



Vol. 65, No. 1 – January 2017

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CALL FOR VOLUNTEERS

SFAA is looking for volunteers to help at Star Parties – both on Mt. Tam and for City Star Parties. Please send an email to Michael Patrick at president@sfaa-astronomy.org if you're interested.

01.

*****NOTE: NEW SFAA MEETING LOCATION FOR 2017*****

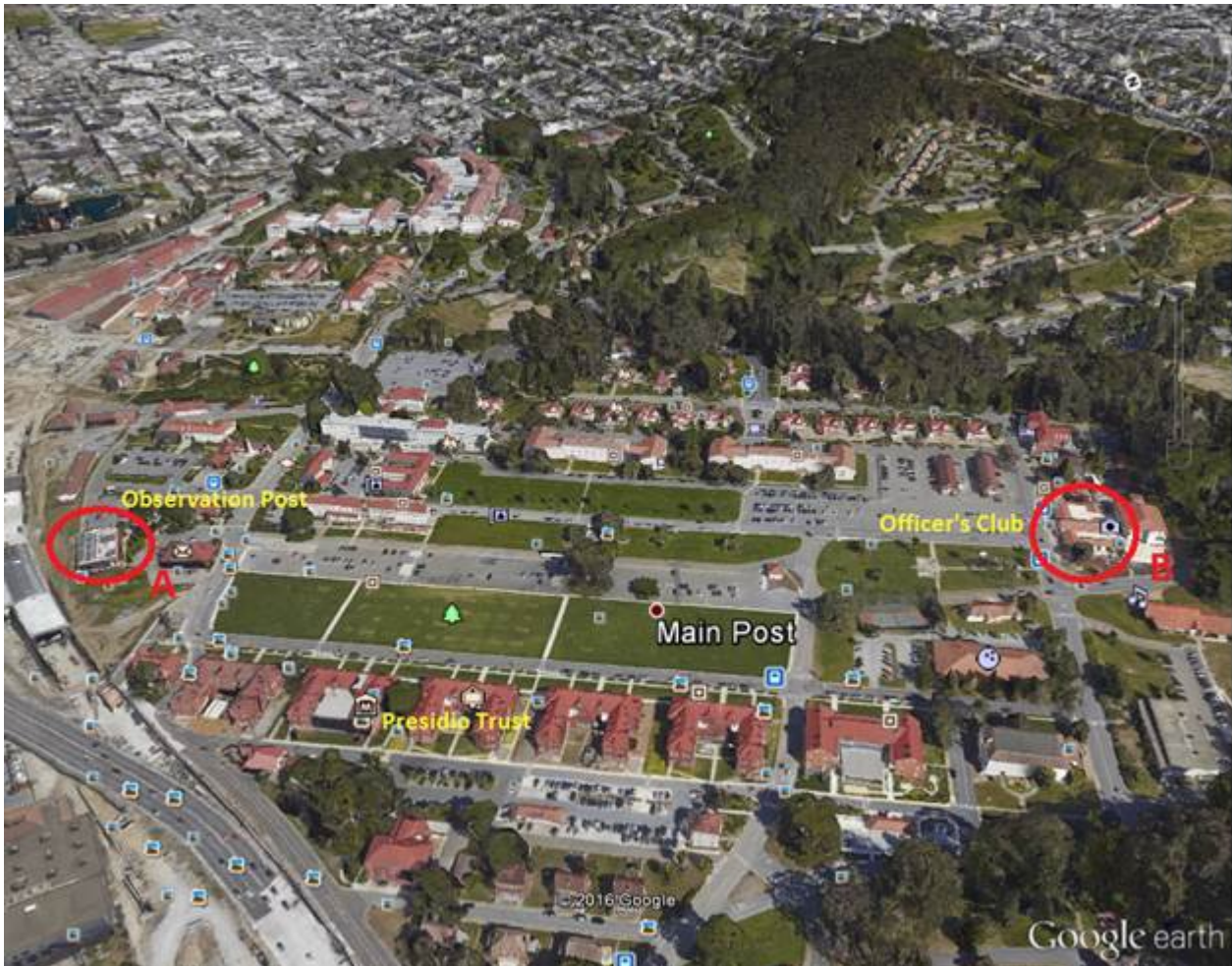
We are happy to announce that, starting in January 2017, we will be meeting at:

The San Francisco Presidio Officers' Club
50 Moraga Avenue, San Francisco, CA 94129

The SFAA meetings will take place in Moraga Hall, which is just inside the main entrance.

