

# Sonoma Skies

Newsletter of the Sonoma County Astronomical Society  
A nonprofit scientific and educational organization

[www.sonomaskies.org](http://www.sonomaskies.org)



January 2007

Volume XXX No. 1

## President's Message

by John Whitehouse

Happy New Year to all you star lovers out there! Now that we've passed the Solstice of '06 and we swing polar axis around old Sol for another year, the nights get shorter but hopefully a little drier and clearer for a glimpse of those lovely winter constellations. But most of all I hope you've all had a warm and festive holiday season with your friends and love ones.

As we welcome the new calendar year in, we have a few changes among our erstwhile board members. We held elections in December, and while many of our members have volunteered to continue to take care of all the details of running SCAS, we still need some help. Though I look forward to serving you all again this year as President, and look forward to seeing you all soon, I need to put a plea for help to you, and offer you a fine opportunity to serve your club. And that is:



### **Wanted: Vice President to Serve a Group of Lovely People with Stars in Their Eyes**

Sounds glamorous, even romantic in a way, doesn't it? Well it is! And the best part of the job is that no experience is required, on-the-job training is offered, and we have people available who have done this before and can show you that it is not difficult, and even very interesting. Much of the duties entail coordinating our monthly programs, so you get to meet some fascinating people, as well as come to board meetings to hang out with some more fascinating people and sample some of the tasty treats the other members miss out on! Plus, opportunities for advancement exist!

Please consider becoming a more active and interested party in keeping our club vital and interesting, and contact me or any other board member with any questions you may have.

I would like to thank Lynn Anderson for serving as VP with us for the past year; he is moving into the position of Community Activities Director being vacated by our hard-working Len Nelson, who is taking a well-deserved break. Thank you Len! And kudos to our remaining staff: Cecelia Yarnell for persevering in producing our great newsletter you are reading, (and could use some help, too), Larry McCune for continuing as Treasurer and coordinating our 2007 Striking Sparks campaign, Loren Cooper as

## Shadows and Silhouettes

### **SCAS January 10 Meeting, Proctor Terrace School**

Shadows & Silhouettes is the newest addition, to the Astronomical Society of the Pacific's Night Sky Network ToolKits. Inside this "magic box" are a variety of activities that we can use at star parties, in classroom or other presentations, at the RFO or just to help a friend or neighbor understand a particular astronomy concept.



Shadows & Silhouettes emphasizes the how and why of transits, solar and lunar eclipses, and the phases of the moon, Venus and Mercury. A PowerPoint presentation, included in the toolkit, describes the proposed NASA Kepler satellite mission, which is due to be launched within the next several years, with instrumentation designed to detect Earth-sized planets transiting sun-like stars in a  $10^\circ \times 10^\circ$  region located between Vega and Deneb of the Summer Triangle.

Lynn Anderson will share these materials and demonstrate many of the activities at the January meeting. Lynn has been a member of SCAS since 1989, and a docent at the RFO since 1998. He recently retired from 33 years of teaching (mostly science) in the Cloverdale school district and in retirement has found time to take a more active roll in SCAS and the RFO. He served as the SCAS Vice President and Program Director during 2006 and has volunteered to be elected Director of Community Activities beginning this year. He has a passion for sharing our solar system and the night sky with people of all ages.

Now that he has found more time to be involved with public astronomy he has begun to learn how to use the ASP's Night Sky Network toolkits. Come to the meeting, learn these techniques then go home and amaze your friends and neighbors.

Secretary and loyal scribe, and Walt Bodley as Membership Director and Astronomical League contact. Thank you all for your services past and future. These are the fine people you could work with if I could place your name among them.

Most of all just come on out and enjoy the companionship of your fellow members at the meetings and get-togethers. I look forward to seeing you soon.

*Ed. Note: And thanks to John, for volunteering again!*

**Young Astronomers See page 6**

# Sonoma County Astronomical Society (SCAS)

## Membership Information

**Meetings:** 7:30 PM on the second Wednesday of each month, in the Multipurpose Room of Proctor Terrace Elementary School, 1711 Bryden Lane at Fourth Street, Santa Rosa, unless otherwise announced in this publication. The public is invited.

**Dues:** \$25, renewable June 1 of each year. New members joining between December 1 and May 31 pay partial-year dues of \$12.50.

**Star Parties:** See the Events section for dates and times.

**Rental Telescope:** Members are eligible to borrow the club's 80mm refractor with tripod. Contact any Board member listed below.

