



# SJAA EPHEMERIS

## SJAA Activities Calendar

Jim Van Nuland

### (late) September

- 22 Autumnal Equinox. 8:44 a.m.
- 25-27 CalStar star party at Lake San Antonio County Park
- 27 Dark Sky weekend. Sunset 6:56 p.m., 1% moon rises 6:24 p.m.

### October

- 4 Dark Sky weekend. Sunset 6:46 p.m., 29% moon sets 9:47 p.m. Henry Coe Park's "Astronomy" lot has been reserved. (Note: Henry Coe SP will host the Tarantula Festival during the day. Early arrivers for the star party may find a few day visitors still in the parking lot. Take care that they have a clear route to leave. It's expected that they will be out by sunset.)
- 10 Houge Park star party. Sunset 6:37 p.m., 84% moon sets 3:45 a.m. Star party hours: 7:30 until 10:30.
- 11 **General Meeting at Houge Park.** 8 p.m. Our speaker is Dr. Monika Kress (SJSU), on the Virtual Planet Laboratory
- 24 Astronomy Class at Houge Park. 7:30 p.m. TBA
- 24 Houge Park star party. Sunset 6:18 p.m., 12% moon rises 4:14 a.m. Star party hours: 7:30 until 10:30.
- 25 Dark Sky weekend. Sunset 6:17 p.m., 6% moon rises 5:17 a.m.

### November

- 1 Dark Sky weekend. Sunset 6:09 p.m., 15% moon sets 8:31 p.m. Henry Coe Park's "Astronomy" lot has been reserved.
- 2 DST ends at 2 a.m. . Set clocks back 1 hour.
- 7 Houge Park star party. Sunset 5:03 p.m., 70% moon sets 1:32 a.m. Star party hours: 7:00 until 10:00.
- 8 **General Meeting at Houge Park.** 8 p.m. Our speaker is Dr. Helen Quinn of SLAC: her topic: "The Mystery of the Missing Antimatter".
- 9 Fall Swap. TBA
- 21 Astronomy Class at Houge Park. 7:30 p.m. TBA
- 22 Houge Park star party. Sunset 4:54 p.m., 25% moon rises 2:11 a.m. Star party hours: 7:00 until 10:00.
- 22 Dark Sky weekend. Sunset 4:53 p.m., 16% moon rises 3:12 a.m.
- 29 Dark Sky weekend. Sunset 4:51 p.m., 5% moon sets 6:20 p.m. Henry Coe Park's "Astronomy" lot has been reserved.

*The Board of Directors meets before each general meeting. Call the hotline for the exact time.*

### October General Meeting

**Dr. Monika Kress**

**October 11, 2008 – 8 p.m.**

Mary Kohlmler

Dr. Monika Kress will address SJAA at the general meeting on October 11, 2008. Dr. Kress is an astrophysicist and professor at San Jose State University. She obtained her PhD and performed postdoctoral work at Ames as well as at UW in Seattle.

Dr. Kress participates in the Virtual Planet Laboratory, which is the topic of her talk. The Virtual Planet Laboratory is a team of scientists that build computer simulated Earth-sized planets. The team's goal is to discover the likely range of habitable planets around other stars and how these planets might appear to future planet-finding missions. The simulated environments enable us to visualize what these planets look like from space.



