

FIRST LIGHT



Journal of the South Bay Astronomical Society - October 2003
on line at www.geocities.com/sbas_elcamino

Monthly General Meeting: Friday, October 3, 7:30 PM

Guest Speaker: Dr. Vince Lloyd (ECC & SBAS)

” Who Determined the Distance of the Earth from the Sun?”

Color on the Moon

Are you interested in the Moon? Are you equipped to do CCD imaging? Then, have I got a project for you! Several years ago, I published an article in *Sky & Telescope* magazine (page 99 of the March 1996 issue, to be exact) which illustrated how the subtle colors that exist on the Moon's surface can be revealed through computer processing. The technique involves taking three CCD images of the Moon, through a red filter, then a green filter, then a blue filter, and recombining them on a computer to form a conventional color photograph. Then, the color saturation is increased up to as much as 100% and subtle color variations appear.

I confidently expected lunar observers to contact me with their results, exploring the lunar maria in more detail. Instead, nothing! Could it be possible that nobody is interested in looking at the Moon in this way? Unfortunately, I don't have the equipment to make these colorgraphs myself, but I would certainly like to hear from anyone willing to give it a try. The new tricolor CCD imagers and digital color cameras make this investigation even easier than it was just a few years ago, and lunar projects are perfect for small telescopes and light-polluted skies.

You might also try taking CCD images of the Moon through a polarizing filter. One picture with the polarizer north-south, a second picture with no polarizer and half the exposure time, and a third picture with the polarizer east-west, could be assigned to red, green and blue colors in the computer and the color saturation again increased. Polarization, invisible to the human eye, would be turned into color. Such a polargraph has never been made, as far as my research has been able to determine, even though lunar polarization reaches a maximum of 10%. Both of these techniques could also be applied to the Sun. Who knows what there is to see?

- Steven Morris

Lomita Math and Science Magnet School Astronomy Night

For such a short notice we had an impressive turnout of scopes at the Lomita Math and Science Magnet School on **Sept. 6**. There were no less than 13 scopes and binoculars present. A number of 8-inch SCTs were brought by Al Fader, Bea Collu, Ken and Dicie Sizemore, Larry and Greg Benecke, and Joe Fierstein with the Club's Nexstar. Bea also brought her ETX 90. Ron and Jennifer Rennie were sporting 15X80 binoculars. The Dobs ranged from Deanne Chaffee's 6 inch, Bill Eisele's 13.1 inch Odyssey to Jim Madison's 17.5 inch. Jaques Linder had his trusty 8 inch Orion Skyview and Ken Munson had his Nexstar 11. There was even a representative from Celestron who was invited by the school. He brought the new CGE1400 14 inch SCT Goto. The night started with a presentation in the auditorium by Joe Fierstein on the solar system. The kids were so enthralled they went well overtime and Joe had to bring it to a close so the viewing could begin. Unfortunately the seeing was not very good, but everyone in the crowd of about 200 seemed to enjoy what for most was their first views of Mars and the Moon through a telescope. A letter of thanks from the school is published elsewhere in this month's Firstlight.

- Greg Benecke

Working to Overcome Light Pollution

You might all like to hear my good news. Just this week the San Bernardino County Board of Supervisors gave initial approval to an Outdoor Lighting Ordinance for the unincorporated areas of the County. This is the Ordinance that we started drafting two years ago. It will help a great deal in curtailing light trespass, glare and artificial sky glow in our mountain and desert areas. We can make a difference by devoting a little time and energy to promote our cause.

- Laverne Booth, International Dark-Sky Assoc.

Light Pollution from the Port

The skies above us, too bright already, are likely to get brighter still as the Port of Los Angeles expands and modernizes. Recognizing the concerns of the community, the Port has formed a Port Community Advisory Committee, and I spoke to it at their meeting on Friday, September 12. The eight members who attended were very interested in what I had to say about light pollution, particularly light trespass. I also pointed out that Mt. Wilson and Mt. Palomar had expressed concern about the Vincent Thomas Bridge lighting project, and future expansion of the Port may dwarf the brightness increase of the original plans for the Bridge.

If you enjoy the night sky, why not become involved? Committee work may not be very attractive, but it's the way things get done nowadays. In any case, if you haven't joined the International Dark-Sky Association (IDA), now is as good a time as any. I recommended to the Committee that they ask the IDA to write a letter of concern. You might think it obvious that the Port authorities simply look at the light spillage to see what needs to be done, but an official letter from a large-membership organization is sometimes more visible to those in charge. IDA will be a large-membership organization, only if people like you support it.

