

ABOVE THE FOG

• BULLETIN OF THE SAN FRANCISCO AMATEUR ASTRONOMERS •

Vol. 62, No. 8 – September 2014

GENERAL MEETINGS

Randall Museum . 199 Museum Way . San Francisco

7:00 pm Doors Open . 7:30 pm Announcements . 8:00 pm Speaker

SFAA's General Meetings occur on the 3rd Wednesday of each month (except January)

October 15, 2014

KAREL SCHRIJVER, PH.D., Senior Fellow, Lockheed Martin STAR Labs, Palo Alto

STORMS FROM THE SUN



The weather patterns of the Sun are powerful, ever changing, and mesmerizingly beautiful. They drive explosions of literally astronomical proportions that can escape the Sun's gravity to affect all of the planets from nearby Mercury to distant Uranus, including Earth. Space storms involve a force that we generally ignore in our daily lives: magnetism. This force can heat gases to millions of degrees, can speed up atoms to be as dangerous as radioactivity, and can force electromagnetic storms into the

the electrical power grid. But although the terminology may be unfamiliar, space weather follows the laws of physics: storm paths can be forecast and storms lead to predictable consequences around Earth. We are rapidly increasing our understanding of how solar storms become space weather, but the Sun is a big object and the space between it and Earth is vast. We combine the sparse observational coverage of all that space with computer models to help us view the activity of the Sun-Earth system. Thus, we increasingly grasp how three apparently distinct types of space weather originate from explosive lightning storms on the star next door that affect satellites, radio signals, and high-voltage power lines.

Karel Schrijver is a senior fellow at the Lockheed Martin STAR Labs in Palo Alto, California. He received his doctorate in 1986 at the University of Utrecht on the topic of solar and stellar magnetic activity. His current research focuses on the magnetic activity of the Sun, the coupling of the Sun's magnetic field into the heliosphere, the manifestations of magnetic activity of other Sun-like stars, and the impact of solar variability on society.

In addition to scientific research, he is actively involved in developing and operating space instrumentation: he was the science lead and later the Principal Investigator for the Transition Region and Coronal Explorer (TRACE) and for the Atmospheric Imaging Assembly (AIA) of the Solar Dynamics Observatory (SDO), and co-investigator on the Helioseismic and Magnetic Imager (HMI) on SDO and on the Interface Region Imaging Spectrograph (IRIS) Small Explorer project.

President's Message

Hello SFAA!

Fall is upon us and it's starting to get cold out there, but the skies are just as clear and magical as ever. Fall also brings many great events that will let you meet and talk to your fellow SFAA members in the light! Scary though, I know, but it should be fun.

First, we have our Star-B-Q this weekend. It will be on October 18th, at 4pm at the Bootjack Picnic Area. This is the picnic area to the right just before the last turn that takes you to the parking lot we have our Mount Tam star parties at. This is an old tradition that is usually lots of fun. There will be free food and great people. If you can, come enjoy! Afterwards we'll continue up the mountain to have our Private Star Party, so don't worry about missing out on the stars.

Later this month, on October 25th, we'll be having our last public star party of the year. The last lecture will be by Andrew Fraknoi about the top tourist sights in the solar system. The lecture, as always, will be great and the viewing afterwards will feature our summer constellations going away for another season.

Finally, we have been invited to help out the Bay Area Science Festival with some viewing after the Are We Alone (<http://wonderfest.org/are-we-alone/>) event on Monday, October 27th at 7:30 at the Thurgood Marshall Auditorium in San Francisco. (See newsletter page 4.) They will talk of Science Fiction and how accurate it could be. Is there really life out there? Come visit and bring some scopes for viewing after. If you do make it, come say hi to me at the SFAA table!

With all the great events that are forthcoming, we also need to start preparing for next year. The board will be looking for new leaders, and we have a spot open for you! If you love the club and want to help make it even better, please consider joining. There is a board meeting once a month, and any extra time you could give would be great. Even if you don't want to join the board, we have plenty of outreach events to show the universe to schools, local events, and the general public. Email me at president@sfaa-astronomy.org if you are willing to help out!

Thanks again for being an amazing club and lets end the year with a bang!

May the stars shine on all of you!

Matt Jones
President
San Francisco Amateur Astronomers
2014

**SAN FRANCISCO
AMATEUR ASTRONOMERS
SFAA UPCOMING EVENTS**

<p>October 15 Wednesday 7:00 pm – 9:00 pm</p>	<p>Astronomy Lecture @ Randall Museum KAREL SCHRIJVER, PH.D., Senior Fellow, Lockheed Martin STAR Labs, Palo Alto <i>STORMS FROM THE SUN</i></p>
<p>October 18 Saturday 4:00 pm - 6:30 pm</p> <p>Members Only</p>	<p>Member Social – StarBQ @ Bootjack Parking Lot - Mt Tam Oct 18 @ 4:00 pm – 6:30 pm</p> <p>Join us for our Fall Social StarBQ up at the Bootjack Campground. This is open to members only and is free of charge. Come talk with your fellow Amateur Astronomers before viewing at the private star party on the mountain.</p>
<p>October 18 Saturday 5:00 pm – 2:00 am</p>	<p>Mt Tam Members Public Star Party Mt Tam - Rock Springs Parking Lot</p> <p>The SFAA hosts monthly public and members-only star parties at the Rock Springs parking lot in Mt Tamalpais State Park. The parking lot is above the Pan Toll ranger station, near the Mountain Theater.</p>
<p>October 25 Saturday 7:00 pm – 11:00 pm</p>	<p>Mt. Tam Public Star Party @ Rock Springs Parking Lot - Mt Tam Oct 25 @ 7:00 pm – 11:00 pm April – October only.</p> <p>The SFAA again joins the Mt Tam Interpretive Society at the annual ‘Summer Astronomy Program’ hosting public viewing events from April through October. SFAA members bring their telescopes, big and small, to Rock Springs parking lot and share viewing with the public after the astronomy lecture has concluded.</p>
<p>November 1’ Saturday</p>	<p>San Francisco City Star Party @ Location To Be Determined Nov 1 @ 5:30 pm – 10:00 pm Come join us for our monthly City Star Party. SFAA members provide telescopes for your viewing pleasure. See our City Star Parties page for directions on how to get to the site.</p>