**Egroup URL:** Connect with other members about going observing, observing reports and chat about astronomy and news items from AANC and *Sky & Telescope*. Hosted by Robert Leyland at [r.leyland@verizon.net](mailto:r.leyland@verizon.net). Any SCAS member is welcome to join. Visit <http://groups.yahoo.com/group/scas> and click the "Join" button, or send an email to [scas-subscribe@yahogroups.com](mailto:scas-subscribe@yahogroups.com)

**Discount Subscriptions:** For *Sky & Telescope*, new subscribers may send a check for \$32.95 payable to "SCAS", with your complete mailing address, directly to: Larry McCune, 544 Thyme Place, San Rafael, CA 94903. For renewals, send him your check with the completed renewal card and return envelope. Discount subscriptions to *Astronomy* Magazine occur annually in October. Check *Sonoma Skies* for details.

**Library:** SCAS Librarian Joan Thornton hosts a library of astronomy books that may be checked out by members at SCAS meetings, to be returned at the next meeting. Videotaped lectures on astronomy may be rented for \$3 per month.

**Sonoma Skies** is the monthly newsletter of the Sonoma County Astronomical Society (SCAS). Subscription is included as part of membership. Articles and member announcements are welcome and are published on a first come, first served basis, space permitting, and may be edited. **The deadline for submissions is 10 days prior to the end of each month.** Mail to: Editor, SCAS, P.O. Box 183, Santa Rosa, CA 95402, or email [publications@sonomaskies.org](mailto:publications@sonomaskies.org)

## SCAS Elected Board

**President:** John Whitehouse 539-5549 [jmw@sonic.net](mailto:jmw@sonic.net)

**Vice-President & Program Director:** Open

**Treasurer:** Larry McCune, (415)492-1426 [llmccune@comcast.net](mailto:llmccune@comcast.net)

**Secretary:** Loren Cooper, 525-8737 [lorenco@sonic.net](mailto:lorenco@sonic.net)

**Membership Director:** Walt Bodley 823-5268,  
[membership@sonomaskies.org](mailto:membership@sonomaskies.org)

**Community Activities Director:** Lynn Anderson 433-1154  
[penumbra@sonic.net](mailto:penumbra@sonic.net)

**Publications Director:** Cecelia Yarnell 569-9663,  
[publications@sonomaskies.org](mailto:publications@sonomaskies.org)

## SCAS Appointed Positions

**Young Astronomers Advisor:** Gary Jordan 829-5288  
[SieraMolly@aol.com](mailto:SieraMolly@aol.com)

**Striking Sparks Program Coordinator:** Larry McCune  
(415)492-1426 [llmccune@comcast.net](mailto:llmccune@comcast.net)

**Amateur Telescope Making:** Steve Follett 542-1561  
[sfollett@sonic.net](mailto:sfollett@sonic.net)

**Librarian:** Joan Thornton 762-0594 [phonyjoanie@earthlink.net](mailto:phonyjoanie@earthlink.net)

Visit us on the web at:  
[www.sonomaskies.org](http://www.sonomaskies.org)

# SCAS Talent Search

Bring your specialty and share it with the club.

The retiring Program Director has scheduled himself to be the speaker at the January 10<sup>th</sup> meeting. Dr. Adrienne Cool will be the speaker in April and Rick Maxwell, from Lockheed Martin Space Systems will be with us in May. Do note that we currently do not have a speaker scheduled for February or March. That is where you come in.....

Do you have a secret astronomy talent (like when Bob Schalck showed us how to care for our lenses and eyepieces)? Have you taken an astronomy-related trip or vacation (like Shingletown or an eclipse trip)? Have you visited an observatory or other historic astronomy location? Do you have slides, photos or digital images that could (with help) be formed into a PowerPoint presentation? If so, here is your chance. Contact Lynn Anderson [penumbra@sonic.net](mailto:penumbra@sonic.net) and he will schedule you to be a speaker for one of the upcoming meetings *and* will help you to put together a program.

## Striking Sparks 2007 Getting Closer!

by Larry McCune, Striking Sparks Coordinator

The Striking Sparks Program is moving along towards the telescope award presentation to be held Friday February 16, 2006. We have met some outstanding students attending the YA meetings and the Robert Ferguson Observatory. The contest entries must be postmarked by Saturday, January 13 and the judges will select the winners on January 20.

I picked up 6 new Dobsonian Telescopes at Orion on Tuesday and will store them until the assembly in early January. Orion has provided the telescopes at a discounted price to help us carry out the program. The scopes are even better than last year with an improved finder and a laser alignment tool along with two eye pieces.

