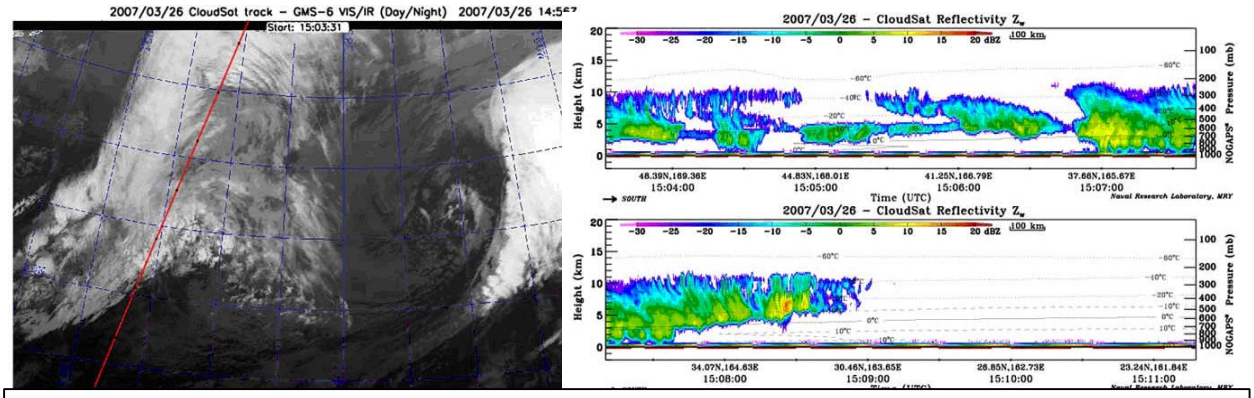
By Patrick L. Barry

During the summer and fall of 2006, U.S. Coast Guard planes flew over the North Pacific in search of illegal, unlicensed, and unregulated fishing boats. It was a tricky operation—in part because low clouds often block the pilots' view of anything floating on the ocean surface below.

To assist in these efforts, they got a little help from the stars.

Actually, it was a satellite—CloudSat, an experimental NASA mission to study Earth's clouds in an entirely new way. While ordinary weather satellites see only the tops of clouds, CloudSat's radar penetrates clouds from top to bottom, measuring their vertical structure and extent. By tapping into CloudSat data processed at the Naval Research Laboratory (NRL) in Monterey, CA, Coast Guard pilots were better able to contend with low-lying clouds that might have otherwise hindered their search for illegal fishing activity.

In the past, Coast Guard pilots would fly out over the ocean not knowing what visibility to expect. Now they can find out quickly. Data from research satellites usually takes days to weeks to process into a usable form, but NASA makes CloudSat's data publicly available on its QuickLook website and to users such as NRL in only a matter of hours—making the data useful for practical applications.



A CloudSat ground track appears as a red line overlaid upon a GMS-6 (a Japanese weather satellite) infrared image. CloudSat is crossing the north-central Pacific Ocean on a descending orbit (from upper-right to lower-left) near a storm front. The radar data corresponding to this ground track (beginning in the center panel and continuing into the lower panel) shows a vertical cloud profile far more complex than the two-dimensional GMS-6 imagery would suggest. Thicker clouds and larger droplets are shown in yellow/red tones, while thinner clouds are shown in blue.

"Before CloudSat, there was no way to measure cloud base from space worldwide," says Deborah Vane, project manager for CloudSat at NASA's Jet Propulsion Laboratory.

CloudSat's primary purpose is to better understand the critical role that clouds play in Earth's climate. But knowledge about the structure of clouds is useful not only for scientific research, but also to operational users such as Coast Guard patrol aircraft and Navy and commercial ships at sea.

"Especially when it's dark, there's limited information abut storms at sea," says Vane. "With CloudSat, we can sort out towering thunderclouds from blankets of calmer clouds. And we have the ability to distinguish between light rain and rain that is falling from severe storms." CloudSat's radar is much more sensitive to cloud structure than are radar systems operating at airports, and from its vantage point in space, CloudSat builds up a view of almost the entire planet, not just one local area. "That gives you weather information that you don't have in any other way."

There is an archive of all data collected since the start of the mission in May 2006 on the CloudSat QuickLook website at cloudsat.atmos.colostate.edu. And to introduce kids to the fun of observing the clouds, go to spaceplace.nasa.gov/en/kids/cloudsat_puz.shtml.