(As you may or may not know, the building where we have been meeting is scheduled to be demolished)

The image below illustrates the location of the Presidio Officers' Club relative to our prior location at the Observation Post.



02.

*****NOTE: NO SFAA LECTURE IN JANUARY 2017*****

Just a reminder that there is NOT a lecture in January. SFAA is looking forward to our first presentation of 2017 in February at our new meeting location at The Presidio Officers' Club. We'll see you there!

**FEBRUARY 21ST LECTURE | BRIAN KRUSE,
ASTRONOMICAL SOCIETY
OF THE PACIFIC (ASP) &
BOARD MEMBER, SFAA**

THE PRESIDIO . PRESIDIO OFFICERS' CLUB, BUILDING 50 . MORAGA HALL

50 Moraga Avenue, San Francisco

7:00 pm Doors Open | 7:30 pm Light Refreshments | 7:45 pm Announcements | 8:00 pm Speaker

SFAA'S GENERAL MEETINGS OCCUR ON THE 3RD TUESDAY OF EACH MONTH (EXCEPT JANUARY)

“MARS AND THE HUMAN IMAGINATION”



BRIAN KRUSE, ASTRONOMICAL SOCIETY OF THE PACIFIC (ASP) & BOARD MEMBER, SFAA

Mars has long been an object of intense interest in ancient and modern myths. Its ruddy glow inspiring visions of conflict and war, and its surface markings creating a whole genre of popular (mis)representations of Mars as the abode of life in a variety of forms. In this presentation, discover how popular culture has represented, and misrepresented Mars while sparking a special interest most all have in what is actually taking place on the planet most similar to earth in our solar system. NASA missions have returned a plethora of images and information about what Mars is really like. Find out the latest about what is known about the red planet, and what still remains for investigation and discovery on future missions.

03.

UPCOMING SFAA LECTURES 2017

THE PRESIDIO . PRESIDIO OFFICERS' CLUB, BUILDING 50 . MORAGA HALL

50 Moraga Avenue, San Francisco

7:00 pm Doors Open | 7:30 pm Light Refreshments | 7:45 pm Announcements | 8:00 pm Speaker

SFAA'S GENERAL MEETINGS OCCUR ON THE 3RD TUESDAY OF EACH MONTH (EXCEPT JANUARY)

MARCH 21ST | ALAN AGRAWAL, AMATEUR ASTRONOMER AND HISTORIAN

"GALILEO'S TELESCOPES AND OBSERVATIONS - THE GREAT INFLECTION POINT IN THE HISTORY OF SCIENCE"



In 1609 Galileo Galilei significantly improved the optical performance of the telescope and began a series of celestial observations that dramatically changed our understanding of the universe and our place in it. He developed a new method for reliably comprehending phenomena in the world around us, and so correctly has been called the father of modern science. This talk will lay out the key developments in the history of science related to astronomy preceding Galileo, describe in detail what is known about the optics and construction of his telescopes, and then discuss his observations and how they radically changed the science of astronomy.

Alan Agrawal is a physician who specializes in the treatment of autoimmune diseases in the field of rheumatology. He is also an avid amateur astronomer and independent historian on the development of the telescope. He designs and builds telescopes and eyepieces, enjoys deep sky observing with his 0.6 meter telescope, is interested in the testing of optics and currently in the process of building an interferometer. He is an active member of the Antique Telescope Society and the Mount Diablo Astronomical Society, and just recently joined the SFAA. He has given previous talks on Galileo's telescopes, the history of star charts, and the life and work of Joseph von Fraunhofer.

Photo credit: Portrait of Galileo Galilei by Giusto Sustermans

04.