If you would like to take part in assembling the telescopes, transporting them to Sebastopol or assisting with the telescope awards event, please contact me at (415) 492-1426.



# January Observing Notes

- 1/3 The Full Moon occurs at 5:57 AM PST.
- 1/3 The Earth reaches Perihelion at 12:00 NPST. Perihelion is when the Earth is closest to the Sun in its slightly elliptical annual orbit around the Sun. At Perihelion the Earth is a little less than 91.4 million miles from the sun. "Peri" refers to being near and "helion" refers to the Sun. The average distance between the Earth and Sun is a little less than 93 million miles. In early July the Earth reached aphelion or its most distant point from the Sun, at about 94.5 million miles.
- 1/9 Jupiter 5.3° N of Antares
- 1/11 The Last Quarter Moon occurs at 4:45 AM PST.
- 1/18 The New Moon occurs at 8:01 PM PST.
- 1/25 The First Quarter Moon occurs at 3:01 PM PST.
- 1/26 Mercury 1.4° SSE of Neptune
- 1/27 Moon 0.93° N of center of the Pleiades
- 1/31 Moon 2.5° S of Pollux
- 2/1 The Full Moon occurs at 9:45 PM PST.

## Observing Treats

The **Milky Way** crosses overhead diagonally from southeast to northwest on January evenings.

**Saturn** is the highlight this winter, dominating the night sky in Leo and reaching opposition on 2/10, when it will be magnitude 0.0 with a disk of 20.3". Aim those telescopes at Saturn any crisp clear dark night you get this winter! You won't be disappointed. The moon will be near Saturn on the morning of 1/6, and on the evenings of 2/2, 3/1 and 3/28.

**Jupiter** is emerging from conjunction with the sun and adorning the morning skies. On the morning of 1/15 (about 5am), the moon will be very close to the red star Antares and also near Jupiter.

**Mars**, too, is emerging from behind the sun. Because it "keeps up" with Earth in orbital motion much more than the other superior planets, it only emerges slowly into the morning sky (as Earth slowly "gains" on it on our "inside track"). Still, by the end of March, it will be prominent in the east-southeast well before sunrise. From January to March, Mars moves from Ophiuchus to Aquarius.

**Mercury** puts in two moderately good appearances this winter. First, it will be readily viewable in the west-southwest sky after sunset from about 1/27 to 2/12, reaching greatest elongation east on 2/7.

**Moon:** Besides visiting planets, the moon will pass near a couple of bright stars this winter. It will be near Regulus on the evening of 1/21 and the morning of 2/3. On that morning of 2/3, the moon will occult Regulus (here in Sonoma County, at least) at about 7:07am, the bright blue Regulus disappearing behind the moon's bright limb. Note that this is just a few minutes before sunrise, so requires a larger telescope to observe. The moon will be near Spica at about 1am on 1/9 and 2/8. (See Jupiter, above, for a very close lunar encounter with Antares.)

—Most of above info courtesy of Jack Welch



## SOCIAL AMENITIES

Thanks to John Jaffrey for providing coffee and refreshments at the December meeting.

You can sign up to provide refreshments at a meeting, too. It's easy! Just contact any Board member and choose a month.

## WELCOME NEW MEMBER!

The SCAS wishes to welcome new member Alan Karbousky of Santa Rosa.

### Scope City New Member Bonus!

- Scope City at 350 Bay Street, San Francisco, is offering a
- **\$25 merchandise discount to new members.**
- Manager Sam Sweiss has supported SCAS and Striking
- Sparks and offers a huge selection of telescopes, accessories
- and more. Obtain a receipt from Walt Bodley, Membership
- Director, showing you have paid the \$25 SCAS membership
- dues. To arrange for your merchandise discount, contact
- Sam at 415/421-8800 or at [sanfrancisco@scopecity.com](mailto:sanfrancisco@scopecity.com)

# Events

## ROBERT H. FERGUSON OBSERVATORY

**Public Viewing: Saturday, January 20**

Solar Viewing: 11:00 AM - 3:00 PM

Night Viewing begins 7:00 PM

**The Observatory:** Three scopes are operating: The 14-inch SCT with CCD camera in the East wing, the 8-inch refractor under the dome and the 24-inch Dobsonian in the West wing. No admission fee for the solar viewing, but donations are appreciated. The Park charges \$6 per vehicle for entry. A \$2 donation is requested from adults 18 and over for admission to the observatory during night viewing sessions. SCAS members may set up telescopes in the observatory parking lot to assist with public viewing. Auto access closes at dusk; late arrivals must carry equipment from the horse stable parking area.