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

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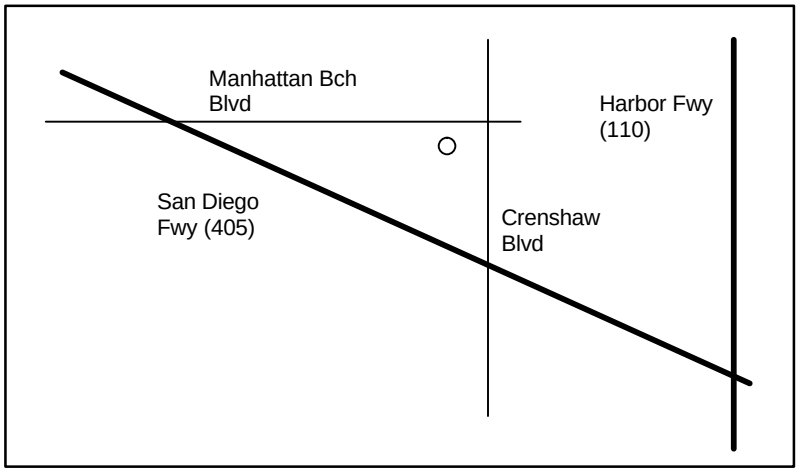
Monthly General Meetings



We normally meet on the first Friday of each month at 7:30 p.m. in the Planetarium at El Camino College. 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 May 7th planning meeting will be held at 7:30 PM at the home of Greg Benecke. From Crenshaw Blvd., head West on 182nd St. Shortly after going under the 405 overpass you will see a Fire Station on the right. Turn right into the cul-de-sac just after the Fire Station. From Prairie Ave., head East on 182nd St. Go one block past the second traffic light (Yukon Ave.) and make a left into the cul-de-sac just before the Fire Station. You are making the correct turn if you see a sign saying "Park Place" on the white fence on the Northwest corner next to the Fire Station. Greg's house is the first one on the left side of the cul-de-sac 18161 Patronella Ave., Torrance.

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! Make your check payable to SBAS and mail the payment and your subscription / renewal form directly to South Bay Astronomical Society, P.O. Box 1937, Redondo Beach, CA 90278.

Part of your SBAS membership dues goes toward membership in the Astronomical League. All paid members should be receiving the "Reflector", the league's newsletter, four times a year. As a member organization, we can participate in a number of award programs they offer. These are based on completing various observing challenges. Check out the Astronomical League website at www.astroleague.org.

SBAS Membership News

Current membership stands at 93 members who are up to date with SBAS dues.

The Executive Board at the March Planning Meeting voted to make every effort to contact those members who have not renewed their membership and encourage them to renew. Those members that have not renewed since 2005 and are not able to be contacted will be dropped from the membership rolls. Those members past due from 2006 will be given a 120 day grace period before being dropped from the membership rolls. Twenty-five members that have not responded to club efforts to contact them by telephone or email and fall into the two categories above have been dropped from the membership roster

JPL Open House

The Jet Propulsion Laboratory 2007 Open House will take place on Saturday and Sunday, May 19th and 20th from 9 A.M. to 5 P.M. each day.

This popular event will celebrate JPL's accomplishments with exhibits and demonstrations about the Laboratory's ongoing research and space exploration. Many of the Lab's scientists and engineers will be on hand to answer questions about how spacecraft are sent to other planets, how scientists utilize space technologies to explore Earth and how researchers are now searching for planets beyond the solar system. Visitors will see exhibits, displays, demonstrations and presentations about new technologies, solar system exploration, spacecraft communication and much more. The JPL Education Office will also be on display. Come by and say "hi."

Details and directions are at *http://www.jpl.nasa.gov/pso/oh.cfm*

RTMC

The 39th annual RTMC Astronomy Expo will take place on Friday, May 25, through Monday, May 28, 2007 (Memorial Day weekend). It will be held at YMCA Camp Oakes, five miles southeast of Big Bear City on State Route 38 at Lake Williams Road between mileposts 44 and 45. This location is about 50 miles northeast of Riverside in the San Bernardino mountains. This year's theme is Public Outreach. Special presentations will be made on outreach to the general public, to schools, scout groups, and others. We'll hear from a few of the old pros about how to turn people on to the hobby that we all love. The Keynote Speaker, Dr. Alex Filippenko of the University of California, Berkeley, knows a thing or two about spreading enthusiasm for astronomy, and was recognized recently as the recipient of the "Carl Sagan Prize for Science Popularization." His address will focus on "Dark Energy and the Runaway Universe." Filippenko led the team that first determined that the expansion of the universe is accelerating, perhaps due to the cosmic "antigravity" effect. His theories of nonzero vacuum energy density have been the talk of cosmology and astronomy for almost a decade since that discovery.