**** SPECIAL PRESENTATION PRIOR TO MARCH 21 LECTURE ****

MARCH 21 AT 7:00PM

**PHOTOGRAPHER BETH MOON REVISITS THE WORLD'S OLDEST TREES IN THE DARKEST PLACES ON EARTH, USING COLOR PHOTOGRAPHY TO CAPTURE VIBRANT NIGHTTIME SKIES
"ANCIENT SKIES, ANCIENT TREES"**



It is only in the rarest and clearest of nights that we can look up at the sky to find a sprinkling of twinkling stars. Surrounded by the bright lights of humanity, the infinite majesty of the cosmos can only be truly enjoyed by those devoted enough to seek it. Critically acclaimed photographer Beth Moon's own appreciation of the dazzling array of stars that shine above us began with her fourteen-year quest, spanning from continent to continent, to record the lives of some of the oldest trees in the world. Her devotion to photographing these ancient, living relics—the subject of her debut bestseller **Ancient Trees: Portraits of Time**—led her to some of the darkest corners of world, where constellations and nebulas shine more brightly, far from the obscuring lights of civilization. Moon's much awaited sequel **Ancient Skies, Ancient Trees** (October 2016, Hardcover) captures the boundless beauty of trees under the night sky, seemingly undisturbed by humans.

A collection of over 50 full-color prints, only achieved through Moon's relentless dedication, undeterred by knee-high mud, windstorms, and distance, **Ancient Skies, Ancient Trees** reveals the rich hues of the night that are often too faint to be seen by the naked eye. Accompanying Moon's introduction, which chronicles her search for the trees documented in this book, are essays by Jana Grcevich, a postdoctoral fellow of astrophysics at the American Museum of Natural History, and Clark Strand, the author of **Waking Up to the Dark: Ancient Wisdom for a Sleepless Night**. In a world where our night skies are becoming increasingly brighter, Grcevich's illuminating text speaks to the uniqueness behind the brilliant impressions of the cosmos reflected in Moon's photography, while Clark Strand's essay ruminates on another natural wonder placed at risk by growing cities and populations—our rare and sacred ancient trees.

A look into some of the most remote locations around the world, **Ancient Skies, Ancient Trees** is an adventure into the wild, wrapped in the elegant binding of your new favorite coffee table book. The ideal purchase for any lover of nature and photography, Beth Moon's photography collection is guaranteed take you on a journey.

Books will be available for sale at the lecture. The SFAA will not receive any of the proceeds from the sales.

05.

SFAA PRESIDENT'S NOTE | A HEALTHY AND ASTRONOMY-KNOWLEDGE-ENHANCING 2017 TO ALL SFAA MEMBERS!

I am very excited about our upcoming lecture series to be held at the Officers' Club in the Presidio. We will miss the (very well named) Observation Post, which has been our home for the past several years, but look forward to great events in the Officer's Club.

In that vein we will offer a "double header" at our 21 March meeting / lecture. Up first beginning at 7:00 PM – and a first for the SFAA – will be a presentation, followed by a book signing, by Beth Moon. She will discuss her book "**Ancient Skies, Ancient Trees**" in which she photographed very old trees positioned against the night sky from around the world including Botswana, Namibia, Italy, Great Britain and the U.S. Beth will autograph copies of her book, which will be for sale by Book Passage. Members whose interest is in astrophotography will not want to miss this.

When we look up at the current night sky we see familiar Orion rising in the East. For those not familiar with this easy to find constellation, please see the following chart showing its outline. In the constellation Orion – the Hunter – you can see the outline of his shoulders, belt (3 bright stars in a near horizontal row) and sword hanging down from his belt. Orion's sword contains one of the easiest binocular objects to find, M 42, the Orion nebula. At a distance of 1,300 light years it really stands out, as it is 4th magnitude and a linear diameter of about 20 light years. This is a must see for those who have not yet taken those binoculars and dusted them off, putting them to good astronomical use.

Dark, clear and stable skies,

Michael Patrick
President, SFAA

SFAA Board Officers and Directors:

President	Michael Patrick	president@sfaa-astronomy.org
Vice President	Liz Triggs	vice-president@sfaa-astronomy.org
Treasurer	Michael Patrick	treasurer@sfaa-astronomy.org
Secretary	Anthony Barreiro	secretary@sfaa-astronomy.org
Directors:	PJ Cabrera, Anil Chopra, Brian Kruse, Matthew Jones, Jessica Miller, Scott Miller, Mina Reyes, Douglas Smith, Paul Salazar	

*** * * SFAA T-SHIRTS NOW AVAILABLE! * * ***

Many of you have asked when those handsome blue SFAA T-Shirts will be available for sale. We have a limited number available, so reserve yours now!