### CLASSES, LABS

**Jan. 14 Observing Lab, 6:30 PM** (Raincheck Jan. 17). *"Diffuse Nebulae, Star Formation, and Open Clusters."* The Lab is an intensive telescope observing session after a brief presentation on the night's theme. Handouts/Observing Lists provided. Attendance limited to 6. Fee: \$30.

**Feb. 9 Observing Lab, 6:30 PM.** *"Binaries and Multiple Stars"* (Raincheck Mon., 2/12)

**Feb. 13 Night Sky Spring Series #1, 7:00 PM**

This is the first of the Spring 6-class series. Each class includes a lecture on the constellations of the season, their history and mythology, and how to find objects within them. Learn the bright stars, deep-sky objects, and visiting planets of the spring skies.

After each presentation (sky conditions permitting), you will enjoy a review of the constellations in the actual night sky and learn how to find them for yourself. Viewing through telescopes follows.

Fees: \$75 for the series of six presentations. (Single session fee is \$23.)

**Feb. 20 Night Sky Spring Series #2, 7:00 PM** (see above)  
Classes are held at the Observatory. Reservations recommended. (707) 833-6979, <http://www.rfo.org> or [nightsky@rfo.org](mailto:nightsky@rfo.org)

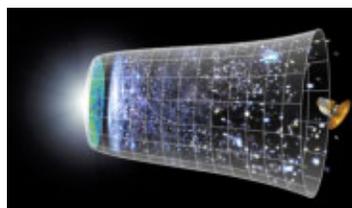
### RESERVE THE OBSERVATORY FOR YOUR GROUP

In addition to RFO public events, you may reserve the Observatory for families, private groups, company outings, or school programs. Astronomer docents are provided to operate the telescopes and answer questions. Make your reservation at least two weeks prior to your event. Best times for optimal sky gazing are any time more than a week away from a Full Moon. For more information, visit [www.rfo.org](http://www.rfo.org) and follow the pull-down menus "About/RFO/Reserve RFO", or contact George Loyer at [gloyer@rfo.org](mailto:gloyer@rfo.org).

## SRJC PLANETARIUM

**"Space and the Universe" Jan. 26-Mar. 4**

When compared to our earthly perceptions; such things as the size and distances to the planets, stars, and galaxies are often hard to



conceive. In this show we will give you an astronomical yardstick to help understand space from the Big Bang, to the atom, to the entire universe.

Shows are held at Santa Rosa Campus, Lark Hall, Room

2001, on Fridays and Saturdays at 7:00 PM and 8:30 PM, Sundays at 1:30 PM and 3:00 PM during the Fall and Spring semesters. Admission is \$5 General; \$3 Students and Seniors (60+). Tickets are sold at the door only, beginning 30 minutes before show time. A parking permit is required and is included in the Planetarium admission price. Pick it up at the planetarium when you pay admission. Please arrive early enough to place your permit on your vehicle's dashboard before the show starts.

Info: 527-4372, <http://www.santarosa.edu/planetarium/>

**Start off the new year with a Special SRJC Planetarium Program "Starship Earth - The Search for Life."** Blast off with the Physics Chanteuse (aka SRJC Physics Instructor Lynda Williams) in a Live musical theater planetarium show! Explore distant worlds and time travel to past and future Earth in a Quest for life and meaning in the Universe.

This is a special presentation in the SRJC Planetarium that will be presented *4 times only on January 12, 13, 19, & 20, 2007 (Friday and Saturday nights) at 8pm.* Admission is \$5 General/\$3 Students and Seniors. Tickets are sold at the door only - beginning 30 minutes before show time. SRJC parking permits will be offered with admission to the show. Funded in part by a Randolph Newman Cultural Enrichment Grant. Recommended for mature audiences.

## MORRISON PLANETARIUM DEAN LECTURE SERIES

**Jan. 15, 7:30 PM: "Saturn's Rings: Ongoing Studies by Cassini"**—Dr. Jeff Cuzzi, NASA Ames Research Center.

The Cassini spacecraft arrived at Saturn in July 2004 and has provided many new insights into the structure and composition of Saturn's rings, and their dynamic interactions with nearby and embedded moonlets. By January 2007, the spacecraft will be at higher elevations above the ring plane than ever achieved before. New results will be put in the context of the big picture for understanding this fascinating system.