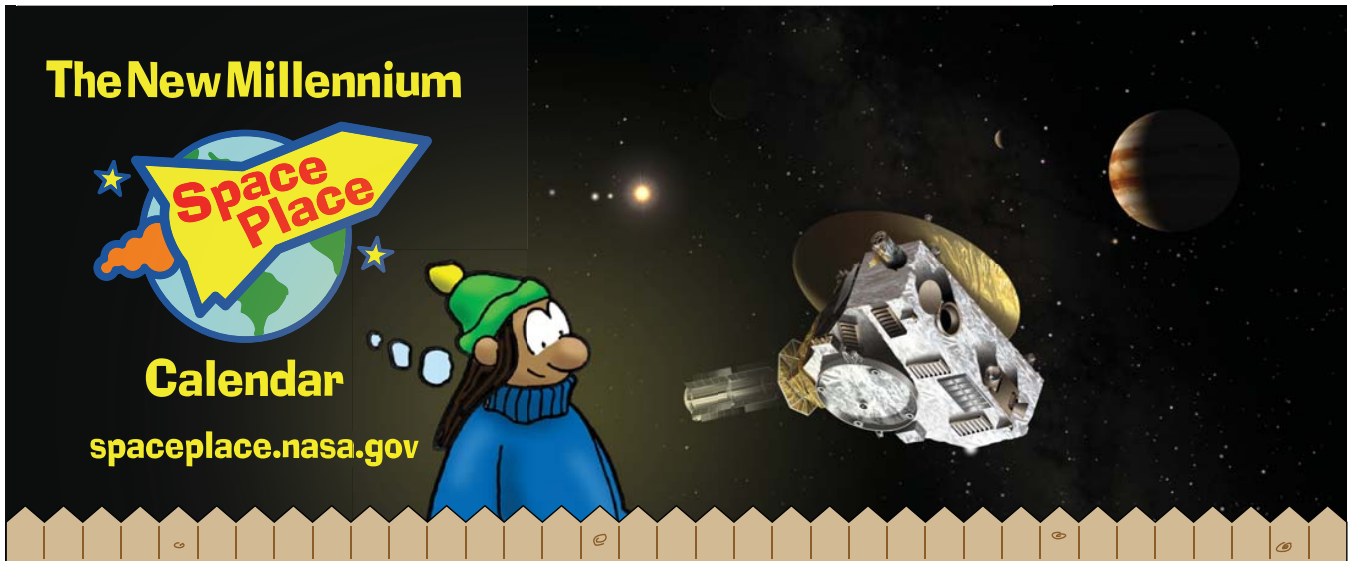
### **SJAA Approved for Houge #1**

On September 16, SJAA received notice that we have been selected as the lead operator of Houge Park Building #1. More approvals and agreements are yet to be finalized but this is good news for our continued use of Houge Park. Thanks to all who helped in this effort.

**24 hour news and information hotline:**

**(408) 559-1221**

**<http://www.sjaa.net>**



Launched in 2006, New Horizons will reach Pluto in 2015! On its long journey, its "Beacon Monitor" sends short status messages back to Earth. This intelligent software technology was first proven on Deep Space 1. Find out more at [spaceplace.nasa.gov/en/educators/beacon\\_monitor.pdf](http://spaceplace.nasa.gov/en/educators/beacon_monitor.pdf).

# OCTOBER 2008

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<b>Energy Awareness Month.</b> Energy takes many forms. When humans use any of them, side effects happen, not all good.			1	2	3	4 <b>World Space Week (4-10).</b> Spend the week exploring The Space Place.
5	6 <b>World Habitat Day.</b> What's the recipe for a harmonious planet?	FIRST QUARTER 7 	8 	9	10	11
12	13 <b>Train Your Brain Day.</b> Play Vec→Touring. Finding your way to the launch pad will surely do your brain good.	FULL MOON 14 	15 	16 <b>Launch in 1975 of GOES-1,</b> the first weather satellite to take pictures of Earth at night. Newer GOES also keep an eye on space weather!	17	18 <b>Sweetest Day.</b> A day to give sweets to those in need and those you love. Make your own in star shapes.
19 <b>Evaluate Your Life Day.</b> Are you headed where you want to go? Get ideas about careers in space.	20	21 LAST QUARTER <b>Orionids meteor shower</b> at maximum. Look for shooting stars in constellation Orion using the Starfinder.	22	23 <b>First U.S. national radio broadcast, 1924.</b> Find out how engineers use radio waves to communicate with faraway spacecraft.	24	25
26 <b>In 1959, Earthlings</b> see their first photo of the far side of the Moon, taken by Lunik 3. What have we learned since then?	27	28 NEW MOON 	29 <b>Internet Day.</b> Have fun and learn lots on the internet by visiting The Space Place!	30 <b>Compact Disc (CD)</b> first introduced by Sony and Phillips in 1981. Use an unwanted CD to make a model of Saturn, with rings.	31 <b>Halloween.</b> If you could travel into the future, you might find yourself dressed in an ancient costume! Is time travel even possible?	