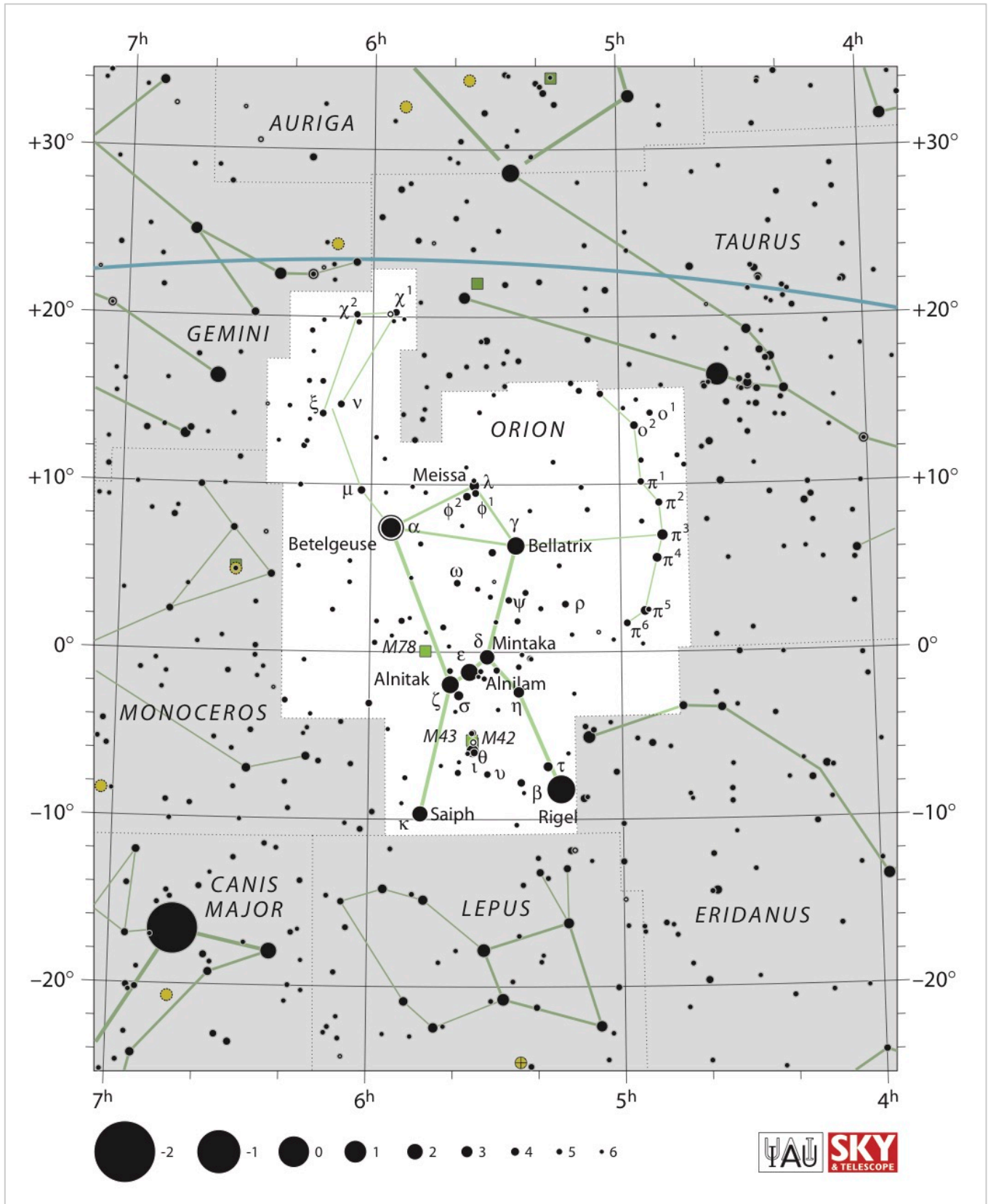
Prices:

\$10 for SFAA Members (membership must be current)

\$25 for non-Members

Shirts will be available for purchase and/or pick-up at the February 21st lecture at the Presidio Officers' Club. If you need to renew your membership or want to join as a new member, please submit the Membership Application, included as the final page of this newsletter, or from our web site, at: <http://www.sfaa-astronomy.org/membership/>

Constellation Chart: Orion the Hunter



06.



