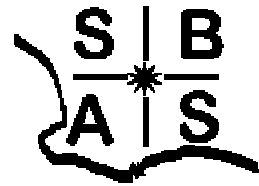


FIRST LIGHT



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

Monthly General Meeting: Friday, February 6th, 7:30 PM

Guest Speaker: Dr. Dave Doody, JPL

“Cassin’s Discoveries at Saturn”

SBAS Kicks Off The International Year Of Astronomy-400 Years Since Galileo Observed The Moon With A Telescope

On Sat Jan 17 Ken Rossi, Ron Rennie, Larry Kinney, Tim Moore and Joe Fierstein spent the better part of the day helping the Girl Scouts celebrate the joining of several local Los Angeles councils into a single entity the "Greater Los Angeles Council". It was also the start of their



annual cookie sale. 5,000 scouts were registered so it was an appropriate event to begin IYA. It was held on the infield of the Hollywood Park Race Track, which provided a lovely setting, but a logistical nightmare. In order to access the infield without crossing the actual track a narrow tunnel is used. There were nearly 100 exhibitors most of whom needed to use a vehicle to get their displays set up.

Cars and pedestrians were not allowed at the same time. Set up was supposed to be from 9 to 10am We didn't get to our site till 11am. Fortunately Ron arrived early and was able to drive thru to set up 2 cabanas for our booth before the crowd arrived. Despite the initial confusion it was a beautiful sunny day . We set up 4 scopes and Ron had his large binoculars with tilting mirror which proved very popular. While not all 5000 scouts visited our booth we estimate that we gave between 300 to 500 scouts their first look thru a telescope and view of the Sun (unfortunately no sun spots). In addition we passed out a great deal of literature and at least 100 copies of a 2 disk CD set supplied by NASA called "Imagine The Universe". One disk was for elementary grades and the other for high-schoolers. Although it was a long and trying day it was also rewarding and a great start for IYA. Thanks to all the participants. We continue our IYA outreach on Fri Jan 30 when SBAS is invited to give a Star Party at The Silver Spur School 5500 Ironwood St in RPV. Contac Joe Fierstein for details 310 377 9834 or joefiers@aol.com

- Joe Fierstein

The January 9 Meeting

President Ken Rossi gaveled the meeting to order at 7:36, welcoming everyone to the International Year of Astronomy and describing some of the plans the SBAS has for public outreach this year. Greg Benecke and Craig Gates described their recent observing session at Joshua Tree, including both imaging and visual work.

Steven Morris then reported on the recent semiannual meeting of the American Astronomical Society, which had just finished at the Long Beach Convention Center. Many young adults are entering the field and many wonderful observatories are in their planning stages, but it is hard to imagine how even a small fraction of all these great projects can be funded in the foreseeable future. Indeed, the David Dunlap Observatory in Canada has recently been sold to developers, and the Arecibo Radio Observatory may close for lack of funds. One bright spot is the rapid rise of Chinese astronomy. In the last decade, financing for observatories and equipment has increased from 3 million dollars per year to 30 million dollars per year. The Chinese are currently constructing a radio telescope half a kilometer in diameter (creating more than twice the area of the Arecibo telescope). With a maximum zenith distance of 40 degrees, this telescope will be able to scan through a very wide swath of the sky.

Ron Rennie presented a five-minute Powerpoint presentation of the Earth from space. After a seven-minute social break, Dr. Gary Peterson gave the evening's lecture on "The Capture of the Moon". There are four possible explanations of how the Moon came to orbit the Earth: it formed in circular orbit around the Earth as the Earth formed, or it was torn from the Earth due to rapid rotation, or it formed elsewhere in the Solar System and was captured by the Earth, or it formed when a large object crashed into the Early Earth and carried away a large chunk of the Earth's crust and mantle, leaving most of the impacting object's core behind.

Any description of the Moon's formation must explain the small size of its nickel-iron core, compared to the size of the core of the Earth. The first of the four explanations fails to do this; if the Moon formed near the Earth, it should have the same ratio of metal to rock. The second explanation fails due to our knowledge of dynamics, and because the Theory of Plate Tectonics explains the existence of the Pacific Ocean, so the Pacific Ocean is no longer considered to be the hole formed as the Moon was torn away.

The fourth explanation is currently favored by about 90% of planetary geologists, partly because mega-impacts appeal to the human mind. This theory postulates that an off-center collision with a large object expelled some of the crust and mantle of both objects into orbit, leaving both cores behind to form the Earth's present large core, scanting the Moon. Interestingly enough, Dr. Peterson favors the third hypothesis. Mercury, Venus and Mars decrease in core size with increasing distance from the Sun, so if the Moon formed beyond the Earth's orbit, it might well have formed with its present small core and no impact would be necessary.