TRUTH IS A GREAT FLIRT

WONDERFEST

The Bay Area Beacon of Science

Wonderfest's Mission is to inspire and nurture a deep sense of wonder about the world. We aspire to stimulate curiosity, promote careful reasoning, challenge unexamined beliefs, and encourage life-long learning. We achieve these ends through public science gatherings in the San Francisco Bay Area and through online science discourse & video that reach around the world.

[Are We Alone in the Cosmos? — Oct 27](#)



When science fiction portrays the galaxy as an arena of interstellar commerce and, occasionally, of star wars, could it be accurate? We now know that *billions* of hospitable, Earth-like planets are sprinkled throughout our Milky Way Galaxy. Yet *billions* of short-term searches for ET have turned up nothing. *Where is everybody?!* Premier planet hunter Geoff Marcy and expert alien detective Dan Werthimer will debate this most fascinating of scientific questions: *Are We Alone in the Cosmos?*

WHAT: *Are We Alone in the Cosmos?* science debate

WHO: Geoff Marcy, Professor of Astronomy, UC Berkeley, and Dan Werthimer, SETI@home Chief Scientist, UC Berkeley

WHEN: 7:30pm, Monday, October 27, 2014

WHERE: Thurgood Marshall Auditorium, 45 Conkling Street, San Francisco, CA 94124 <<http://goo.gl/maps/TCIRy>>

HOW: Presented as part of the [Bay Area Science Festival](#).

WHY: Because we're curious creatures.

ADMISSION: FREE! But please register with Eventbrite, below.

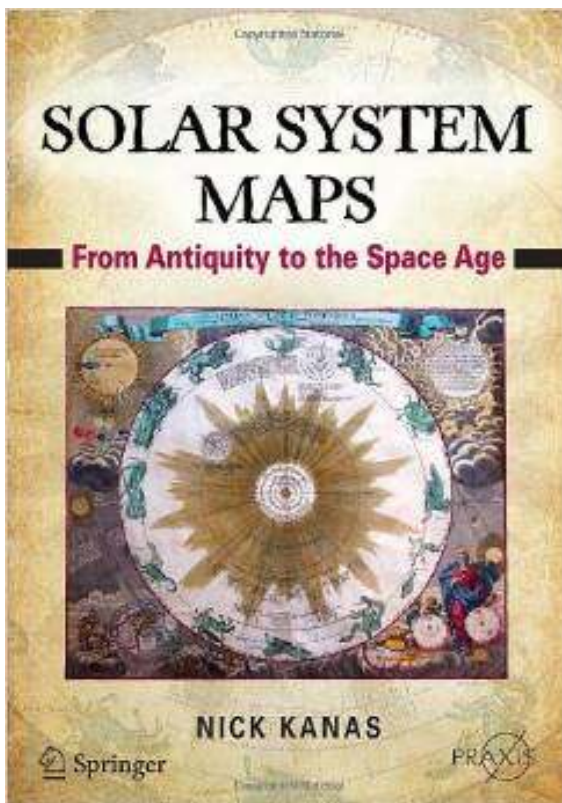
Please consider making a tax-deductible [donation to Wonderfest](#) to help us promote the scientific outlook. Even a modest gift will make more events like this possible.

CALIFORNIA ACADEMY OF SCIENCES
55 Music Concourse Drive, San Francisco 94118
415 379-8000

Monday
November 3, 2014
7:30pm

NICK KANAS M.D.
Fellow, Royal Astronomical Society

Benjamin Dean Lecture
MAPPING THE HEAVENS
CELESTIAL CARTOGRAPHY THROUGH THE AGES



Initially, Earth was seen as the center of the universe surrounded by orbiting planets and stars. Then, the Sun became the center of the cosmos. Finally, there was no center but instead a vast array of galaxies with individual stars, some with their own retinue of planets. In recent years, there has been an increased interest in our Solar System prompted by the launching of giant orbiting telescopes and space probes, which have made once unimaginable discoveries. In this presentation, Kanas will share with us the ways in which humans have been fascinated by the night sky for thousands of years. We have populated it with images of imaginary beasts, gods and goddesses that reflected important aspects of our various cultures. Both constellation maps and maps of the solar system will be illustrated from antiquity to modern times. Through a historical examination from the perspectives of the people who made them, these images will

tell us much about our ancestors and how we got to where we are today. Author of: Solar System Maps: From Antiquity to the Space Age. Book signing to follow the talk.

RESERVATIONS

Members: \$8, General \$12, Seniors \$10. Seating is limited and advanced ticketing is required. To reserve a place today, buy a [Member](#) or [Non-Member](#) ticket online or over the phone at 1-877-227-1831

October 2014 - THE EVENING SKY

September Sky Map: <http://skymaps.com/skymaps/tesmn1410.pdf>
September Sky Calendar: <http://skymaps.com/articles/n1410.html>

BAY AREA ASTRONOMY EVENTS

Kenneth Lum

<http://tech.groups.yahoo.com/group/bayastro/?v=1&t=directory&ch=web&pub=groups&sec=dir&slk=94>

BAY AREA REGULARLY SCHEDULED EVENTS

**EVERY FRIDAY NIGHT
7:00 PM – 10:00 PM
excluding major holidays**

**The Telescope Makers'
Workshop**

**CHABOT SPACE AND SCIENCE
CENTER
10000 Skyline Boulevard
Oakland, CA 94619-2450**

THE TELESCOPE MAKERS' WORKSHOP is held every Friday night from 7pm - 10pm, excluding major holidays (e.g. Christmas Day and New Year's Day) that fall on Fridays. The Workshop is always closed on Memorial Day Weekend. Attendance every Friday night is not mandatory, and members work at their own pace. The Workshop meets at Chabot Space & Science Center, 10000 Skyline Blvd., Oakland.