Month of October: [spaceplace.nasa.gov/en/kids/earth/wordfind](http://spaceplace.nasa.gov/en/kids/earth/wordfind)  
 Oct. 4: [spaceplace.nasa.gov](http://spaceplace.nasa.gov)  
 Oct. 6: [spaceplace.nasa.gov/en/kids/earth/wordfind](http://spaceplace.nasa.gov/en/kids/earth/wordfind)  
 Oct. 13: [spaceplace.nasa.gov/en/kids/st7/vectouring](http://spaceplace.nasa.gov/en/kids/st7/vectouring)  
 Oct. 16: [spaceplace.nasa.gov/en/kids/goes/spaceweather](http://spaceplace.nasa.gov/en/kids/goes/spaceweather)  
 Oct. 18: [spaceplace.nasa.gov/en/kids/cookies.shtml](http://spaceplace.nasa.gov/en/kids/cookies.shtml)

Oct. 19: [spaceplace.nasa.gov/en/kids/live](http://spaceplace.nasa.gov/en/kids/live)  
 Oct. 21: [spaceplace.nasa.gov/en/kids/st6starfinder/st6starfinder.shtml](http://spaceplace.nasa.gov/en/kids/st6starfinder/st6starfinder.shtml)  
 Oct. 26: [spaceplace.nasa.gov/en/kids/phonedrmarc/#moon](http://spaceplace.nasa.gov/en/kids/phonedrmarc/#moon)  
 Oct. 29: [spaceplace.nasa.gov](http://spaceplace.nasa.gov)  
 Oct. 30: [spaceplace.nasa.gov/en/kids/cassini\\_make2.shtml](http://spaceplace.nasa.gov/en/kids/cassini_make2.shtml)  
 Oct. 31: [spaceplace.nasa.gov/en/educators/podcast#time](http://spaceplace.nasa.gov/en/educators/podcast#time)

THE SPACE PLACE CALENDAR IS FOR EDUCATIONAL PURPOSES ONLY AND IS NOT TO BE SOLD

## Twinkle, Twinkle

Akkana Peck

October is the month when we get a chance to give some "eye candy", as well as the other kind, to all the ghosts and goblins and licensed Disney characters who might come venturing by your doorstep.

If you have a good western horizon, early evening on Halloween night offers a lovely slim crescent (3 day old) moon that sets at about 7:40. Earlier in the month, dim Mars is barely visible in the twilight glow, but by Halloween it'll be down so low it'll be quite a challenge.

Once the moon sets, you can try bright Venus, unfortunately in gibbous phase rather than crescent but still worth showing. Alas, Venus' long-time partners, Mars and Saturn, have finally disappeared into the sun's glare.

Venus doesn't set until 8, but you might want to switch before that, as soon as the sky gets dark enough to see Jupiter, hanging low (about 20°) in the southern sky. All four Galilean moons are visible, with Io and Europa on one side, Ganymede and Callisto on the other (unfortunately, there are no shadows visible tonight).

Is there anything more challenging to look for during the rest of the month when you're not besieged by candy-starved urchins?

Of course! Neptune is already well up when the sky gets dark, and transits around 9 pm, so look for it relatively early in the evening. Fortunately it transits 38° up, not as far down in the murk as Jupiter.

It's in northeastern Capricornus, and at magnitude 7.9 it might be easy to

confuse with a magnitude 7.64 star lying about 4/10 of a degree away to the east. Your main clue is color, Neptune being a pale bluish. Of course, Neptune's also the one that shows a disk, if you magnify it enough, but you probably won't see the disk with the low-power eyepiece you probably use to hunt for it.

On a night of good steady seeing, you might be able to see that Neptune is a disk and the nearby star isn't, even at

low power, using the "planets don't twinkle" rule. That's the same rule you use to

tell naked eye planets like Saturn from bright stars, or Jupiter's Galilean moons from nearby stars.

Why does it work that way? The light from a point source like a star is subject to the fluctuations of our own atmosphere that we call the "seeing". Any minor change in the air density between your eye and the star will cause a change in the way the star looks to you — it may be refracted a little to one side, or be a little brighter or a little fainter, or even go in or out of focus. A planet or moon that's big enough to show a disk, on the other hand, is much less subject to these fluctuations: a small atmospheric fluctuation that affects one part of the disk may not affect the rest of it, so you'll only see changes from fluctuations that are big enough to affect most of the disk. Planets and moons certainly can twinkle, if the seeing is unsteady enough; but they'll twinkle less than a star of similar magnitude, and with practice you can tell you're looking at a planet from that difference in steadiness.