-Steven Morris

SBAS Observation Reports

@Cottonwood Springs - On **August 30** a few members went out to Cottonwood Springs for the monthly dark sky trip. The usual suspects, Craig Gates, Mike Rivas and Greg Benecke were there with their 11, 12 and 8 inch SCTs and Jim Madison with his 17.5 inch Dob. Joe Fierstein was working with club's recently upgraded Nexstar 8i with GPS. Jim Edwards was also there with his classic C8. The night was warm with moderate seeing. Mars was the star of the night being only a few days since opposition. The Milky Way was intense in the dark sky. One of the highlights was wondering through the Veil Nebula. Nothing beats a dark sky!

@Ridgecrest School - There was a relatively small turnout at Ridgecrest School on **Sept. 20**. That was a shame since it was one of those rare occasions where the marine layer was our friend. There was a temperature inversion that kept the fairly heavy and cold marine layer well below the top of PV while we were in warm and dry conditions at the school. This noticeably dimmed the skyglow from the LA basin, clearly exposing the Milky Way above us. Bea Collu, Shawn Belveal, Al Fader and I had our 8-inch SCTs while Jim Madison has his 17.5 inch Dob. Kurt Stenzel, new member and a science teacher from the Lomita Math/Science Magnet School worked with Jim to learn the ins and outs of operating a large Dob. There were a couple of other folks there to view the sights, but I am afraid I did not jot their names down. The seeing started out moderate and steadily improved through the night. Mars was looking good with most of the South Polar cap gone. No sign of any dust storms this season.

- Greg Benecke

Our SBAS Committee

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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). Click on the map to get a display that can be zoomed out for a regional view. The zoom display appears in a separate browser window, which can be closed to return to this page.

The domed roof of the planetarium is visible from the street. 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. Park in northeast corner lot, temporarily, due to the construction project.

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 Meetings

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 by any member or visitor wishing to attend. All are welcome!

We will meet on Monday, October 6th 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.

SBAS Membership Benefits

“Welcome” to our newest SBAS members: John Brandt, Kenneth Wiener, Kurt Stenzel and James E.T. Blake.

Contact John Collins for magazine subscriptions at club rates: “Sky & Telescope” \$29.95 and “Astronomy” \$29.00! Make your check payable to SBAS and mail the payment and your subscription / renewal form directly to SBAS, c/o Microcosm, Inc. at 401 Coral Circle, El Segundo, CA 90245-4622.

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

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!

Looking at Mars

I was outside during the early morning of August 27th, along with so many others across North America, to witness Mars as it reached its remarkably close approach to the Earth. While I admired its almost “Jupiter-like” apparent diameter through my 24-inch telescope, I was disappointed by the lack of detail.

The problem of course, was the degraded image caused by seeing. In all the hoopla, it was not often pointed out that such very close approaches occur when Mars is far to the south in the sky. At a declination of -15.8 degrees, Mars was at a zenith distance (the angular distance from the zenith to the object) of 48.0 degrees as seen from Los Angeles, as it culminated in the south. Throughout the night, it never climbed even halfway up the sky!

So, if you missed seeing Mars this time around, don't despair! Mars will be farther and farther away from us for the next four oppositions, but for the first two of these oppositions it will be riding higher and higher in the sky. The following table lists this year's closest approach and the next four closest approaches, the distance of Mars from the Earth, and the zenith distance as seen from Los Angeles when Mars is highest in the sky at local midnight.

Date	Distance (millions of km)	Zenith distance (degrees)
2003 Aug. 27	55.8	48.0
2005 Oct. 30	69.4	17.6
2007 Dec. 28	88.2	7.3
2010 Jan. 27	99.3	11.8
2012 Mar. 05	100.8	23.2

The oppositions of 2010 and 2012 will indeed be unimpressive, but in 2005 and 2007 an observer in Los Angeles may get better views of Martian surface features than we obtained in 2003.

- Steven Morris

Labor Day Weekend Observation Report

Due to other obligations, I was unable to make the trip out to the club's usual dark sky site in the Mojave Desert. Considering how much it's been raining there lately, maybe it wasn't such a loss. I did manage to get up to my old site on the Angeles Crest Highway north of Los Angeles, near the Mount Wilson Observatory with the Nexstar 11. What I had thought would, at best, be a compromise turned into one of the best viewing sessions this summer. The sky was incredibly clear and very stable. Even when Mars was low on the horizon, just rising above the ridge to the east, there was very little thermal distortion. The sky did get a bit cloudy around midnight but cleared by 1:30 AM and was again amazingly stable.

This site is a trailhead for several hiking trails that head off into the mountains nearby. When I and two of my daughters arrived, a couple of cars were already in the parking lot. Shortly after dark a couple of hikers came back to their car. They were both exhausted and hungry and didn't have time to take a look. I had to laugh when I heard my daughter, Stephanie, explaining what we were doing there. She explained that, "after dark there'll be hundreds of stars out and my Dad will see all of them with his telescope!"