The major drawback to this theory is that only a narrow range of orbital parameters will allow an object to be captured as a moon rather than merely passing nearby and continuing on its way, while a mega-impact allows energy and angular momentum to be absorbed by the Early Earth. Dr. Peterson noted that 'improbable' does not mean 'impossible', and pointed out that capture is the favored explanation for several Solar System satellites. Some moons around gas giants move in retrograde orbits; they cannot have formed in place as they would then share the same rotational motion as the planet, and the gas giants have no solid surface to impact. Neptune's moon Triton is the size of the Moon, and it is in retrograde motion. Phobos and Deimos certainly look like captured asteroids, so capture, however improbable, does seem to have taken place elsewhere in the Solar System.

Dr. Peterson ended by noting that the advantage of this minority theory is that it allows the Moon's crust to be fully formed and heavily cratered at the Moon's initial location. After capture, tidal heating would have created the lava

flows that filled in the basins, forming the maria. The mega-impact theory perhaps cannot so easily explain how the heavily-cratered surface formed, with internal heating and lava flow occurring later, when the heat caused by formation and radioactive decay would be expected to decrease, not increase, over time.

Several questions were asked by some of the 45 people present, as one might expect for a controversial theory. President Rossi thanked the speaker, and the meeting ended at 10:02.

- Dr. Steven Morris

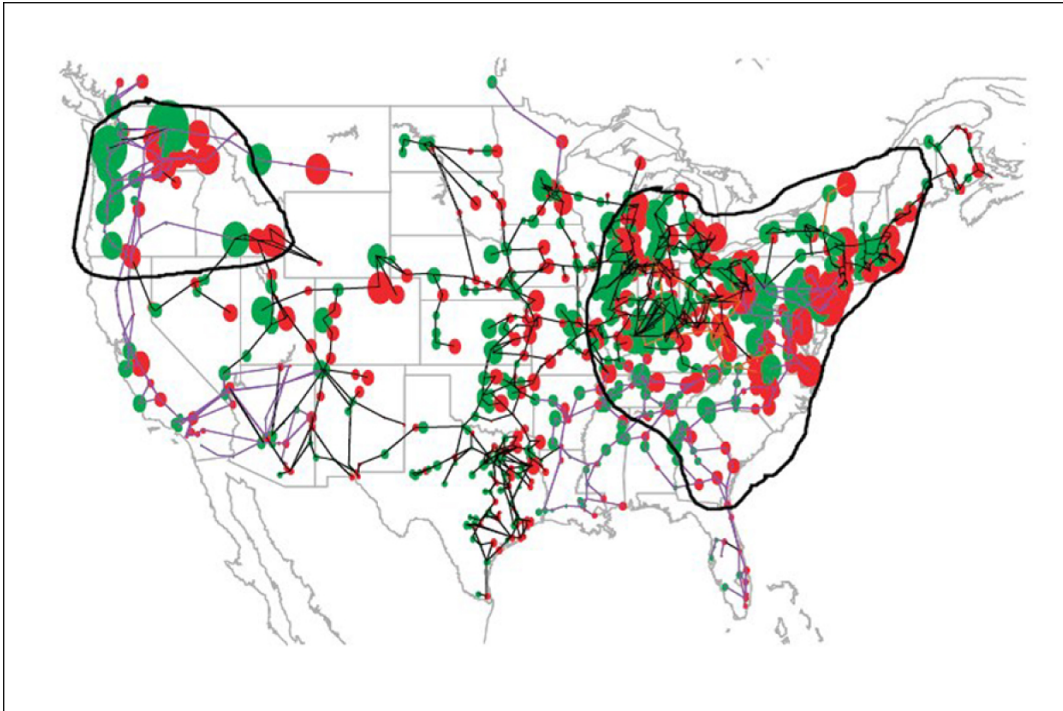


Severe Space Weather

by Dr. Tony Phillips

Did you know a solar flare can make your toilet stop working?

That's the surprising conclusion of a NASA-funded study by the National Academy of Sciences entitled Severe Space Weather Events—Understanding Societal and Economic Impacts. In the 132-page report, experts detailed what might happen to our modern, high-tech society in the event of a “super solar flare” followed by an extreme geomagnetic storm. They found that almost nothing is immune from space weather—not even the water in your bathroom.