**Location:** Kanbar Hall, Jewish Community Center, 3200 California Street (at Presidio). Parking in the UCSF Laurel Heights campus parking lot is \$1.25/night. Parking in the JCC garage is \$1.25 per half-hour. Tickets \$4 at the door or by email. Contact: 415/321-8000, <http://www.calacademy.org/planetarium/dean.cfm>

# Events

## SCAS COMMUNITY OUTREACH

Lynn Anderson went to Yulupa School on the afternoon of December 12 to give a PowerPoint presentation about “What is a Constellation” to the members and parents of Cub Scout Pack 50. Before the presentation the young scouts were making Constellations in a Canister (a plastic 35mm film can). The den mother had prepared a page of the patterns that can be found on NASA’s [http://www.nasa.gov/audience/for\\_kids/activities/A\\_Constellation\\_in\\_Canister.html](http://www.nasa.gov/audience/for_kids/activities/A_Constellation_in_Canister.html) website.

Lynn made one canister in reverse to attempt to use the canister and a Mini Maglight to project the pattern on a wall or screen. The idea was successful, but still needs some further development.

The “What is a Constellation” presentation held the attention of the 8-10 year-olds and was appreciated by their parents as well.

## SONOMA STATE UNIVERSITY SERIES “WHAT PHYSICISTS DO”

**Mondays at 4:00 PM**

*Darwin Hall* Room 103 (Coffee at 3:30 PM)

### **Feb. 5—How Atoms Dance and Join Together in the Ultracold**

Dr. Chris Greene of the University of Colorado will discuss recent studies of the strongly-interacting limit for dilute quantum gases, emphasizing some unusual states just observed within the past year.

Contact <http://phys-astro.sonoma.edu/wpd/>

## UC BERKELEY ASTROPHYSICS CLUB

### **Institute for Particle Astrophysics Journal Club Seminars**

**Jan. 5—Cecile Rouelle** (LBNL/INPA) speaking on Pierre Auger detector and results

**Feb. 16—Rychard Bouwens** “Galaxy Buildup During the First 1.5 Billion Years of Cosmic History”

Just four years ago, only a few high redshift galaxies were known within the first billion years. However, since then, sufficient HST ACS and NICMOS data have been taken that we can construct very large samples of galaxies at early times and study the evolution of the rest-frame UV LF all the way out to redshifts of 8 — just 700 million years after the Big Bang.

Lectures: 12:00 Noon. Location: Bldg. 50, room 5026, Lawrence Berkeley National Laboratory, 1 Cyclotron Rd., Berkeley. Contact Vitaliy Fadeyev [VAFadeyev@lbl.gov](mailto:VAFadeyev@lbl.gov). Information: <http://stokstad.lbl.gov/INPA/journalclub.html#aboutjclub>

## SCHOOL STAR PARTIES

Greetings from Lynn Anderson, Director of Community Activities. I will be doing the classroom presentation for schools from Santa Rosa, north. Len Nelson has graciously volunteered to continue to give school presentation in the schools in Rohnert Park, Cotati and Petaluma. I will be the person soliciting volunteers with traveling telescopes, binoculars, and green lasers to staff the school star parties for all of these events.

According to Len, the following SCAS members have participated in recent star parties; Steve Alvernaz, Ben Barker, Rick Belding, Walt Bodley, Derek Braud, Merlin Combs, Loren Cooper, Daniel Gunyan, Sean Jeane, Bob Johnston, Robert Leyland, Harry Linder, Bruce Lotz, Steve Owen, Ben Pietsch, Emillo Ricci, David Simons, Frank Siroky, Dave Smith, Al & Rita Stern, Ron Tietz, John Whitehouse, Dickson Yeager and, of course, Len Nelson. To all of these volunteers (and any others who may have been missed) SCAS extends a great big THANK YOU.

It is my hope that all of the past volunteers and anyone else interested in sharing the joy of the night sky’s wonders will join Len and myself at school star parties this new year. If you are not listed above and would like to be notified about upcoming star parties, please contact me at [astroman@sonic.net](mailto:astroman@sonic.net) (my new email address dedicated to public astronomy related activities). (My personal email remains [penumbra@sonic.net](mailto:penumbra@sonic.net))

**Upcoming School Star Parties:** We already have several requests for school star parties in 2007. The first is at Piner Elementary Thursday, January 11<sup>th</sup> (one night after the SCAS meeting.) Friday the 12<sup>th</sup> is the alternate date. The teacher expects one hundred or more students and parents. Therefore we should need five or more telescope volunteers.

Len is in contact with Stephanie Derby of Meadow school in Petaluma, who has requested a star party during the week of January 21 (the exact date has not yet been determined). He tells me that he has experienced over 100 students and parents at this school’s prior star parties. He would like to have at least 5 other telescope volunteers.

