FIRST LIGHT

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

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

Guest Speaker: John C. Smith, JPL

"Space Exploration"

The August 7 Meeting

The meeting was gaveled to order at 7:37 by President Ken Rossi, who began by welcoming newcomers Rob Hutchins and George Manus. Last month's in-town observing session at Ridgecrest Middle School was reported to have gone well, and various members reported successful dark-sky observing at Mt. Pinos, Bear Valley Springs, Big Bear and the Angeles Forest. President Rossi then introduced the subject of filing for incorporation and non-profit status for the SBAS. Several members asked questions about what was involved in this procedure, and why this change of status was an issue. When it came to a vote, only three of the thirty-five people present voted for incorporation. A seven-minute video about the spacecraft LCROSS was then screened, nicely augmenting last month's presentation on the subject.

Greg Explains Astrophotography And his Setup

After a twelve-minute social break, Greg Benecke began his talk on DSLR Astrophotography. Greg decided to pursue astrophotography two years ago, and immediately faced the choice of which type of camera to buy. He chose a Digital Single Lens Reflex camera, which has the advantages of being used at the prime focus of a telescope instead of taking pictures through an eyepiece, and is usable with or without a computer. It does suffer the disadvantage that noise becomes worse on warm nights. Indeed, the amount of noise in such a system doubles for every temperature increase of six degrees Centigrade.

A Digital Single Lens Reflex (DSLR) camera is Digital in the sense that unlike a film image, the image is represented as a set of numbers which a computer can process to form a photograph. Such a camera uses a Single Lens, rather than having a viewfinder with a separate lens system, so the view through the viewfinder is exactly what the imaging system is going to receive. When an image is taken, the camera automatically (as a Reflex) sends the light to the imaging system instead of the viewfinder.

There are other choices that can be made. A Film Single Lens Reflex camera is inexpensive, but film is a dying medium, and very long single exposures are required. A Webcam-Based Camera is inexpensive and takes color

photographs, but it has a low pixel count (so you can't get a large high-resolution picture) and is noisy (generating a large unwanted random contribution to the image). A Point-and-Shoot Camera can be inexpensive, but is also noisy, and focusing may be difficult. A final possibility is a full-fledged Astronomical CCD Cooled Camera, which has very low noise and has full H-alpha sensitivity. However, these can be very expensive, in the range of $8,000 to $10,000.
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Greg chose a DSLR for good performance at a reasonable price. This camera has a quantum efficiency in the range of 20% to 50%, far outperforming film, in which the great majority of photons (particles of light) go unrecorded. This camera also has the advantage over film of having a very good linear response, so that doubling the exposure time doubles the signal. Such a camera also has a high dynamic range, capable of recording bright stars and faint nebulae much more accurately than film.

To do this, a DSLR camera contains an imaging system made up of an array of photosites. Each photosite is a photodiode that absorbs photons and releases electrons. Each photodiode can accommodate a fixed maximum number of electrons before it saturates, leaking excess electrons into neighboring photosites, creating blooming (long streaks) in the resulting image. Most DSLR cameras now have anti-blooming circuitry to prevent this. An analog-to-digital converter converts the amplified well voltage caused by the electrons in each photodiode into a number that is then recorded. A 16-bit converter can provide 65,536 (2 to the power 16) levels of response.

Unfortunately, a camera records not only the photons from an astronomical object, but other signals such as skyglow, along with noise. To get the best image possible, many short-exposure individual images called subframes are taken and then added together, in a process called stacking. Dark frames and calibration frames are also taken to subtract unwanted signals from each subframe. The amount of computer processing can become formidable, and commercial software such as Photoshop is widely used.

Greg reviewed the other equipment necessary for astrophotography, such as a stable mount, a guidescope, a laptop computer and of course the telescope. He suggested getting the best mount you can afford, and recommended guiding even for short exposures, because the mount may not track perfectly, and polar alignment errors will cause drift. The laptop computer is not only used to record the subframes and perform processing, but can be used to control the camera, the mount and the focuser as well.