The problem begins with the electric power grid. Ground currents induced during an extreme geomagnetic storm can melt the copper windings of huge, multi-ton transformers at the heart of power distribution systems. Because modern power grids are interconnected, a cascade of failures could sweep across the country, rapidly cutting power to tens or even hundreds of millions of people. According to the report, this loss of electricity would have a ripple effect with “water distribution affected within several hours; perishable foods and medications lost in 12-24 hours; loss of heating/air

On this power-grid map of the United States, the black-circled areas are regions especially vulnerable to collapse during an extreme geomagnetic storm. Inside those boundaries are more than 130 million people. Credit: National Academy of Sciences report on severe space weather.

conditioning, sewage disposal, phone service, fuel re-supply and so on.”

“The concept of interdependency,” the report notes, “is evident in the unavailability of water due to long-term outage of electric power—and the inability to restart an electric generator without water on site.”

It takes a very strong geomagnetic storm to cause problems on this scale—the type of storm that comes along only every century or so. A point of reference is the “Carrington Event” of August-September 1859, named after British amateur astronomer Richard Carrington who witnessed the instigating solar flare with his unaided eye while he was projecting an image of the Sun on a white screen. Geomagnetic storms triggered by the flare electrified telegraph

lines, shocking technicians and setting their telegraph papers on fire; Northern Lights spread as far south as Cuba and Hawaii; auroras over the Rocky Mountains were so bright, the glow woke campers who began preparing breakfast because they thought it was morning!

“A contemporary repetition of the Carrington Event would cause ... extensive social and economic disruptions,” the report warns. Widespread failures could include telecommunications, GPS navigation, banking and finance, and transportation. The total economic impact in the first year alone could reach \$2 trillion (some 20 times greater than the costs of Hurricane Katrina).

The report concluded with a call for infrastructure designed to better withstand geomagnetic disturbances and improvements in space weather forecasting. Indeed, no one knows when the next super solar storm will erupt. It could be 100 years away or just 100 days. It’s something to think about ... the next time you flush. One of the jobs of the Geostationary Operational Environmental Satellites (GOES) and the Polar-orbiting Operational Environmental Satellites (POES) operated by NOAA is to keep an eye on space weather and provide early warning of solar events that could cause trouble for Earth.

You can keep an eye on space weather yourself at the National Weather Service's Space Weather Prediction Center, www.swpc.noaa.gov. And for young people, space weather is explained and illustrated simply and clearly at the SciJinks Weather Laboratory, scijinks.gov/weather/howwhy/spaceweather.

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

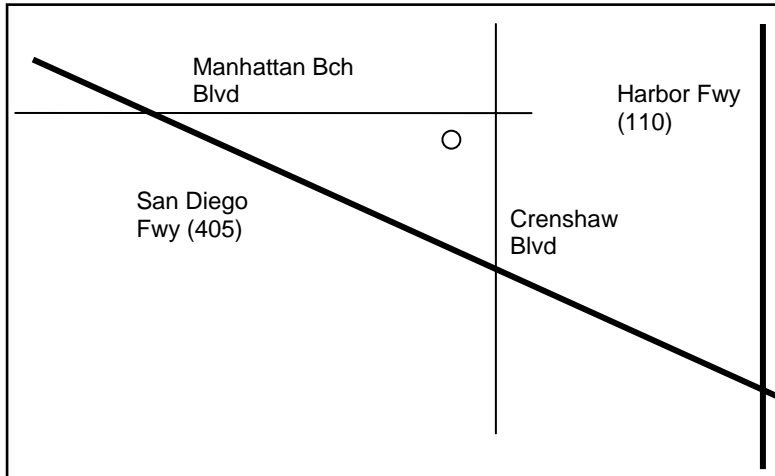
SBAS Executive Board

President	Ken Rossi	515-1586	ken_a_rossi@yahoo.com
Vice-President	Ron Rennie	326-5589	vidron@sbcglobal.net
Secretary	Steve Pedersen	378-6479	eponstlyusc82@earthlink.net
Treasurer & Astronomical League Rep.	Arnie Stodolsky	937-0220	astodols@ix.netcom.com

SBAS Committees

Program Chairman	Ron Rennie	326-5589	vidron@sbcglobal.net
Astronomical League Liaison	Bill Eisele	542-5070	Astronomy131@msn.com
Newsletter Reproduction	Arnie Stodolsky	937-0220	astodols@ix.netcom.com
Publications Committee:			
SBAS Website Webmaster	Alex Athas		sbas_elcamino@yahoo.com
First Light Editor	Ken Munson	782-0873	kenmunson333@sbcglobal.net
Observing Committee	Greg Benecke	217-1512	BeneckeRUs@aol.com
	Craig Gates	376-6387	- - -
Membership Committee	Ray Grace	370-1913	rgrace3@verizon.net
Publicity Committee	Joe Fierstein	377-9834	joefiers@aol.com
	Arnie Stodolsky	937-0220	astodols@ix.netcom.com
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Outreach Committee	Joe Fierstein	377-9834	joefiers@aol.com