Two schools have requested star parties during the week of February 19-23; Willowside Middle School, and Windsor Creek. The Willowside school star party is now scheduled for Friday, February 23rd. Three telescope volunteers should be adequate. (However, this is the time of year for basketball play-offs and I have a job as scoreboard operator at Cloverdale high. Therefore, I might not be one of those telescopes.) The Windsor Creek dates have not been confirmed as of this writing. Two more schools are in the works for March; Evergreen in Rohnert Park and El Verano in Sonoma.

One new wrinkle to be worked around this year is that Daylight Savings Time begins on March 11. This gives us sunsets around 7:20 for the second half of March and between 7:20 -7:35 throughout April, so viewing times would most likely not begin until around 8:00 o’clock at the earliest. By the end of May, the sun does not set until almost 8:00.

# Young Astronomers



## Extreme Astronomy

**YA January 19 Meeting,  
7:30 PM at Apple Blossom School**

So, you may be asking yourself “What is extreme astronomy?” Come to our next YA meeting and find out! On January 19, YA president Melissa Downey will discuss some of the most exotic objects in the universe, such as supermassive black holes, quasars, “super-galaxies”, and dark matter. This truly is going to be astronomy to the extreme! Don’t miss it!

We will also be holding annual elections for open positions on the YA board. Positions currently open include vice president and recorder. If you are interested in one of these positions please let Melissa Downey or Gary Jordan know.

Weather permitting, bring your telescope as well for star viewing after the general meeting. We look forward to seeing you in January!

## Stardust Provides Surprises for Scientists

Apparently, comets are not all made of interstellar dust and ice, but instead may contain material shot from the heart of the solar system during its birth. Samples collected by the Stardust spacecraft. This suggest that comets did not form in isolation in the outer parts of the solar system. Instead, some of the hot material that formed planets around the Sun seems to have traveled off into the outer reaches of the young solar system and become a part of distant comets.

The Stardust spacecraft flew within 150 miles of the comet Wild 2’s nucleus and trapped particles spewing from it in a type of foam called aerogel. Last January, after traveling 2.88 billion miles, Stardust returned to Earth with its payload of thousands of tiny particles from Wild 2.

Many of these particles contained high-temperature minerals that likely formed in the hottest part of the solar nebula. At least one grain was made of a rare mineral seen in some meteorites, which are among the oldest samples in the solar system. It is believed that comet Wild 2 formed more than 4.5 billion years ago. It had remained preserved in its original form in the outer solar system until a 1974 close encounter with Jupiter shifted its orbit to a path between Jupiter and Mars.

How material from the inner solar system could have ended up in comets is still a mystery. “Many people imagined that comets formed in total isolation from the rest of the solar system; we have shown that’s not true,” said Donald Brownlee, a University of Washington astronomer who is the lead scientist for the Stardust mission. “As the solar system formed 4.6 billion years ago, material moved from the innermost part to the outermost part. I think of it as the solar system partially turning itself inside out.”

Brownlee said the process that formed our solar system must have been chaotic and unstable, allowing high-temperature particles to travel billions of miles out to the edge of the solar system. As a result, he estimates that up to 10 percent of materials in comets may come from the inner solar system. “That’s a real surprise,” he said. “It’s not just dust and particles—we are working on rocks, some of them igneous rocks formed by heating and melting.”

Scientists now have to figure out how these rocks were formed, and more importantly, how they became parts of comets that were formed far out on the edge of the solar system.”

*Sources: Warren E. Leary, in the New York Times*

*Ron Cowen, Science News*

## DECEMBER YA MEETING UPDATE

The December 15 Young Astronomers meeting was a hands-on type of experience for members. First we passed around a large meteorite sample (thanks to Len Nelson for the sample!) to observe its characteristics. Then, adult advisor Gary Jordan gave us a few introductory words and instructions on how to search for micrometeorites (dust-sized meteorites that often come down in rainwater after a meteor shower).

Using microscopes, everyone got right to work looking for micrometeorites, examining magnetic specks of dust and dirt collected from the base of rain gutters. Gary walked around the room, lending encouragement, often saying “it just might be a sample from space,” or “it could be a speck from a roof shingle.” There was a laptop displaying some pictures of micrometeorites, to help us in our search.

After an hour of careful searching, the meeting was adjourned to refreshments. Cloudy skies prevented a star party after the general meeting.