Chabot's TMW is one of only a handful of regularly scheduled telescope making workshops in the U.S., and probably the world; it meets every Friday evening throughout the year, except Memorial Day weekend. It has been in operation since December of 1930, founded by Franklin B. Wright, and is currently run by Eastbay Astronomical Society member Rich Ozer, with help from other EAS members, Dave Barosso, Barry Leska, and others. The price of admission is FREE. All you have to do is show up, buy a mirror blank and a "tool" (typically around \$100 - \$200 depending on the size of the mirror) and start "pushin' glass!" We supply you with instruction, the various grits you'll need to first grind, and then polish and figure your mirror, and all the testing equipment needed. With a small bit of luck, you could wind up with a telescope that costs 1/3 or 1/4 the cost of a store-bought telescope, that is yet optically superior! It does take time - depending on how much time you put in on it, and other factors, it could take a few months or several months. But, it's a fun project, great for kids, and at the end you get a great telescope!

For more information call or email Richard Ozer at rozer@pacbell.net or phone (510) 406-1914.

**EVERY FRIDAY & SATURDAY
EVENING, weather permitting
7:30 PM – 10:30 PM**

**CHABOT SPACE AND SCIENCE
CENTER
10000 Skyline Boulevard
Oakland CA 94619-2450
(510) 336-7300**

EXPLORE THE NIGHT SKIES AT THE CHABOT OBSERVATORIES

For more information: <http://www.chabot.space.org/>

Free Telescope Viewing

Regular hours are every Friday & Saturday evening, weather permitting: 7:30pm -10:30pm
Come for spectacular night sky viewing the best kept secret in the Bay Area and see the magnificence of our telescopes in action!

Daytime Telescope Viewing On Saturday and Sunday afternoons come view the sun, moon, or Venus through Chabot's telescopes. Free with General Admission. (weather permitting)

12pm - 5pm: Observatories Open

<p>Sunset – 5:11 PM (TWICE MONTHLY)</p> <p>Inclement weather (clouds, excessive wind and showers) will cause the event to be canceled without notice.</p> <p>SAN MATEO COUNTY ASTRONOMICAL SOCIETY STAR PARTY</p>	<p>STAR PARTIES AT CRESTVIEW PARK, SAN CARLOS</p> <p>Come out and bring the kids for a mind expanding look at the universe</p> <p>The City of San Carlos Parks and Recreation Department and the San Mateo County Astronomical Society has open Star Parties twice a month. These events are held in Crestview Park, San Carlos California. Note that inclement weather (clouds, excessive wind and showers) will cause the event to be canceled without notice.</p> <p>For more information call Bob Black, (650)592-2166, or send an email to SMCAS@live.com or call Ed Pieret at (650)862-9602.</p> <p>Reasons to Attend</p> <p>If you have kids interested in space or planets bring them here for a real life view of planets, nebula, star clusters and galaxies.</p> <p>If you are thinking of buying a telescope or want help using a telescope you own, come here to talk with experienced users. If you think you might have an interest in astronomy come and talk to experienced amateur astronomers.</p> <p>Cautions</p> <p>Dress warmly and wear a hat.</p> <p>Visitors should park on the street and walk into the park so your headlights don't affect the observer's dark adaptation.</p> <p>Only park in the parking lot if you are arriving before dark and plan to stay until the end of the event. You shouldn't need lights but if you feel you do, only bring a small flashlight with the lens covered using red cellophane or red balloon.</p> <p>Please respect the telescopes and ask permission from the owner if you wish to touch.</p> <p>Parents, please watch your children.</p> <p>The park is residential, and adjacent to homes and backyards, please keep noise to a minimum.</p> <p>Schedule Time</p> <p>Astronomers arrive to set up at around sunset. Observing starts at about one hour after sunset and continues for two to three hours.</p>
<p>EVERY CLEAR SATURDAY MORNING OBSERVATORY 10:00 AM – 12:00 PM</p> <p>FOOTHILL COMMUNITY COLLEGE 12345 Moody Road Los Altos Hills</p> <p>Cost: Free</p>	<p>Solar observing with a Hydrogen alpha solar telescope every clear Saturday morning. This allows spectacular views of solar prominences and unusual surface features on the Sun not otherwise visible with regular white light telescopes.</p> <p>Admission is free.</p> <p>Foothill Observatory is located on the campus of Foothill College in Los Altos Hills, CA. Take Highway 280 to the El Monte Rd. exit. The observatory is next to parking lot 4. Parking at the college requires visitor parking permits that are available from the machines in the parking lots for \$ 3.00.</p>
<p>EVERY CLEAR FRIDAY EVENING 9:00 PM – 11:00 PM</p> <p>FOOTHILL COMMUNITY COLLEGE OBSERVATORY 12345 Moody Road Los Altos Hills</p> <p>Cost: Free</p>	<p>Foothill Observatory is open for public viewing every clear Friday evening from 9:00 p.m. until 11:00 p.m. Visitors can view the wonders of the universe through the observatory's computer-controlled 16-inch Schmidt-Cassegrain telescope. Views of objects in our solar system may include craters and mountains on the moon, the moons and cloud-bands of Jupiter, the rings of Saturn, etc. Deep space objects including star clusters, nebulae, and distant galaxies also provide dramatic demonstrations of the vastness of the cosmos. The choice of targets for Any evening's viewing depends on the season and what objects are currently in the sky.</p> <p>The public viewing programs at Foothill are free of charge and are open to guests of all ages. Please note that the observatory is closed when the weather is cloudy. Also note that visitor parking permits are available from the machines in the parking lots for \$3.00.</p> <p>Come to Foothill Observatory and join us in the exploration of our Universe!</p>

Foothill Observatory is located on the campus of Foothill College in Los Altos Hills, CA. Take Highway 280 to the El Monte Rd exit. The observatory is next to parking lot 4. Parking at the college requires visitor parking permits that are available from the machines in the parking lots for \$3.00.