Greg ended his presentation by processing an image of the Horsehead Nebula, taking the audience through the various steps required to create a vivid and colorful image. After answering a couple of questions from the audience, President Rossi and the audience thanked Greg for his efforts, and the meeting ended at 10:08.

- Dr. Steven Morris

A Planet Named Easterbunny?

You know Uranus, Neptune, and Pluto. But how about their smaller cousins Eris, Ceres, Orcus, and Makemake? How about Easterbunny?

These are all names given to relatively large "planet-like" objects recently found in the outer reaches of our solar system. Some were just temporary nicknames, others are now official and permanent. Each has a unique story.

"The names we chose are important," says Caltech astronomer Mike Brown, who had a hand in many of the discoveries. "These objects are a part of our solar system; they're in our neighborhood. We 'gravitate' to them more if they have real names, instead of technical names like 2003 UB313."

Nearby planets such as Venus and Mars have been known since antiquity and were named by the ancient Romans after their gods. In modern times, though, who gets to name newly discovered dwarf planets and other important solar-system bodies?

In short, whoever finds it names it. For example, a few days after Easter 2005, Brown and his colleagues discovered a bright dwarf planet orbiting in the Kuiper belt. The team's informal nickname for this new object quickly became Easterbunny.

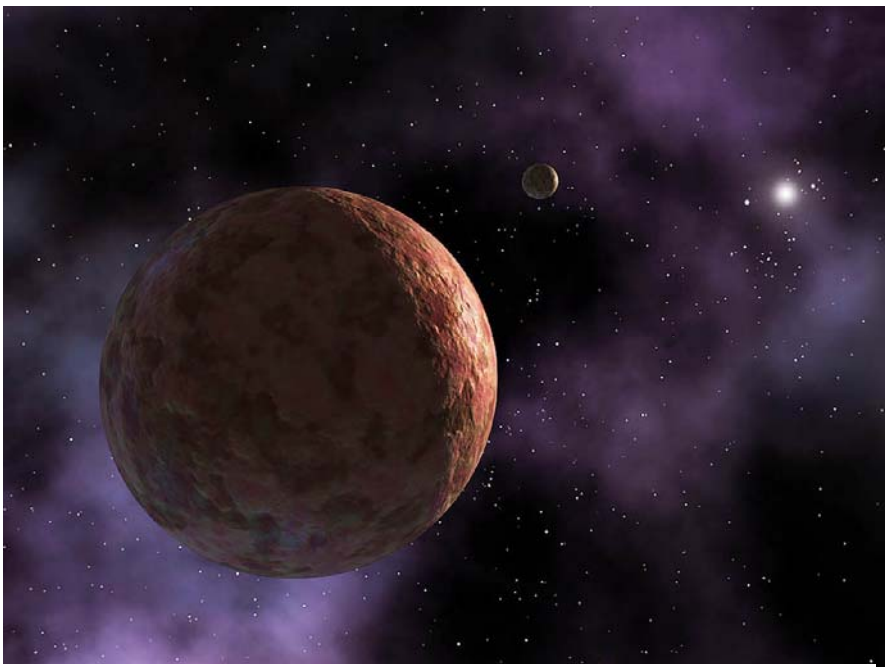
However, ever since its formation in 1919, the International Astronomical Union (IAU) ultimately decides whether to

accept or reject the name suggested by an object's discoverers. "Easterbunny" probably wouldn't be approved.

According to IAU guidelines, comets are named after whoever discovered them—such as comet Hale-Bopp, named after its discoverers Alan Hale and Thomas Bopp. Asteroids can be named almost anything. IAU rules state that objects in the Kuiper belt should be given mythological names related to creation.

So Brown's team started brainstorming. They considered several Easter-esque names: Eostre, the pagan mythological figure that may be Easter's namesake; Manabozho, the Algonquin rabbit trickster god.