SFAA BOARD OF DIRECTORS ELECTION RESULTS

2017 SAN FRANCISCO AMATEUR ASTRONOMERS GENERAL ELECTION

The following members have been elected to serve as San Francisco Amateur Astronomers' Officers and Directors for calendar year 2017.

President
MICHAEL PATRICK

Vice President
LIZ TRIGGS

Treasurer
MICHAEL PATRICK

Secretary
ANTHONY BARREIRO

Directors
PJ Cabrera • Anil Chopra
Brian Kruse • Matthew Jones
Jessica Miller • Scott Miller
Mina Reyes • Douglas Smith

Alternate Director
Paul Salazar

The Officers and Directors are responsible for planning and coordinating club activities --including our meetings, star parties, school programs, telescope loan program, telescope making workshop, liaison with media and other community organizations, and other outreach and public education activities -- as well as the behind-the-scenes work involved in running a 501(c)3 nonprofit educational organization. More information about the duties of officers and directors can be found at <http://www.sfaa-astronomy.org/sfaa-bylaws/>

If you have any questions, feedback, requests, or suggestions -- or if you want to help out with club activities -- please contact the officers and board via <http://www.sfaa-astronomy.org/contact-us/> We look forward to hearing from you.

07.

THE URBAN ASTRONOMER BLOG: SEEING THE ANDROMEDA GALAXY | PAUL SALAZAR

While out under the night sky I frequently point out that everything we can see with the naked eye is located in our home galaxy, the Milky Way. The thousands of stars that shine in a dark night sky are, relatively speaking, local stars in our own galaxy. The Milky Way is vast, stretching 100,000 light years from end to end. To see anything beyond our own galaxy means we are seeing well past 100,000 light years.

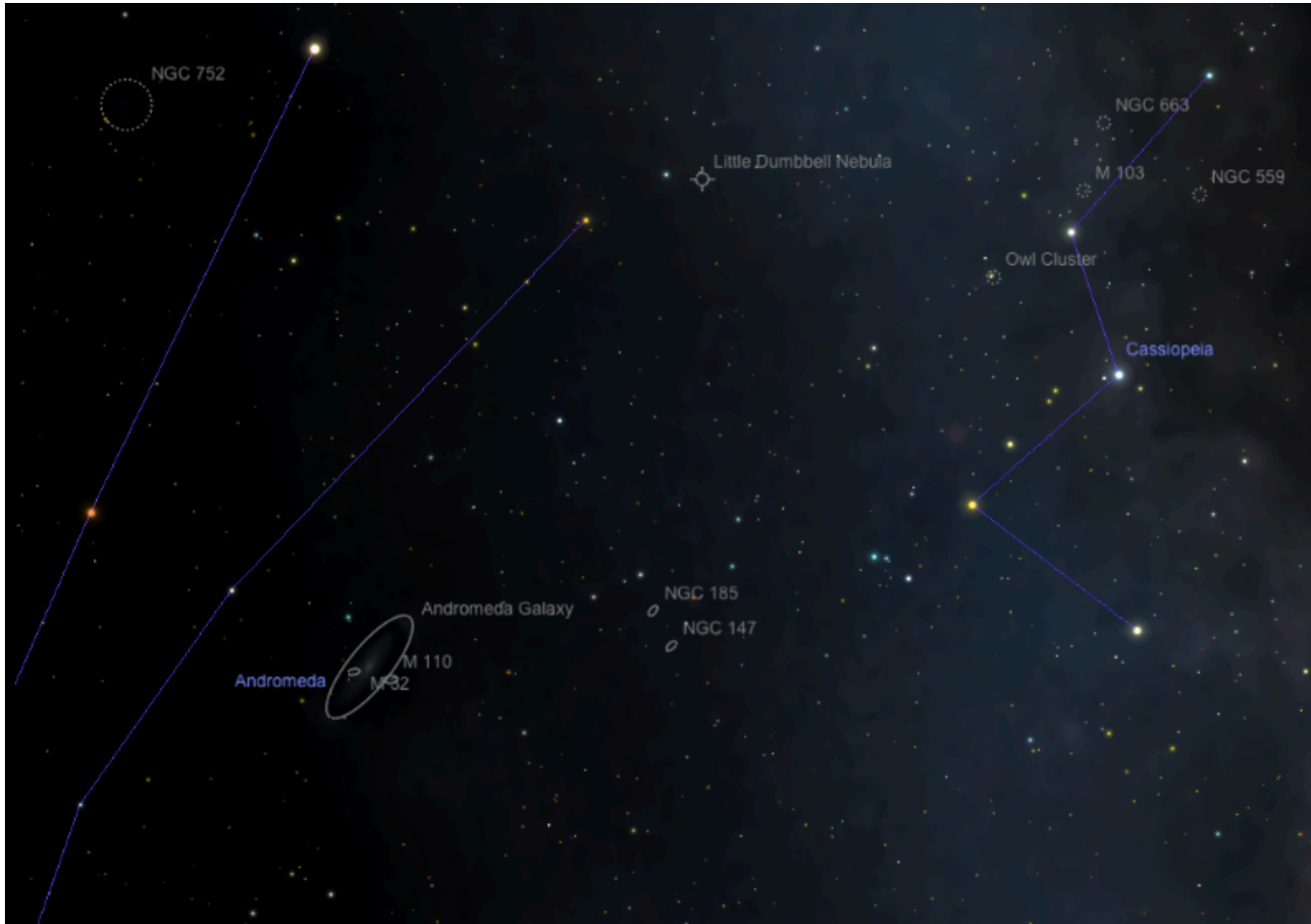
The Andromeda Galaxy is a neighboring galaxy in our 'Local Group' and is the nearest fully-formed galaxy. Despite its size (about 50% larger than our own Milky Way galaxy) and overall brightness, it is located 2.2 million light years away so it is an object that only under very good conditions can be glimpsed by the naked eye, but even then is challenging to spot and is best viewed with some magnification. My preference is to find Andromeda with binoculars and in the winter it is a good target because it is located directly overhead. With warm clothes and a comfortable blanket or pad, you can lie on your pack and look up with binoculars, and with some attention and focus you can see beyond our galaxy into Andromeda.