It doesn't work with Pluto, though.

Pluto just isn't big enough to show a disk, certainly not in our amateur-sized telescopes — about 0.08 arcseconds on average and just under 0.11 at its very best. 0.1 arcsecond seeing is about ten times as good as a typical good steady night at most of our local sites. And that's even if you had a telescope that could resolve a disk that small — from Earth, the Keck on Mauna Kea can just about do that, but the Keck is tough to fit into your car to take to an observing night at Coe. Too bad!

Pluto isn't a good bet this month anyway, unless you go for it with determination as soon as the sky gets dark enough. It's in northern Sagittarius, about a degree and a half north of M23.

Uranus, in Aquarius, is a much better bet. It rises around sunset and is visible most of the evening. At magnitude 5.75, it should be barely visible with the naked eye from a dark site, and easy in binoculars. It's in one of those sky regions devoid of bright stars, so finding it is a little trickier than usual: look for it a couple of degrees to the left (northeast) of Phi Aquarii.

If you want to go after a more unusual target, have you spied an asteroid lately? 4 Vesta, the brightest asteroid (though it's only the third largest), is at opposition on October 30th, so late October and early November is a great time to look for it. Peak brightness at magnitude 6.4 occurs three days earlier. It's at the north end of Cetus.

Finally, for you early risers, Mercury emerges out of the sun's glare to make a nice appearance in the morning sky during the second half of October. If you point your telescope at it you won't have any trouble telling it from a star. Watch it grow as it waxes from a thin crescent at mid-month to a half-disk by the 20th to the fat gibbous disk it will show by Halloween.

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**“October is the month when we get a chance to give some ‘eye candy’, as well as the other kind, to all ...”**

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If you could see every satellite passing overhead each day, it would look like a chaotic meteor shower in slow motion.

Hundreds of satellites now swarm over the Earth in a spherical shell of high technology. Many of these satellites gaze at the planet's surface, gathering torrents of scientific data using a dizzying array of advanced sensors — an extraordinary record of our dynamic planet.

To help people tap into this resource, NASA researchers such as Daniel Mandl are developing a "Google for satellites," a web portal that would make requesting data from Earth-observing satellites almost as easy as typing a search into Google.

"You just click on it and it takes care of all the details for you across many sensors," Mandl explains.

Currently, most satellites are each controlled separately from the others, each one dauntingly complex to use. But starting with NASA's Earth Observing-1 (EO-1) satellite, part of the agency's New Millennium Program, Mandl and his team are building a prototype that stitches these satellites together into a seamless, easy-to-use network called "Sensor Web 2.0."

The vision is to simply enter a location anywhere on Earth into the website's search field along with the desired information types — wildfire maps, vegetation types, floodwater salinity, oil spill extent — and software written by the team goes to work.

"Not only will it find the best sensor, but with proper access rights, you could actually trigger a satellite to take an image in the area of interest," Mandl says. Within hours, the software will send messages to satellites instructing them to gather the needed data, and then download and crunch that raw data to produce easy-to-read maps.