In the end, they settled on Makemake (pronounced MAH-kay MAH-kay), the creator of humanity in the mythology of Easter Island, so named because Europeans first arrived there on Easter 1722.



Artist's rendering of dwarf planet MakeMake, discovered around Easter 2005. Unlikely to gain acceptance their nickname Easterbunny, the discoverers named it for the god of humanity in the mythology of Easter Island.

Other names have other rationales. The dwarf planet discovered in 2005 that triggered a fierce debate over Pluto's status was named Eris, for the Greek goddess of strife and discord. Another dwarf planet with an orbit that mirrors Pluto's was dubbed Orcus, a god in Etruscan mythology that, like Pluto, ruled the underworld.

Brown says he takes "this naming business" very seriously and probably spends too much time on it. "But I enjoy it." More tales of discovery and naming may be found in Brown's blog MikeBrownsPlanets.com.

Constellations have also been named after ancient gods, human figures, and animals. Kids can start to learn their constellations by making a Star Finder for this month at: ***spaceplace.nasa.gov/en/kids/st6starfinder/st6starfinder.shtml***. There you will also find a handy explanation of why astrology has no place in science.

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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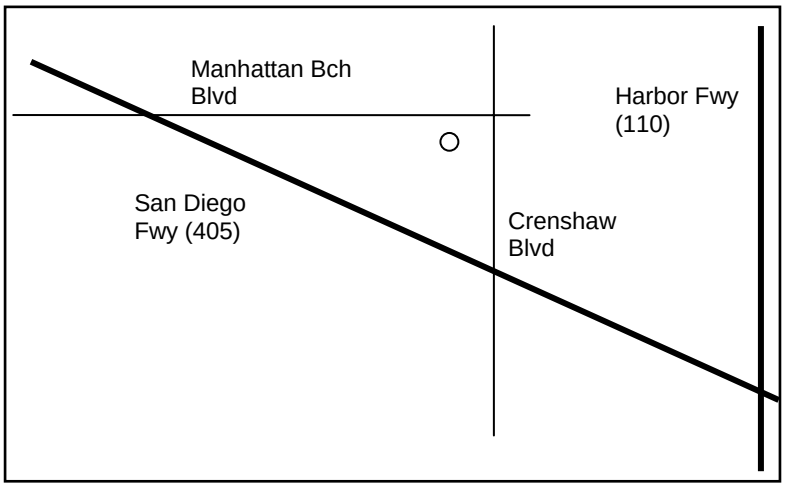
Monthly General Meetings



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 September 14th planning meeting will be held at the home of Joe & Miriam Fierstein. Take Hawthorne Blvd. south past Pacific Coast Hwy. up the hill passing Silver Spur Rd. and Highridge until you get to the light at Eddinghill Dr., then turn right and go downhill to the 'T' intersection at Golden Meadow where you turn left up 2 blocks and turn left on Willow Tree Dr. to 3rd house on the right side from the corner – 7022 Willow Tree Dr., Rancho Palos Verdes.

Welcome to New Members

The club welcomes the following new members: Sascha Bottoms of Redondo Beach, Robert Hutchins of Palos Verdes, and George Manus of San Pedro.

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.

Election Time Approaches

It's coming up fast again, that time of year when decisions need to be made. The SBAS is facing some critical decisions soon and it needs the support of its members. Having served a couple of terms already, President Ken Rossi will be stepping down this year. Vice President Ron Rennie will also be stepping down. So, the club is in need of members to fill these important positions. The success of an astronomy club depends on its members. Their devotion to the hobby is what makes a club a great and dynamic place to be. If you have ideas on what the club should do, the direction it should go, don't hesitate to put your name in nomination (or to have a friend do it). To paraphrase another famous writer: Now is the time for all good men and women to come to the aid of their club. Don't be just an armchair astronomer. Take an active part in leading this club into the future!