—Max Eliaser

## YA INFORMATION

**Meetings:** 7:30 PM the second Friday of each month of the school year, at Apple Blossom School, 700 Water Trough Road, Sebastopol, in the Multipurpose Hall. Open to all Sonoma County students.  
**Telescope viewing** is held in the upper parking lot after the meeting. **Directions:** From Hwy. 116 in Sebastopol, go west onto Bodega Ave. Continue almost two miles to Water Trough Rd. Turn left and go about 1/3 mile to the school, on your right.

### YA ELECTED OFFICERS

**PRESIDENT:** Melissa Downey 632-5661

**VP/PROGRAM DIRECTOR:** Open

**RECORDER:** Open

**NEWSLETTER EDITOR:** Max Eliaser

**LIBRARIAN:** Rachel Loughman, [stop\\_rachel\\_4\\_insanity@yahoo.com](mailto:stop_rachel_4_insanity@yahoo.com)

**ADULT ADVISER:** Gary Jordan 829-5288

## NASA AND GOOGLE TO BRING SPACE EXPLORATION DOWN TO EARTH

NASA Ames Research Center and Google have signed a Space Act Agreement that formally establishes a relationship to work together on a variety of challenging technical problems ranging from large-scale data management and massively distributed computing, to human-computer interfaces.

As the first in a series of joint collaborations, Google and Ames will focus on making the most useful of NASA's information available on the Internet. Real-time weather visualization and forecasting, high-resolution 3-D maps of the moon and Mars, real-time tracking of the International Space Station and the space shuttle will be explored in the future.

"This agreement between NASA and Google will soon allow every American to experience a virtual flight over the surface of the moon or through the canyons of Mars," said NASA Administrator Michael Griffin at Headquarters in Washington. "This innovative combination of information technology and space science will make NASA's space exploration work accessible to everyone," added Griffin.

"Partnering with NASA made perfect sense for Google, as it has a wealth of technical expertise and data that will be of great use to Google as we look to tackle many computing issues on behalf of our users," said Eric Schmidt, chief executive officer of Google. "We're pleased to move forward to collaborate on a variety of technical challenges through the signing of the Space Act Agreement."

Recently, teams from NASA and Google met to discuss the many challenging computer science problems facing both organizations and possible joint collaborations that could help address them.

NASA and Google intend to collaborate in a variety of areas, including incorporating agency data sets in Google Earth, focusing on user studies and cognitive modeling for human computer interaction, and science data search utilizing a variety of Google features and products.

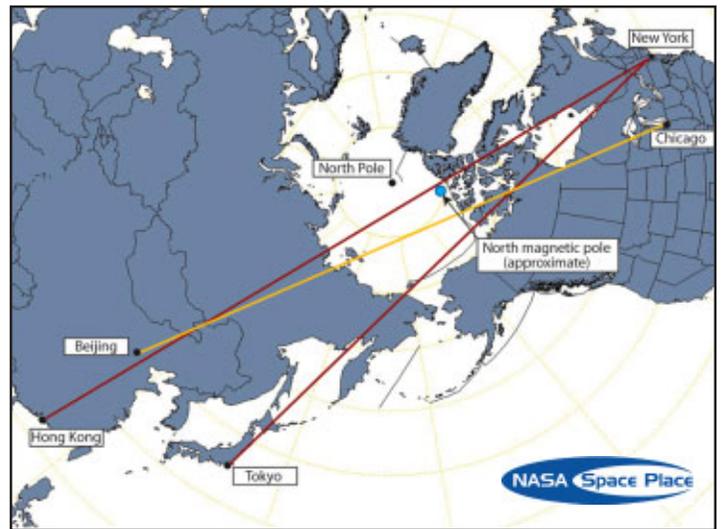
"NASA has collected and processed more information about our planet and universe than any other entity in the history of humanity," said Chris C. Kemp, director of strategic business development at Ames. "Even though this information was collected for the benefit of everyone, and much is in the public domain, the vast majority of this information is scattered and difficult for non-experts to access and to understand.

"We've worked hard over the past year to implement an agreement that enables NASA and Google to work closely together on a wide range of innovative collaborations," said Kemp. "We are bringing together some of the best research scientists and engineers to form teams to make more of NASA's vast information accessible."

NASA and Google also are finalizing details for additional collaborations that include joint research, products, facilities, education and missions.

Google's innovative search technologies connect millions of people around the world with information every day. Google is headquartered close to Ames in Silicon Valley with offices through the Americas, Europe and Asia.