Pegasus and Cassiopeia

Image courtesy of Sky Safari

My way to find the galaxy is to look between on the Great Square of Pegasus and Cassiopeia, finding the galaxy in the space between the two. The first image (above) shows the overall proximity of the Andromeda constellation between Pegasus and Cassiopeia. The second image (below) shows a more close up view for pointing your binoculars. As you search this part of the sky under reasonably dark conditions you will be able to see the glow of Andromeda come into view in your binoculars.



The Andromeda Galaxy

Image courtesy of Sky Safari

Long-time SFAA Member, Paul Salazar is "The Urban Astronomer". In case you haven't met Paul, here is an excerpt from his blog profile: In 2005 I began writing a column for the San Francisco Waldorf School newsletter called "The Urban Astronomer." I started this blog in 2007 as a place to archive my articles and to offer additional insights on the night sky - even if you live in a big city. In 2008 I became an occasional guest on the KFOG Morning Show, and more recently on KALW and KGO. Archived shows are posted on the blog. Check out the blog at: <http://urbanastronomer.blogspot.de>

08.

ASTRONOMY EVENTS

SAN FRANCISCO AMATEUR ASTRONOMERS EVENTS JANUARY 1, 2017 – MARCH 31, 2017

Saturday January 14, 6:00 pm
City Star Party, Point Lobos, San Francisco, CA

Saturday January 28, 5:30 pm
Mt. Tam Members Night

Saturday February 11, 6:00 pm
City Star Party, Presidio Parade Grounds

Tuesday February 21, 7:00 pm – 9:30 pm
Meeting and Lecture, Presidio Officers' Club

Saturday February 25, 6:00 pm
Mt. Tam Members Night

Saturday March 11, 6:30 pm
City Star Party, Point Lobos, San Francisco, CA

Tuesday March 21, 7:00 pm – 7:45 pm
"Ancient Skies, Ancient Trees" (see Section 4)
Special Presentation Prior to Lecture and Book Signing, Presidio Officers' Club

Tuesday March 21, 7:45 pm – 9:30 pm
Meeting and Lecture, Presidio Officers' Club

Saturday, March 25, 6:00 pm
Mt. Tam Members-only Observing Night: Messier Marathon

Details: <http://www.sfaa-astronomy.org>



BAY AREA ASTRONOMY EVENTS

Each month, long-time SFAA member Kenneth Lum assembles and sends out a list of Bay Area Astronomy events. As each month unfolds, check the following link for information regarding additional events:

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

09.