I spent the evening hunting down obscure, little known, star clusters and planetary nebulas along the Milky Way from Cygnus to Ophiuchus. Most were small and faint, usually 10th magnitude and fainter. NGC 6819 in Cygnus, with a few stars around magnitude 7 was one of the brightest. It's a small, box-like open cluster with four 'arms' of stars extending from the corners. NGC 6765 in Lyra was a real challenge at 12th magnitude. Even with the 10mm eyepiece and OIII filter, it was just a tiny grey ball that couldn't be resolved to a point like the 10th magnitude star next to it. NGC 6572 in Ophiuchus is another nice challenge. In the 40mm eyepiece, it just looks like another star. With the 10mm, even without the OIII filter, it clearly showed as a fuzzy ball when other stars were fine points. NGC 6661 in Hercules is about the only galaxy I managed to find. It's a faint 12th magnitude galaxy and appears to be an elliptical. However, that's probably just because I can only see the core. If there's any spiral arms, they were too faint to be seen without long exposure photography. After a brief visit to my old friend M11, I took a swing through Aquila.

Once again, I got to have the thrill of finding something completely unexpected. While looking for IC 1298, which was listed in the hand controller database as an open cluster, I stumbled across a faint grey object. Even under my highest power eyepiece, it did not resolve into stars and therefore I figured it was not IC 1298. Nothing was showing on my chart other than IC 1298 even though I'd set it to display objects down to magnitude 13 when I printed the charts. When I got home, I checked out the coordinates I'd recorded from the hand controller and found it was NGC 6778, a magnitude 13.3 planetary nebula. That's a new record low magnitude sighting for me at this site! NGC 6934 in Delphinus is a very nice, small but bright 9th magnitude globular cluster. With the air so nice and stable, I was able to use the 4mm eyepiece and could resolve individual stars in this cluster. NGC 1514 in Perseus is a fairly large planetary nebula surrounding a moderately bright star. Virtually invisible in the 10mm eyepiece, it was best seen with the 40mm and OIII filter.

Of course the evening wouldn't have been complete without a good look at Mars. This has got to be the best I have ever seen Mars. For once, I didn't have to stare at it and wait for ripples in the atmosphere to snap the image into some sort of clarity. One large, distinct feature I could see was what looked like a dark, circular basin surrounded by lighter material. A smaller one, not fully encircled was visible to the left. So far, I can't match what I saw to any of the features that should have been visible around 0900-1000 GMT. Disappointing that I can't put a name to the features but I was thrilled to have seen such detail. I was even able to use the 4mm eyepiece on Mars!

The night finally ended with my first look at Saturn for this season. First glimpse was shortly after it rose but, that was the period of intermittent clouds and the atmosphere was not very stable in that area. Later on, near sunrise, the view was far better. Even in the increasing glow of sunrise, I could clearly see the Cassini Division in the rings, the Encke Minima and four of the moons. Rhea, Tethys and Dione made a nice triangular pattern on one side with bright Titan as a counterpoint on the opposite side of the planet. An excellent end to a far better night than I had expected.

- ***Ken Munson***

Galileo End of Mission Status

The Galileo spacecraft's 14-year odyssey came to an end on Sunday, Sept. 21, when the spacecraft passed into Jupiter's shadow then disintegrated in the planet's dense atmosphere at 11:57 a.m. PDT. The Deep Space Network tracking station in Goldstone, Calif., received the last signal at 12:43:14 PDT. The delay is due to the time it takes for the signal to travel to Earth. Hundreds of former Galileo project members and their families were present at NASA's Jet Propulsion Laboratory in Pasadena, Calif., for a celebration to bid the spacecraft goodbye. "We learned mind-boggling things. This mission was worth its weight in gold," said Dr. Claudia Alexander, Galileo project manager.

Having traveled approximately 4.6 billion kilometers (about 2.8 billion miles), the hardy spacecraft endured more than four times the cumulative dose of harmful jovian radiation it was designed to withstand. During a previous flyby of the moon Amalthea in November 2002, flashes of light were seen by the star scanner, which indicated the presence of rocky debris circling Jupiter in the vicinity of the small moon. Another measurement of this area was taken during Galileo's final pass. Further analysis may help confirm or constrain the existence of a ring at Amalthea's orbit.

"We haven't lost a spacecraft, we've gained a steppingstone into the future of space exploration," said Dr. Torrance Johnson, Galileo project scientist. The spacecraft was purposely put on a collision course with Jupiter because the onboard propellant was nearly depleted and to eliminate any chance of an unwanted impact between the spacecraft and Jupiter's moon Europa, which Galileo discovered is likely to have a subsurface ocean. Without propellant, the spacecraft would not be able to point its antenna toward Earth or adjust its trajectory, so controlling the spacecraft would no longer be possible. The possibility of life existing on Europa is so compelling and has raised so many unanswered questions that it is prompting plans for future spacecraft to return to the icy moon.