Info: <http://www.google.com>, <http://www.nasa.gov>



The shortest airline routes from the Eastern U.S. to popular destinations in Asia go very near the magnetic North Pole, where space weather is of greatest concern.

## Space Weather for Air Travelers

By Dr. Tony Phillips

At a time when much of the airline industry is struggling, one type of air travel is doing remarkably well: polar flights. In 1999, United Airlines made just twelve trips over the Arctic. By 2005, the number of flights had grown to 1,402. Other airlines report similar growth.

The reason for the increase is commerce. Business is booming along Asia's Pacific Rim, and business travel is booming with it. On our spherical Earth, the shortest distance from Chicago to Beijing or New York to Tokyo is over the North Pole. Suddenly, business travelers are spending a lot of time in the Arctic.

With these new routes, however, comes a new concern: space weather.

"Solar storms have a big effect on polar regions of our planet," explains Steve Hill of NOAA's Space Weather Prediction Center in Boulder, Colorado. Everyone knows about the Northern Lights, but there's more to it than that. "When airplanes fly over the poles during solar storms, they can experience radio blackouts, navigation errors and computer reboots—all caused by space radiation."

In 2005, United Airlines reported dozens of flights diverted from polar routes by nasty space weather. Delays ranged from 8 minutes to nearly 4 hours, and each unplanned detour burned expensive fuel. Money isn't the only concern: Pilots and flight attendants who fly too often over the poles could absorb more radiation than is healthy. "This is an area of active research—figuring out how much exposure is safe for flight crews," says Hill. "Clearly, less is better."

To help airlines avoid bad space weather, NOAA has begun equipping its GOES weather satellites with improved instruments to monitor the Sun. Recent additions to the fleet, GOES 12 and 13, carry X-ray telescopes that take spectacular pictures of sunspots, solar flares, and coronal holes spewing streams of solar wind in our

*(continued back page)*

## IMAGING WORKSHOPS 2007: “IMAGING WITH WEB CAMS” AND “DIGITAL ASTROPHOTOGRAPHY”

Held at the National Optical Astronomy Observatory, presented by Robert Reeves, author of *Introduction to Digital Astrophotography: Imaging the Universe with A Digital Camera*.

March 24, 9AM to 3PM: Imaging with a Web Cam

March 25, 9AM to 2PM: Digital Astrophotography

Actual imaging with small telescopes on Friday and Saturday evenings.

Price: \$150.00 per day, \$270.00 for both. Kitt Peak Members' rate is \$135.00 per workshop or \$245.00 for both.

Location: National Optical Astronomy Observatory 950 N. Cherry Ave. Tucson, AZ 85719, (520) 318-8440. The building is located near the campus of the University of Arizona, two blocks south of Speedway and Cherry.

Reservations: Deadline is Friday, March 16. Please call (520) 318-8726 for reservations. A credit card number will be required to hold the reservation but the card will not be charged until the week of the workshop.

Visit these links for additional information: <http://www.noao.edu/outreach/kpvc/events.html>, and [www.robertreeves.com](http://www.robertreeves.com)

## *Space Weather for Air Travelers*

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direction. Other GOES sensors detect solar protons swarming around our planet, raising alarms when radiation levels become dangerous.

“Our next-generation satellite will be even better,” says Hill. Slated for launch in 2014, GOES-R will be able to photograph the Sun through several different X-ray and ultra-violet filters. Each filter reveals a somewhat different layer of the Sun’s explosive atmosphere—a boon to forecasters. Also, advanced sensors will alert ground controllers to a variety of dangerous particles near Earth, including solar protons, heavy ions and galactic cosmic rays.

“GOES-R should substantially improve our space weather forecasts,” says Hill. That means friendlier skies on your future trips to Tokyo.

For the latest space weather report, visit the website of the Space Weather Prediction Center at <http://www.sec.noaa.gov/>. For more about the GOES-R series spacecraft, see [http://goespoes.gsfc.nasa.gov/goes/spacecraft/r\\_spacecraft.html](http://goespoes.gsfc.nasa.gov/goes/spacecraft/r_spacecraft.html). For help in explaining geostationary orbits to kids—or anyone else—visit The Space Place at [http://spaceplace.nasa.gov/en/kids/goes/goes\\_poes\\_orbits.shtml](http://spaceplace.nasa.gov/en/kids/goes/goes_poes_orbits.shtml).

—Article provided by JPL/NASA

**Sonoma County  
Astronomical Society**

P.O. Box 183  
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***Sonoma Skies***

**January 2007**

JANUARY 10

Lynn Anderson

Shadows and  
Silhouettes