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 January 12th planning meeting will be held at the home of Ron and Jenn Rennie. The address is: 25911 Saddle View Road, Lomita. From the intersection of Crenshaw Blvd. and PCH take PCH South towards Long Beach. At the second traffic light Turn Right onto Pennsylvania Avenue, turn first right (Esther View Road) and follow down one block. Turn left on Saddle View Road to second house on right - No 25911

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

Rancho del Mar – The in-town observing session of Saturday, January 17th, saw a very good turn-out of scopes thanks to the good weather and clear skies. The session nearly came to an abrupt end when we arrived at the Ridgecrest School site to find a new padlock on the gate for which we had no key! Craig Gates was able to let us in to the Rancho Del Mar school where we set up on the back parking lot. Club members Ann Koontz, Greg Benecke, Arnie Stodolsky, Ken Rossi, Steve Pederson, Gerry Stowe, Jim Winteroth, Ken Lehmer, Dr. Michael Harrison, George Nestojko and Ken Munson all brought scopes. We were joined by several visitors during the evening: Paul and Anna Lim with their sons, Evan and Bryan and their friends, Chelsea Frederick, and Chelsea and Sascha Bottoms, Dan Nieuwsome and his wife, Jo, and their friend Ed Kennedy. Around midnight a couple more visitors showed up. Robyn Benjamin and Kim Hallinger, who were two teachers from schools around PV. They had come to find us after urging their students to make the trip to Ridgecrest to join us for the evening. After they'd received several calls from families who made the trip to Ridgecrest only to be disappointed, they came looking themselves and, thanks to having a Thomas Guide in their car, were able to find the Rancho del Mar site. All the visitors were really excited at the magnificent views of various deep-sky objects that were offered through the evening.

The observing conditions were really good with a very moderate temperature for a winter night, settling at about 55° F with nice clear and, mostly, stable skies. Occasionally, the sky conditions allowed for some very tight double-star splitting. Gerry Stowe showed a good double-double star near M81 that offered a good test of seeing conditions. For myself, I concentrated on more photographic tests after December's successful image at Ridgecrest. This time I was able to get my first-ever image of the Horsehead Nebula! Not a great picture but, then, my battery power ran out and I couldn't get any more images. We finally put our telescopes away and went home about 1:00 AM.

- Ken Munson

Schedule of Coming Events

30 January Friday Night 6:00 PM	Silver Spur School Star Party 5500 Ironwood Ave. Rancho Palos Verdes. Enter via the West gate on Diversey Dr.
6 February Friday Night 7:30 PM	Monthly General Meeting Guest Speaker: Dr. Dave Doody, JPL Topic: Cassin's Discoveries at Saturn
9 February Monday Night 7:30 PM	Monthly Planning Meeting See directions on Page 4.
14 February Saturday Night	In Town Dark Sky Observing Session at Ridgecrest Middle School – 28915 North Bay Rd. RPV, Weather Permitting: Please contact Greg Benecke to confirm that the gate will be opened! Alternate site: Rancho Del Mar High School -
21 February Saturday Evening	Out-of-Town Dark Sky Observing Session Contact Greg Benecke to coordinate a location.
19 February Thursday 7:00 PM	JPL's Von Karman Lectures: Galileo's Dream: The International Year of Astronomy 2009 by Michelle Thaller, Manager Education and Public Outreach The United Nations Educational, Scientific and Cultural Organization (UNESCO) has chosen 2009 as the International Year of Astronomy? What makes this year special? 400 Years ago in 1609, Galileo Galilei first turned his telescope toward the stars and reported back on what he saw. His honesty, passion and humor gained him instant fame, and plenty of trouble with the authorities of his time. Come along for a journey into the past that will lead to future of astronomy as we re-create the observations of Galileo, Location: Von Karman Auditorium at JPL 3800 Oak Grove Dr. Pasadena
25 February Wednesday 6:00 PM	Montemalaga Start Party 1121 Via Nogales, Palos Verdes Estates

South Bay Astronomical Society

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

Guest Speaker: Dr. Dave Doody

“Cassini’s Discoveries at Saturn”

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