BAY AREA EVENTS – OCTOBER 2014

<http://groups.yahoo.com/neo/groups/bayastro/conversations/topics/49>

Thursday
October 16
4:00 PM

**LOCKHEED MARTIN STAR
LABS**
Bldg. 202 Auditorium
Lockheed Martin
3251 Hanover Street
Palo Alto, California

DR. KATHARINE MACH, CO-DIRECTOR OF SCIENCE FOR INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC) WORKING GROUP II (WGII)

CLIMATE CHANGE IMPACTS, ADAPTATION, AND VULNERABILITY: THE NEW INTERNATIONAL ASSESSMENT

Friday, October 17
6:00 – 7:30 PM

**Chabot Space and
Science Center**
10000 Skyline Blvd
Oakland, CA 94619

Cost:
\$26 General
\$23 Members
**(includes admission to
Chabot)**
\$30 at the door

CIVILIAN SPACE EXPLORATION: PERSONALIZING YOUR ACCESS TO SPACE!

Welcome to the Space Renaissance! Technological advances are now enabling civilians to design, build and operate simple space craft and launch vehicles at an affordable cost. These new technologically driven capabilities are reigniting the passions and interests of students, private citizens, and communities around science, technology, engineering and mathematics. Atchison discusses key opportunities to engage students and their communities to accomplish the goal of civilian space exploration!

Website: <https://14884.blackbaudhosting.com/14884/page.aspx?pid=196&tab=2&txobjid=22a181ca-1f3e-4553-a469-27ecf0bab3bd>

Tuesday, August 26
12:00 PM

SAN JOSE STATE UNIVERSITY
MAIN LIBRARY
One Washington Square
Room 225
San Jose, CA 95112
Cost: Free

DR. FERDINND RIVERA
SUCCESSFUL LEARNING OF MATHEMATICS

Dr. Ferdinand Rivera's research focuses on understanding the emergence of structures among children and adults in mathematical activities that involve patterns. His findings are synthesized in his most recent book, Teaching and Learning Patterns in School Mathematics: Psychological and Pedagogical Perspectives..Rivera is a full professor in the Department of Mathematics and Statistics, College of Science, and Chair of the Department of Elementary Education, College of Education.

See <http://tech.groups.yahoo.com/group/bayastro/?v=1&t=directory&ch=web&pub=groups&sec=dir&slk=94>
for additional events added since time of newsletter publication.

OCTOBER 18, 2014

NASA'S AMES RESEARCH CENTER 75TH ANNIVERSARY OPEN HOUSE -

Entry times between 9 a.m and 3 p.m. by ticketed reservation; event ends at 5 p.m.

Image Credit: NASA



UPDATE (Sept. 5):

We are overwhelmed by the response and enthusiasm for this event -- quite literally! 120,000 tickets were reserved in less than three days! Unfortunately, this reaches our current planning capacity for the size of event we were considering. We apologize

that there are no additional tickets available at this time. However, we are assessing the possibility of expanding the event. If you would like to know if we release additional tickets, please subscribe to our general community events email list. We will announce any further general admission ticket releases there first. To subscribe, submit your email address here: <https://lists.nasa.gov/mailman/listinfo/arc-community-outreach>

Additionally, a very very small number of "backstage passes" for tours will be released each Thursday at noon from now until the Open House on Oct. 18. Those passes will also be honored for general admission entry to the open house any time 9 a.m. to 3 p.m. For additional updates about the open house, please watch this webpage, <http://www.nasa.gov/ames/openhouse2014/>

You've sat on our lawn, maybe even hung out on our flightline. Now, for the first time since 1997, we're opening our house. For our 75th anniversary, we're inviting all of the Bay Area and Silicon Valley to come inside the gates and get to know NASA's center in Silicon Valley. Take a two-mile walking tour through the center and visit with Ames engineers and scientists in booths set up in front of their facilities. After the walking tour, join us on our plaza to learn about our missions. Food, drinks and NASA gift shop merchandise will be on sale. This is a family-friendly event, and children's educational activities will be offered. [See Frequently Asked Questions below](#) Event hashtag is #Ames75

How To Register For General Admission:

To reserve your free general admission ticket:

1. Visit <https://nasaamesopenhouse.eventbrite.com/>
2. Select your arrival time from the drop-down menu
3. Submit the requested information
4. Print your ticket(s) and bring them with you on Saturday, Oct. 18, 2014

General admission tickets allow you to enter NASA's Ames Research Center for our 75th anniversary Open House event, with access to exhibits, a two-mile walking tour and concession areas. We anticipate VERY large crowds. To reduce wait times as much as possible, we staggered entry times. Please register for the time you plan to arrive. Entry to the event is restricted to your printed ticket time window. We recommend you plan additional time for transportation to the center. No parking is available onsite. Please plan accordingly.

Planning and Transportation:

CURRENTLY, NO PARKING WILL BE AVAILABLE ONSITE, but we're developing a portfolio of options to get to the event. We are planning shuttle buses from two local public transit stations and bicycle parking at the main gate at Moffett Blvd. and the Ellis St. gate.

This event is expected to be many times larger than our other recent public events. By distributing automobile traffic over external locations (e.g., public transit stations) rather than our limited on-site roads and lots, we hope to provide a less frustrating traffic experience and a safer pedestrian-only environment across our entire center.