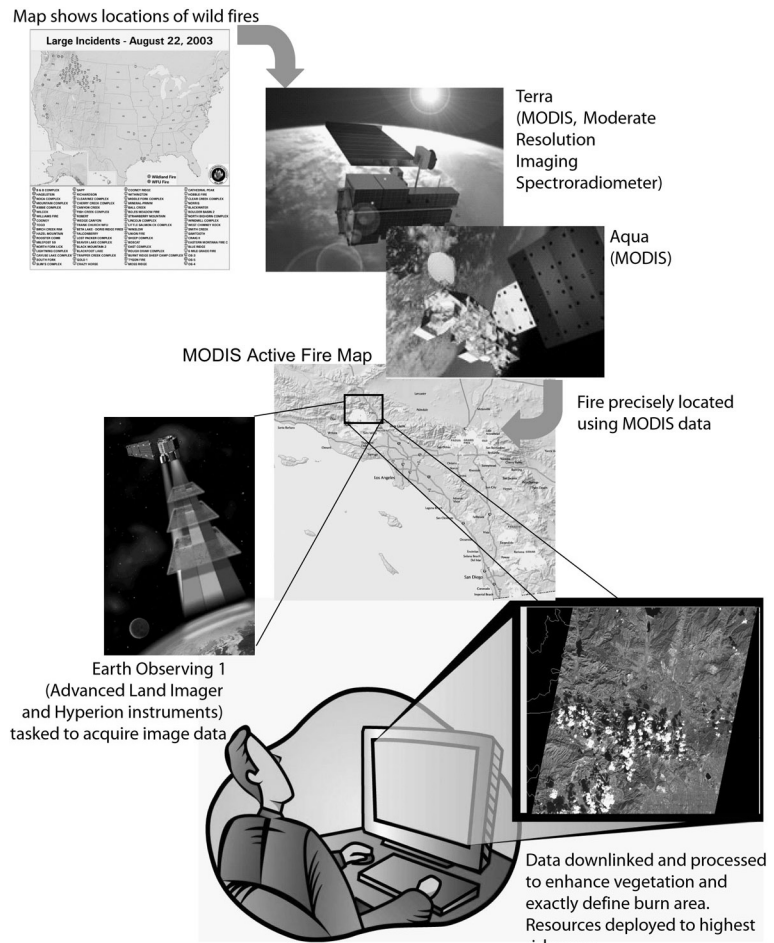
For example, during the recent crisis in Myanmar (Burma) caused by Cyclone Nargis, an experimental gathering of data was triggered through Sensor Web 2.0 using a variety of NASA satellites including EO-1. "One thing we might wish to map is the salinity of flood waters in order to help rescue workers plan their relief efforts," Mandl says. If the floodwater in an area was salty, aid workers would need to bring in bottled water, but if flood water was fresh, water purifiers would suffice. An early and correct decision could save lives.

Thus far, Mandl and his team have expanded Sensor Web 2.0 beyond EO-1 to include three other satellites and an unmanned aircraft. He hopes to

double the number of satellites in the network every 18 months, eventually weaving the jumble of satellites circling overhead into a web of sensors with unprecedented power to observe and understand our ever-changing planet.

To learn more about the EO-1 sensor web initiatives, go to <http://eo1.gsfc.nasa.gov/new/extended/sensorWeb/sensorWeb.html>. Kids (and grown-ups) can get an idea of the resolution of EO-1's Hyperion Imager and how it can distinguish among species of trees— from space at [http://spaceplace.nasa.gov/en/kids/eo1\\_1.shtml](http://spaceplace.nasa.gov/en/kids/eo1_1.shtml).

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



A "Google for satellites" type of web portal will allow users to request real-time data from Earth observing satellites.

## Leonard Susskind - October 1 at 7 p.m.

Andrew Fraknoi

On Wednesday, October 1, at 7 pm, Physicist Leonard Susskind of Stanford University will give a non-technical, illustrated talk on:

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The Black Hole Wars: My Battle with Stephen Hawking  
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as part of the Silicon Valley Astronomy Lectures in the Smithwick Theater, Foothill College, El Monte Road and Freeway 280, in Los Altos Hills, California.

Free and open to the public. Parking on campus costs \$2. Call the series hot-line at 650-949-7888 for more information and driving directions. No background in science will be required for this talk. Seating is first come, first served.

Black holes, the collapsed remnants of the largest stars, provide a remarkable laboratory where the frontier concepts of our understanding of nature are tested at their extreme limits. For more than two decades, Professor Susskind and a Dutch colleague have had a running battle with Stephen Hawking of Cambridge University about the implications of black hole theory for our understanding of reality — a battle that he has described in his well-reviewed book *The Black Hole Wars*.

In this popular talk, without mathematics, Dr. Susskind tells the story of these wars, explains the ideas that underlie the conflict, and recounts how he got Hawking to retract some of his claims. What's at stake is nothing less than our understanding of space, time, matter and information!

Leonard Susskind is Felix Bloch Professor of theoretical physics at Stanford University and the author of two popular books and many articles on recent developments in science and their meaning. He teaches a popular "continuing studies" course at Stanford on modern physics and has won the American Institute of Physics science writing prize for an article explaining black holes. His research focuses on particle physics, quantum theory, and the nature of gravity. He has a rare knack for explaining the most advanced scientific ideas in everyday terms.