Astronomy Day

SBAS celebrated Astronomy Day '07 over a 3 day period starting on Friday, 4/20, with a talk at Silver Spur Elementary School by Ken Lehmer. Ken spoke to a combined 3rd grade class of about 60 students. The students have been studying the Solar System and it showed. They eagerly answered Ken's questions during his interactive discussion - and asked plenty of their own. Highlight was the demo of distances in the solar system: 9 students spread out in an 80 foot semi circle, each student representing a planet separated by 2 feet for each AU. Although it was threatening rain when the program started it cleared up in time for every one to get a good look at the Sun. Sorry no Sun spots. On Saturday night SBAS hosted a star party open to the public and they showed up in droves due to good press in the local papers. I estimate that by time the evening was over we had entertained 20 to 30 visitors to views of the Moon, Venus, Saturn and a number of Messier objects in the constellations Orion and Leo. We fielded 6 scopes for the event. On Sunday morning 4/22 Joe Fierstein, Bill Eisele, Ken Lehmer and Ken Munson participated in setting up a display about the Sun at the Farmers Market in P.V. Despite cloudy weather and intermittent showers we managed to give quite a few people their first view of the sun through a telescope as well as explaining sun spots and the effects of sun activity on the earth. When Ken Lehmer put his telescope on Venus and offered people a look at a planet in broad daylight that really began to draw a crowd. Alas, by noon, the sky began to worsen and we were unable to offer any more viewing.

April – Comets & Asteroids

Comets Visible in April:

Comet	**Mag**	**Constellation(s)**
Lovejoy (2007 C2)	10 - 12	Her-Dra

Asteroid Occultations:

Event Summary for Torrance, California

Local Time d m y	Hr	Min	Durn m/sec	Star mag	Mag drop	Star No.	Planet No	Name
13-May-07	22	35.4	2.4s	8.8	6.8	TYC 7286-00505-1	5661	Hildebrand

Planetary Occultations:

Local Time d-m-y	Hr	Min	Durn m/sec	Star mag	Star No.	Planet Name
17-May-07	21	55.9	425s	9.2	HIP 32559	Venus
19-May-07	20	5.2	436s	8.9	TYC 1898-00769-1	Venus

Check the JPL Ephemeris Generator page for coordinates of these objects at:
http://ssd.jpl.nasa.gov/horizons.cgi#top

Schedule of Coming Events

4 May Friday Night 7:30 PM	**Monthly General Meeting** Speaker: Ken Munson Topic: Introduction to Geostationary Space Operations 101
6 May Early Morning	**Eta Aquarid Meteor Shower** The Eta Aquarids are flakes of dust from Halley's Comet, which last visited Earth in 1986. The constellation Aquarius does not rise very far above the horizon in the northern hemisphere, and that's why northerners see relatively few meteors. But the ones they do see could be spectacular Earthgrazers. Earthgrazers are meteors that skim horizontally through the upper atmosphere. They are slow and dramatic, streaking far across the sky.
7 May Monday Night 7:30 PM	**Monthly Planning Meeting** Location: See Page 4.
10 May Thursday Evening	**Von Kármán Auditorium (Thursday) & Vosloh Forum at Pasadena City College (Friday)** “Looking for Earth in Other Places” Dr Victoria Meadows. In the vast blackness of space, our home planet is a single sparkling oasis of life. Whether the universe harbors other worlds that can support even simple life is a question that has been pondered, yet has remained unanswered, for over two thousand years.
12 May 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, 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.**
19 May Saturday Evening	**Out of Town Dark Sky Observing Session** Contact Greg Benecke to coordinate a location.

South Bay Astronomical Society

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General Meeting at El Camino College Planetarium:
Friday, May 6th at 7:30 P.M.

Guest Speaker: Ken Munson

"Introduction to Geostationary Space Operations 101"

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South Bay Astronomical Society
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