Please understand that this is a walking event, we estimate visitors will be walking a minimum of five miles across our center in order to see the full unique content we're offering for the Open House. See the [Transportation](#) section of Frequently Asked Questions If you'd like to visit and learn more about Ames in a more compact area, we invite you to visit our free public visitor center, open regularly: <http://www.nasa.gov/ames/visit>

Special Opportunity -- "Backstage Passes":

In addition we will be releasing a *limited number* of "backstage passes" to tour behind the scenes and see inside certain research facilities. See the [Backstage Pass](#) section of Frequently Asked Questions Watch this web page, [Ames' home page](#) and Ames' [social media](#) for updates and more information! For email updates about public events at Ames, [join our community mailing list](#).



An aerial photo of NASA's Ames Research Center.

Frequently Asked Questions (FAQs)

PLEASE NOTE: We will be updating this page with frequently asked questions and their answers regularly until our 2014 Open House event. Look for updates mid-day each Tuesday before the event on Oct. 18. We will note the date each question is added or updated in brackets.

TICKETS:

How do I get register to attend the event? [added Sept. 2]

To reserve your free *general admission* ticket,

1. Visit <https://nasaamesopenhouse.eventbrite.com/>
2. Select your arrival time from the drop-down menu
3. Submit the requested information
4. Print your ticket(s) and bring them with you on Saturday, Oct. 18, 2014

General admission tickets allow you to enter NASA's Ames Research Center for our 75th anniversary Open House event, with access to exhibits, a two-mile walking tour and concession areas. We anticipate VERY large crowds. To reduce wait times as much as possible, we staggered entry times. Please register for the time you plan to arrive. Entry to the event is *restricted to your printed ticket time window*. We recommend you plan additional time for transportation to the center. No parking is available onsite. Please plan accordingly.

Backstage pass: This separately reserved ticket allows specific timed opportunities for attendees to participate in a tour of one of the unique facilities or labs at Ames.

What is a "backstage pass" and how do I get one? [added Sept. 2]

Backstage passes allow a limited number of Open House attendees to tour "behind the scenes" and see inside certain research facilities, guided by Ames scientists and engineers. Though most research groups at the center will have explanatory booths set up along the walking tour in front of their buildings, most labs inside the buildings are very small, so capacities are extremely limited and these passes will be the only opportunity to see the interior facilities.

Each Thursday at noon PDT from now until the Open House event, specific sets of backstage passes will be released on this Eventbrite site: <http://amesbackstage.eventbrite.com>

We have restricted capacities for each tour, so the number of backstage passes available are extremely limited, and will be first-come, first-served online according to the schedule below. In order to spread these opportunities among as many attendees as possible, we ask that you select and register for only one pair of tickets for one backstage pass opportunity throughout the day.

The following is the planned release schedule for backstage passes:

Sept. 04: [Fluid Mechanics Laboratory](#) (partially ADA accessible) and [FutureFlight Central](#) (ADA accessible)

Sept. 11: [Unitary Plan Wind Tunnel](#) and [Vertical Motion Simulator](#) (partially ADA accessible)

Sept. 18: [SPHERES lab](#) (ADA accessible) and [20G centrifuge](#) (partially ADA accessible)

Sept. 25: [SpaceShop \(advanced manufacturing\)](#) (ADA accessible)

Oct. 02: [Ames Exploration Encounter](#) (ADA accessible) and [hyperwall-2](#) (ADA accessible)

Oct. 09: TBD

Oct. 16: [National Full-scale Aerodynamics Complex](#) (not ADA accessible)

Please note that not all backstage pass tours are fully accessible, some may be partially accessible. For questions or concerns regarding ADA access, please contact Dana Bolles at dana.bolles@nasa.gov. There may be additional requirements (no high-heels, closed-toe shoes) that will be communicated to you in the ticketing information of your selected backstage pass tour.

TRANSPORTATION:

How do I get to the event? Where do I park? *[added Sept. 2]*

NO PARKING IS PLANNED TO BE AVAILABLE ONSITE. We're developing a portfolio of options to get to the event, but due to the number of pedestrians anticipated, we will not allow motor vehicles on campus.

This event is expected to be many times larger than our other recent public events (e.g. space shuttle flyover, Mars Curiosity landing, LCROSS impact, Yuri's Nights and LADEE science night and launch). By distributing automobile traffic over external locations (e.g., public transit stations) rather than our limited on-site roads and lots, we hope to provide a less frustrating traffic experience and a safer pedestrian-only environment across our entire center.

We are planning shuttle buses from two local public transit stations (1) VTA Lightrail [BayShore/NASA Station](#) and (2) VTA/CalTrain [Mountain View Transit Station](#)

But, again, no parking will be allowed on site. Please note that we have an ADA POC to address specific accessibility needs. If ADA accommodations are needed, please contact Dana Bolles at dana.bolles@nasa.gov.

We are planning to accommodate bicycle parking at the main gate at Moffett Blvd and the Ellis Street gate.

Visit [our Open House website](#) a couple weeks before the event to learn the final details about all the transportation options. We'll also send this information to your registration email address when the information is finalized.

Please understand that this is a "walking event," we estimate visitors will be walking a minimum of five miles across our center in order to see the full unique content we're offering for the Open House,. If you'd like to visit and learn more about Ames in a more compact area, we invite you to visit our free public visitor center, open regularly: <http://www.nasa.gov/ames/visit>

ALLOWED AND PROHIBITED ITEMS AND ACTIVITIES:

What can I bring? *[added Sept. 2]*

- Printed tickets for everyone in your party.
- Cameras and phones! Feel free to take a selfie with everything in sight, unless specifically told not to.
- Comfortable shoes. This is a pedestrian event.
- Sunscreen and/or hats. This is primarily an outdoor event.
- Small bags, purses, backpacks and diaper bags only.
- Water and snacks, though there will be food and non-alcoholic beverages available for purchase.
- Strollers, wheelchairs.
- Small blankets on which you can rest and picnic.
- Enthusiasm and excitement – and patience. We're expecting BIG crowds for this event!