The lecture is co-sponsored by:

- \* NASA Ames Research Center
- \* The Foothill College Astronomy Program
- \* The SETI Institute
- \* The Astronomical Society of the Pacific

This talk kicks off the 2008-2009 series of Silicon Valley Astronomy Lectures. A unit of credit (Astronomy 36.01) is available from Foothill College for those who attend all six Wednesday evening lectures and write a short paper on an astronomy topic of their choice. You may register in advance at: <http://www.foothill.edu/reg> or get the paperwork at the Oct. 1 lecture by coming a little bit early.

## Large Hadron Collider

Paul Kohlmiller

The Large Hadron Collider (LHC) commenced operations on September 10, 2008. This mammoth facility includes a 17 mile long circuit that is 100 meters below the surface. Most of it is in Switzerland but part of it is in France.

A hadron is a particle that is itself made up of quarks. The most notable example of these is the proton and neutron each of which are composed of three quarks. Electrons are not hadrons but are actually part of another class of particles called leptons.

At the LHC, the hadron collisions that are most likely will be proton collisions. It is not prudent to try to predict the results of these experiments but there are a number of possibilities.

1. Nothing. It is possible that the LHC will not find anything that scientists haven't already discovered at other facilities such as the Stanford Linear Accelerator Center (SLAC) — that's the long building you drive over when you are on I-280 driving near the north border of Santa Clara county.
2. New particles will be discovered. The number of particles discovered so far is already large and any new particles discovered by the LHC are likely to be ones previously predicted but surprises are possible.
3. The Higgs boson will be discovered. This is a theoretical particle that is crucial for verifying the Standard Theory of particle physics. However, Stephen Hawking has a \$100 bet that it won't be found. If it is found it could resolve the mystery of dark matter.
4. Evidence found for string theory. So far, string theory — an attempt to come up with a Grand Unified Theory — is only a mathematical construct that is sometimes saddled with the criticism that it is "not even wrong." Perhaps the LHC will at last add some observations.

Any of the above scenarios would be a major step in the history of physics. For more information see <http://lhc.web.cern.ch/lhc/>.

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## The Last 31 Days In Astronomy

SEP-12-2008 **Hubble Repair Mission Still Go** The Hubble repair mission, STS-125, is still set for an Oct. 10 launch. The shuttle Atlantis will perform this mission but the shuttle Endeavour must be on the pad ready for an emergency rescue before Atlantis will be allowed to launch. Endeavour has been mated to its external fuel tank and solid rocket boosters and is expected to roll out to the launch pad during the week of Sept. 15. Hurricane Ike may cause some delays because the Johnson Space Center in Houston was evacuated on Sept. 11 and no return date has been set as we go to press. The following link should give up to date information. [http://www.nasa.gov/mission\\_pages/shuttle/main/index.html](http://www.nasa.gov/mission_pages/shuttle/main/index.html)

SEP-11-2008 **New Type of Object** Scientists at Berkeley have announced the sighting of a new kind of object. It is, perhaps, located near a galaxy that is 8 billion light-years away but that's just a guess. It's lack of parallax indicates it must be more than 130 light-years away and the hydrogen spectrum shows it can't be more than 11 billion light-years away in "look back" time. But what is it? It was unseen, meaning it must be below 26th magnitude and then it brightened over 100 days up to 21st magnitude. Then it went back to 26th magnitude or beyond (i.e. it became invisible) in about the same number of days. Recall that each level of magnitude is different in relative luminosity from the next by a factor equal to the 5th root of 100 so 5 levels of magnitude is 100 times different. Now what kind of celestial animal is it that can increase and decrease that way in those time frames? <http://www.skyandtelescope.com/news/home/28244844.html>

SEP-09-2008 **Phoenix sees less sun** The time of all sol long sunshine in the Northern part of Mars is passing so the Phoenix solar arrays don't generate as much energy as they were before. As of mid-September the energy production was down about 30% and it will continue to decrease. Phoenix scientists are scrambling to get as much science done as possible before "Mars freezes over". From now on, samples will be extracted and placed into ovens without waiting for the previous sample's analysis to be complete. <http://jpl.nasa.gov/news/news.cfm?release=2008-173>