Galileo was launched from the cargo bay of Space Shuttle Atlantis in 1989. The exciting list of discoveries started even before Galileo got a glimpse of Jupiter. As it crossed the asteroid belt in October 1991, Galileo snapped images of Gaspra, returning the first ever close-up image of an asteroid. Less than a year later, the spacecraft got up close to yet another asteroid, Ida, revealing it had its own little "moon," Dactyl, the first known moon of an asteroid. In 1994 the spacecraft made the only direct observation of a comet impacting a planet, comet Shoemaker-Levy 9's collision with Jupiter.

The descent probe made the first in-place studies of the planet's clouds and winds, and it furthered scientists' understanding of how Jupiter evolved. The probe also made composition measurements designed to assess the degree of evolution of Jupiter compared to the Sun. Galileo made the first observation of ammonia clouds in another planet's atmosphere. It also observed numerous large thunderstorms on Jupiter many times larger than those on Earth, with lightning strikes up to 1,000 times more powerful than on Earth. It was the first spacecraft to dwell in a giant planet's magnetosphere long enough to identify its global structure and to investigate the dynamics of Jupiter's magnetic field. Galileo determined that Jupiter's ring system is formed by dust kicked up as interplanetary meteoroids smash into the planet's four small inner moons. Galileo data showed that Jupiter's outermost ring is actually two rings, one embedded within the other.

Galileo extensively investigated the geologic diversity of Jupiter's four largest moons: Ganymede, Callisto, Io and Europa. Galileo found that Io's extensive volcanic activity is 100 times greater than that found on Earth. The moon Europa, Galileo unveiled, could be hiding a salty ocean up to 100 kilometers (62 miles) deep underneath its frozen surface containing about twice as much water as all the Earth's oceans. Data also showed Ganymede and Callisto may have a liquid-saltwater layer. The biggest discovery surrounding Ganymede was the presence of a magnetic field. No other moon of any planet is known to have one.

The prime mission ended six years ago, after two years of orbiting Jupiter. NASA extended the mission three times to continue taking advantage of Galileo's unique capabilities for accomplishing valuable science. The mission was possible because it drew its power from two long-lasting radioisotope thermoelectric generators provided by the Department of Energy. "The mission was a testimonial to the persistence of NASA even through tremendous challenges. It was a phenomenal mission," said Sean O'Keefe, NASA administrator. Additional information about the Galileo mission and its discoveries is available online at <http://www.jpl.nasa.gov/galileo-legacy> and <http://galileo.jpl.nasa.gov>.

- JPL News Release

Schedule of Coming Events

3 October Friday 7:30 P.M.	Monthly General Meeting: Speaker, Dr. Vince Lloyd, will discuss "Who Determined the Distance of the Earth from the Sun?".
6 October Monday 7:30 P.M.	Monthly Planning Meeting Refer to page 3 for location.
16 (JPL) 17 (PCC) October 7:00 P.M.	Von Karman Auditorium Lecture Series – FREE "Cosmic Jets: New Building Blocks of the Universe" by Dr. David Meier, JPL Astrophysicist. How the mysterious, spectacular phenomenon of cosmic jets are integral to our origin and the universe's structure and evolution. For more information call: (818) 354-0112. Current and archived webcasts can be viewed at http://www.jpl.nasa.gov
18 October Saturday Evening	In-Town Dark Sky Observing at Ridgecrest School – Weather Permitting: If the weather conditions are marginal, contact Greg Benecke to confirm that he will be opening the gate! 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 <u>not</u> drip anything you can park with your equipment. Drive with care to avoid steel pillars supporting basketball nets...
25 October Saturday Evening	Out-of-Town Dark Sky Observing – New Moon Contact Greg Benecke to arrange site location.
7 November Friday 7:30 P.M.	Monthly General Meeting: The speaker for the evening will be announced in the November newsletter.
10 November Monday 7:30 P.M.	Monthly Planning Meeting Location will be announced in the November newsletter.
15 November Saturday Evening	In-Town Dark Sky Observing at Ridgecrest School – Weather Permitting. Refer to October 18th entry for directions to the site & instructions on weather conditions.
20 (JPL) 21 (PCC) November 7:00 P.M.	Von Karman Auditorium Lecture Series – FREE "Deep Space Network Challenge for 2003-2004: Tracking Dozens of Mission Critical Spacecraft Events". How the DSN plans to get through its approaching challenge to support more concurrent events of crucial magnitude than ever in its history. For more information call: (818) 354-0112.
23 November Saturday Evening	Out-of-Town Dark Sky Observing – New Moon Contact Greg Benecke to arrange site location.

South Bay Astronomical Society

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*General Meeting at El Camino College Planetarium:
Friday, October 3rd at 7:30 P.M.*

Guest Speaker: Dr. Vince Lloyd (ECC & SBAS)

“Who Determined the Distance of the Earth from the Sun?”

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