Your entry into, continued presence on, or exit from, this installation is contingent upon your consent to inspection of person and property. (14 CFR 1204.1003)

What is prohibited? What are the "rules" of the event? *[added Sept. 2]*

- Unauthorized entry upon any NASA real property of this installation is prohibited. (14 CFR 1204.1004)
- Your entry into, continued presence on, or exit from, this installation is contingent upon your consent to inspection of person and property. (14 CFR 1204.1003)
- Unauthorized introduction of weapons or dangerous materials is prohibited
- Unless specifically authorized by NASA, you may not carry, transport, introduce, store, or use firearms or other dangerous weapons, explosives or other incendiary devices or other dangerous instruments or material likely to produce substantial injury or damage to persons or property. (14 CFR 1204.1003)
- Possession of firearms or dangerous weapons is strictly prohibited.

- No alcohol permitted.
- Please follow California regulations regarding tobacco smoking at this event.
- Awnings, tents, and all other items that require staking are prohibited from the event.
- Animals, other than certified service animals, are prohibited from the event.
- Visitor motor vehicles are prohibited from the event.
- Bicycles, Segways, skateboards, etc. (must be secured at the gates)
- Glass containers, ice chests

PLEASE NOTE: This is a federal site. All substances restricted by federal law are restricted at this event.

NASA SCIENCE NEWS

NASA prepares its science fleet for Oct. 19 Mars comet encounter



[Enlarge](#)

Credit: NASA

NASA's extensive fleet of science assets, particularly those orbiting and roving Mars, have front row seats to image and study a once-in-a-lifetime comet flyby on Sunday, Oct. 19.

Comet C/2013 A1, also known as comet Siding Spring, will pass within about 87,000 miles (139,500

kilometers) of the Red Planet—less than half the distance between Earth and our moon and less than one-tenth the distance of any known comet flyby of Earth.

Siding Spring's nucleus will come closest to Mars around 2:27 p.m. EDT, hurtling at about 126,000 mph (56 kilometers per second). This proximity will provide an unprecedented opportunity for researchers to gather data on both the comet and its effect on the Martian atmosphere.

"This is a cosmic science gift that could potentially keep on giving, and the agency's diverse science missions will be in full receive mode," said John Grunsfeld, astronaut and associate administrator for NASA's Science Mission Directorate in Washington. "This particular comet has never before entered the inner solar system, so it will provide a fresh source of clues to our solar system's earliest days."

Siding Spring came from the Oort Cloud, a spherical region of space surrounding our sun and occupying space at a distance between 5,000 and 100,000 astronomical units. It is a giant swarm of icy objects believed to be material left over from the formation of the solar system.

Siding Spring will be the first comet from the Oort Cloud to be studied up close by spacecraft, giving scientists an invaluable opportunity to learn more about the materials, including water and carbon compounds, that existed during the formation of the solar system 4.6 billion years ago.

Some of the best and most revealing images and science data will come from assets orbiting and roving the surface of Mars. In preparation for the comet flyby, NASA maneuvered its Mars Odyssey orbiter, Mars

Reconnaissance Orbiter (MRO), and the newest member of the Mars fleet, Mars Atmosphere and Volatile Evolution (MAVEN), in order to reduce the risk of impact with high-velocity dust particles coming off the comet.

The period of greatest risk to orbiting spacecraft will start about 90 minutes after the closest approach of the comet's nucleus and will last about 20 minutes, when Mars will come closest to the center of the widening trail of dust flying from the comet's nucleus.

"The hazard is not an impact of the [comet nucleus](#) itself, but the trail of debris coming from it. Using constraints provided by Earth-based observations, the modeling results indicate that the hazard is not as great as first anticipated. Mars will be right at the edge of the debris cloud, so it might encounter some of the particles—or it might not," said Rich Zurek, chief scientist for the Mars Exploration Program at NASA's Jet Propulsion Laboratory (JPL) in Pasadena, California.

The atmosphere of Mars, though much thinner than Earth's, will shield NASA Mars rovers Opportunity and Curiosity from comet dust, if any reaches the planet. Both rovers are scheduled to make observations of the comet.

NASA's Mars orbiters will gather information before, during and after the flyby about the size, rotation and activity of the comet's nucleus, the variability and gas composition of the coma around the nucleus, and the size and distribution of dust particles in the comet's tail.

Observations of the Martian atmosphere are designed to check for possible meteor trails, changes in distribution of neutral and charged particles, and effects of the comet on air temperature and clouds. MAVEN will have a particularly good opportunity to study the comet, and how its tenuous atmosphere, or coma, interacts with Mars' upper atmosphere.

Earth-based and space telescopes, including NASA's iconic Hubble Space Telescope, also will be in position to observe the unique celestial object. The agency's astrophysics space observatories—Kepler, Swift, Spitzer, Chandra—and the ground-based Infrared Telescope Facility on Mauna Kea, Hawaii—also will be tracking the event.

NASA's asteroid hunter, the Near-Earth Object Wide-field Infrared Survey Explorer (NEOWISE), has been imaging, and will continue to image, the comet as part of its operations. And the agency's two Heliophysics spacecraft, Solar TErrestrial RElations Observatory (STEREO) and Solar and Heliophysics Observatory (SOHO), also will image the comet. The agency's Balloon Observation Platform for Planetary Science (BOPPS), a sub-orbital balloon-carried telescope, already has provided observations of the comet in the lead-up to the close encounter with Mars.