AUG-29-2008 **Rover back on the flats** The Mars Rover Opportunity is back on flat ground after spending nearly a year inside of a crater named Victoria. The half-mile wide crater has been the focus of this rover for about half of the nearly 5 year mission thus far. Due to the lack of traffic, Opportunity was able to just follow its tracks when egressing the crater. <http://jpl.nasa.gov/news/news.cfm?release=2008-168>

AUG-21-2008 **Stars created by Black Holes?** New simulations show that molecular gas clouds can be captured by a black hole and lead to star formation. It was previously thought that Black Holes would inhibit star formation and that's probably still true in the short run. But the black hole can flatten or "pancake" the cloud so that it forms the kind of nebula that causes star birth. In fact, it might be that this accounts for many stars in the neighborhood of the Milky Way's black hole. Most likely, the stars are created as binary stars and one of the pair is pulled toward the black hole and the other is sent flying in another direction at high speed. <http://space.newscientist.com/article/dn14582-simulation-shows-stars-form-around-black-holes-after-all.html>

AUG-14-2008 **New details from Enceladus** Cassini's August flyby of Enceladus is allowing scientists to pinpoint the location of the ice geysers from that Saturnian moon. Cassini imaging team leader Carolyn Porco said "This is the mother lode for us. A place that may ultimately reveal just exactly what kind of environment - habitable or not - we have within this tortured little moon." The flyby sent Cassini zooming past Enceladus at 40,000 miles per hour. How do you keep your focus on one part of the moon while doing that? You don't. Instead, a technique called "skeet shooting" was used where the spacecraft is spun as fast as possible to try to match movement of the target. <http://jpl.nasa.gov/news/news.cfm?release=2008-160>



This photo from September 1, 2008 shows clumps that have accumulated on one of the landing struts (upper left of picture). The flat spot of ground near the center of the picture is called "Holy Cow" based on scientists first reaction when they saw it. Photo credit: Image NASA/JPL-Caltech/University of Arizona/Max Planck Institute

## Telescope Loaner Program

The loaner program offers members a means to try scopes of various sizes and technologies before you buy. It is one of the real jewels of being a member of the club. Scopes are available for all experience levels.

The inventory is constantly changing. As of this writing (early September) these scopes were available.

Scope Number	Scope Description
42	11x80 Binoculars
43	4.5" f/8 Orion XT Dob
44	4.5" f/8 Orion Skyview Newt
37	4" Celestron Flourite Refractor
32	5.5" f/7.6 Signature Dob
23	6" f/8 Edmund Newt on EQ Mount
13	6" f/8 Orion XT Dob
34	8" f/10 Dynamax S/C
29	8" Celestron S/C Astrophoto
14	8" f/8.5 Homemade Dob
35	8" f/6 Meade Newt on EQ Mount
7	12.5" f/7 Homemade Dob
41	18 inch f/4.5 Sky Designs Dob
10	Star Spectroscope

For up to date information please see the loaner program web page: <http://www.sjaa.net/loaners>

### Officers and Board of Directors

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Articles for publication should be submitted by the 10<sup>th</sup> of the previous month. The PDF version is generally available by the 24<sup>th</sup> of the previous month and the HTML version by the last day of the previous month.

San Jose Astronomical Association  
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## San Jose Astronomical Association Membership Form

P.O. Box 28243 San Jose, CA 95159-8243

**New**     **Renewal** (Name only if no corrections)

**I'll get the Ephemeris newsletter online**

<http://ephemeris.sjaa.net> Questions?

Send e-mail to [membership@sjaa.net](mailto:membership@sjaa.net)

### Membership Type:

- Regular — \$20  
 Regular with Sky & Telescope — \$53  
 Junior (under 18) — \$10  
 Junior with Sky & Telescope — \$43

Bring this form to any SJAA Meeting  
or send to the club address (above).

Please make checks payable to "SJAA".

Subscribing to Sky & Telescope magazine through the SJAA  
saves you \$10 off the regular rate. (S&T will not accept multi-year  
subscriptions through the club program. Allow 2 months lead time.)

You can join or renew online:

<http://www.sjaa.net/SJAAmembership.html>

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