It should also be noted that Joe Fierstein, who has been Outreach Chairman, for many years will also be relinquishing his position. This is not an elected position but it does require a person with an avid interest in astronomy who loves to educate children and the general public. Joe's devotion to these principles has been wonderfully evident in the many outreach events he has organized, from school sun/star parties, boy/girl scout events and public speaking events and displays at libraries around the South Bay. It's thanks to Joe that the club became involved with the Night Sky Network and has been awarded some marvelous prizes, including the Coronado Personal Solar Telescope. If you enjoy teaching or even just talking about astronomy, step forward and volunteer!

The Sun's Cycle Alters the Earth's Climate

Weather patterns across the globe are partly affected by connections between the 11-year solar cycle of activity, Earth's stratosphere and the tropical Pacific Ocean, a new study finds.

The amount of energy the sun puts out varies over an 11-year cycle, but that cycle changes the total amount of energy reaching Earth by only about 0.1 percent. A conundrum for meteorologists was explaining whether and how such a small variation could drive major changes in weather patterns on Earth.

An international team of scientists led by the National Center for Atmospheric Research (NCAR) used more than a century of weather observations and three powerful computer models to tackle this question. The answer has to do with the Sun's impact on two seemingly unrelated regions: water in the tropical Pacific Ocean and air in the stratosphere.

The study found that chemicals in the stratosphere and sea surface temperatures in the Pacific Ocean respond during solar maximum in a way that amplifies the sun's influence on some aspects of air movement. This can intensify winds and rainfall, change sea surface temperatures and cloud cover over certain tropical and subtropical regions, and ultimately influence global weather. The changes occur like this: The slight increase in solar energy during the peak production of sunspots is absorbed by stratospheric ozone, warming the air in the stratosphere over the tropics, where sunlight is most intense. The additional energy also stimulates the production of additional ozone there that absorbs even more solar energy.

At the same time, the increased sunlight at solar causes a slight warming of ocean surface waters across the subtropical Pacific, where sun-blocking clouds are normally scarce. That small amount of extra heat leads to more evaporation, putting additional water vapor into the atmosphere. The moisture is carried by trade winds to the normally rainy areas of the western tropical Pacific, fueling heavier rains and reinforcing the effects of the stratospheric mechanism.

These two processes reinforce each other and intensify the effect. The solar cycle does not have as great an effect on Earth's climate as the El Nino cycle. But the Indian monsoon, Pacific sea surface temperatures and precipitation, and other regional climate patterns are largely driven by rising and sinking air in Earth's tropics and subtropics.

- ***Reprinted from Space.com***

Schedule of Coming Events

11 September Friday Night 7:30 PM	**Monthly General Meeting** Guest Speaker: John C. Smith, JPL Topic: Space Exploration
12 September 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 -
14 September Monday Night 7:30 PM	**Monthly Planning Meeting** See directions on Page 4.
17 September Thursday Evening 7:00 PM	**JPL's Von Karman Lectures: Measuring Atmospheric Carbon Dioxide from Space** by Dr. David Crisp Carbon dioxide (CO2) is an efficient atmospheric greenhouse gas. Fossil fuel combustion, deforestation and other human activities are currently emitting more than 30 billion tons of this gas into atmosphere each year. Meanwhile, measurements from a network of over 100 stations indicate that more than half of the CO2 that human activities produce is being absorbed by the ocean, forests, and by other natural processes whose identity and location are poorly known. An improved understanding of both the CO2 "sources," where it is emitted into the atmosphere, and the natural "sinks" where it is being absorbed, is essential predicting the impact of CO2 on the Earth's climate. Location: Von Karman Auditorium at JPL 3800 Oak Grove Dr. Pasadena
19 September Saturday Evening	**Out-of-Town Dark Sky Observing Session** Contact Greg Benecke to coordinate a location.
TBA	**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

South Bay Astronomical Society

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General Meeting at El Camino College Planetarium:
Friday, September 4th, at 7:30 P.M.

Guest Speaker: TBD

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South Bay Astronomical Society
P.O. Box 1937
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