Images and updates will be posted online before and after the comet flyby. Several pre-flyby images of Siding Spring, as well as information about the [comet](#) and NASA's planned observations of the event, are available online at: <http://mars.nasa.gov/comets/sidingspring>

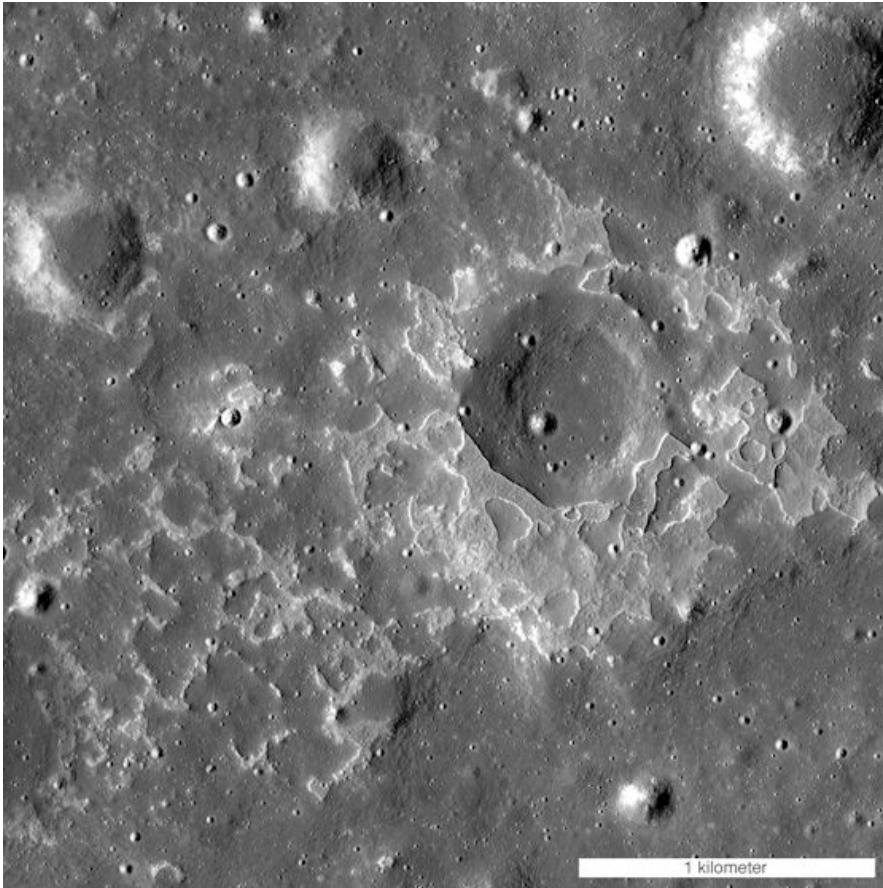
Explore further: [NASA Mars spacecraft prepare for close comet flyby](#)

Provided by [NASA](#)

Evidence for Young Lunar Volcanism

Oct 13, 2014: NASA's Lunar Reconnaissance Orbiter (LRO) has provided researchers strong evidence the moon's volcanic activity slowed gradually instead of stopping abruptly a billion years ago. Scores of distinctive rock deposits observed by LRO are estimated to be less than 100 million years old. This time period corresponds to Earth's Cretaceous period, the heyday of dinosaurs. Some areas may be less than 50 million years old.

"This finding is the kind of science that is literally going to make geologists rewrite the textbooks about the moon," said John Keller, LRO project scientist at NASA's Goddard Space Flight Center in Greenbelt, Maryland.



The feature called Maskelyne is one of many newly discovered young volcanic deposits on the Moon. Called irregular mare patches, these areas are thought to be remnants of small basaltic eruptions that occurred much later than the commonly accepted end of lunar volcanism, 1 to 1.5 billion years ago. Image Credit: NASA/GSFC/Arizona State University

The deposits are scattered across the moon's dark volcanic plains and are characterized by a mixture of smooth, rounded, shallow mounds next to patches of rough, blocky terrain. Because of this combination of textures, the researchers refer to these unusual areas as "irregular mare patches."

The features are too small to be seen from Earth, averaging less than a third of a mile (500 meters) across in their largest dimension. One of the largest, a well-studied area called Ina, was imaged from lunar orbit by Apollo 15 astronauts.

Ina appeared to be a one-of-a-kind feature until researchers from Arizona State University in Tempe and Westfälische Wilhelms-Universität Münster in Germany spotted many similar regions in high-resolution images taken by the two Narrow Angle Cameras that are part of the Lunar Reconnaissance Orbiter Camera, or LROC. The team identified a total of 70 irregular mare patches on the near side of the moon.

The large number of these features and their wide distribution strongly suggest that late-stage volcanic activity was not an anomaly but an important part of the moon's geologic history.

The numbers and sizes of the craters within these areas indicate the deposits are relatively recent. Based on a technique that links such crater measurements to the ages of Apollo and Luna samples, three of the irregular mare patches are thought to be less than 100 million years old, and perhaps less than 50 million

years old in the case of Ina. The steep slopes leading down from the smooth rock layers to the rough terrain are consistent with the young age estimates.



Click to visit the [LRO home page](#)

In contrast, the volcanic plains surrounding these distinctive regions are attributed to volcanic activity that started about 3 1/2 billion years ago and ended roughly 1 billion years ago. At that point, all volcanic activity on the moon was thought to cease.

Several earlier studies suggested that Ina was quite young and might have formed due to localized volcanic activity. However, in the absence of other similar features, Ina was not considered an indication of widespread volcanism.

The findings have major implications for how warm the moon's interior is thought to be.

"The existence and age of the irregular mare patches tell us that the lunar mantle had to remain hot enough to provide magma for the small-volume eruptions that created these unusual young features," said Sarah Braden, a recent Arizona State University graduate and the lead author of the study.

The new information is hard to reconcile with what currently is thought about the temperature of the interior of the moon.

"These young volcanic features are prime targets for future exploration, both robotic and human," said Mark Robinson, LROC principal investigator at Arizona State University.

Details of the study are published online in the Oct. 12th edition of *Nature Geoscience*.

Credits:

Production editor: [Dr. Tony Phillips](#) | Credit: [Science@NASA](#)

More information:

LRO is managed by Goddard for NASA's Science Mission Directorate at NASA Headquarters in Washington. LROC, a system of three cameras, was designed and built by Malin Space Science Systems and is operated by Arizona State University.

To access the complete collection of LROC images, visit <http://lroc.sese.asu.edu/>



**San Francisco Amateur Astronomers
Application for New or Renewing Membership**

1. Memberships, with dues payment, are for one year. Standard renewal dates of 1 July to 30 June and 1 January to 31 December.
2. Submitting appropriate dues in April, May, June, July or August, membership will run to 30 June of the next year.
3. Submitting appropriate dues in October, November, December, membership will run to 31 December of the next year; submitting appropriate dues in January, February or March, membership will run to 31 December of the same year.
4. Renewals are maintained at the original membership date unless the renewal is made later than the original cutoff date (e.g. September or March as described in 3). In such cases the membership date is shifted to the next renewal date 30 June or 31 December.
5. New or renewal memberships sent in via USPS mail will have membership start date based on postmark date.

This application is for:

- New
- Renewing

Name: _____

Address: _____

Email: _____

Home Telephone (optional): _____

Cell Phone (optional): _____

Membership Type: Individual \$25.00 / Family \$30.00 / Student \$10.00 / Supporting \$75.00

Please mail to me a Mt. Tamalpais Parking Permit

To complete the membership process:

- A. Print and fill out this form
- B. Make check or money order payable to San Francisco Amateur Astronomers
- C. Mail this form and payment to:

**Treasurer, SFAA
PO Box 15097
San Francisco, CA 94115**

New members will be entered onto the SFAA roster on the Night Sky Network (NSN) and will receive a verifying email from the NSN with username and password for the NSN. Renewing members will have their information updated but will not receive an email from the NSN. Both new and renewing members will receive a verifying email from the SFAA Treasurer upon completion of the membership process.

2013 Club Officers & Contacts

President	MATTHEW JONES	president@sfaa-astronomy.org
Vice President	Douglas Smith	vice-president@sfaa-astronomy.org
Treasurer	Michael Patrick	treasurer@sfaa-astronomy.org
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Club Telescopes

The SFAA owns eight very fine, easy to use, loaner telescopes well-suited for deep sky, planets, and star parties. All scopes are available to any SFAA member. The loaner custodians for the majority of our fleet are Pete & Sarah Goldie. Please contact them at telescopes@sfaa-astronomy.org for details if you are interested in borrowing a scope or if you have items you can donate for the loaner program (eyepieces, star maps/books, red flashlights, collimator, etc.). Please contact the appropriate member indicated below if you are interested in borrowing one of the telescopes.

- 1) 6" f/10.3 Dobsonian/Ken Frank ken@sfaa-astronomy.org
- 2) 8" f/7 Dobsonian/Pete Goldie
- 3) 8.5" f/6 Dobsonian/Pete Goldie
- 4) 10" f/8 Dobsonian/Pete Goldie
- 5) 114mm f/4 Newtonian StarBlast/Pete Goldie
- 6) 8" f/10 Celestron SCT/ Ken Frank ken@sfaa-astronomy.org
- 7) 8" f/10 Meade SCT/Stefanie Ulrey/treasurer@sfaa-astronomy.org
- 8) 9.5" f/5.6 Celestron Newtonian/Ken Frank/ ken@sfaa-astronomy.org

Club Astronomy Videos

The SFAA owns a series of astronomy videotapes featuring Alex Filippenko, a world-renowned professor of astronomy at UC Berkeley. The videotapes provide an introduction to astronomy and cover topics such as the Solar System, the lifecycles of stars, the nature of galaxies, and the birth of the Universe. The SFAA loans the tapes free to all members. If you are interested in viewing these tapes, you may check them out at any of the SFAA General Meetings. These tapes were kindly donated to the SFAA by Bert Katzung. For information on the course tapes themselves:

<http://www.teach12.com/ttc/assets/coursedescriptions/180.asp>

Membership Dues

Membership is billed for each upcoming year on June 30. Members may receive no more than one bulletin after the expiration of membership.

SFAA Website and Online Services

The SFAA web site at sfaa-astronomy.org is provided to our members and the general public for the sharing of club information and services. The web site contains links for club [star parties](#), [events](#), [newsletters](#), [lectures](#) and [meetings](#). If you wish to interact with other people who are interested in astronomy, the SFAA web site offers public and members only [bulletin board forums](#). If you wish to remain up-to-date on club activities, then we encourage you to subscribe to one or both of our public [mailing lists](#), which will allow you to receive our newsletter and/or club announcements via email. Other useful and interesting information and services are available on the site such as [observing location reviews](#), member [astronomy photos](#), and [members only telescope loans](#). Information about SFAA's membership, organization and by-laws are available at the club's online public document [archive](#). If you need to contact a representative of the SFAA, then please visit our [contacts](#) page to help in finding the right person to answer your questions.

***Above the Fog** is the official bulletin of the San Francisco Amateur Astronomers. It is the forum in which club members may share their experiences, ideas, and observations. We encourage you to participate by submitting your articles, announcements, letters, photos and drawings. We would also like to hear from our new members. Tell us about yourself – what you have done in the past and what other*

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Has your membership expired? Your mailing label includes the month and year through which your membership is paid. If it is past, your membership has expired and this may be your last issue.