SFAA EXPEDITION 2017

TOTAL SOLAR ECLIPSE

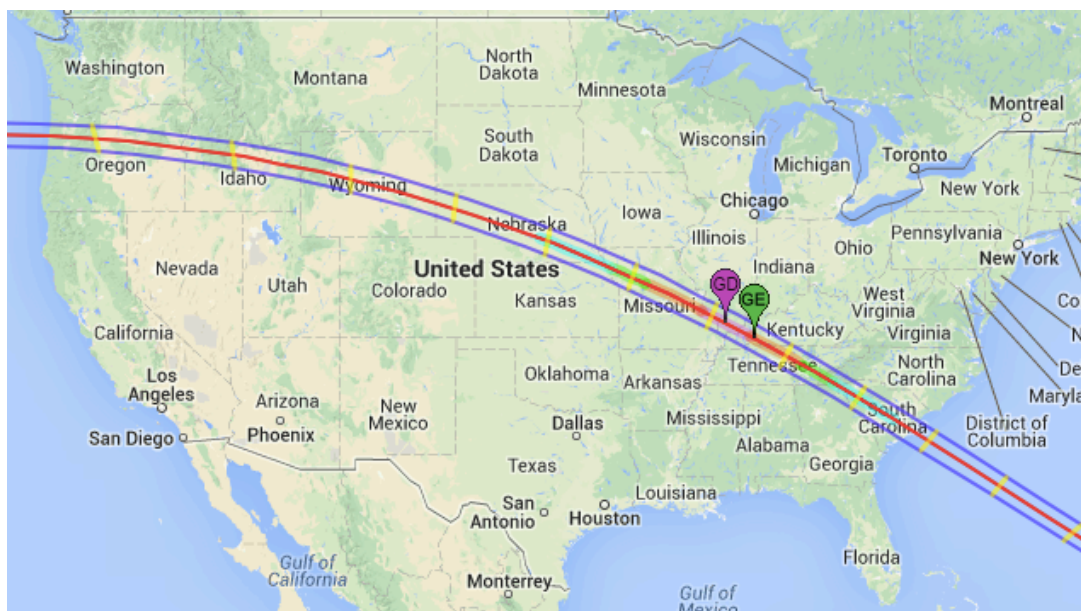
August 21, 2017

Jackson Hole, Wyoming (Teton Mountains)

The San Francisco Amateur Astronomers is organizing an expedition to witness the August 21, 2017 Total Solar Eclipse. The eclipse will be visible across a broad swath of the USA, and club members will gather near Jackson Hole, Wyoming, to witness this spectacle high in the Teton Mountains. The trip is an opportunity for club members to gather in one place along the path of totality and journey together up the mountains for viewing of this spectacular astronomical phenomenon.

Over the past year as we have promoted this event, hotel space in all of the Jackson Hole region has sold out. So at this point in time, we welcome SFAA members to join us for the weekend of August 19th and 20th at our location in Teton Village, and for totality on Monday August 21st. However, you will have to find hotel or camping accommodations elsewhere and drive in. If you wish to join us or just to get updates, send an email to 2017eclipse@sfaa-astronomy.org to receive periodic updates.

If you have any other questions, send to 2017eclipse@sfaa-astronomy.org.



10.

NASA JPL SCIENCE NEWS | December 29, 2016

NASA'S NEOWISE MISSION SPIES ONE COMET, MAYBE TWO



An artist's rendition of 2016 WF9 as it passes Jupiter's orbit inbound toward the sun.

JPL manages NEOWISE for NASA's Science Mission Directorate at the agency's headquarters in Washington. The Space Dynamics Laboratory in Logan, Utah, built the science instrument. Ball Aerospace & Technologies Corp. of Boulder, Colorado, built the spacecraft. Science operations and data processing take place at the Infrared Processing and Analysis Center at the California Institute of Technology in Pasadena. Caltech manages JPL for NASA.

NASA's NEOWISE mission has recently discovered some celestial objects traveling through our neighborhood, including one on the blurry line between asteroid and comet. Another--definitely a comet--might be seen with binoculars through next week.

An object called 2016 WF9 was detected by the NEOWISE project on Nov. 27, 2016. It's in an orbit that takes it on a scenic tour of our solar system. At its farthest distance from the sun, it approaches Jupiter's orbit. Over the course of 4.9 Earth-years, it travels inward, passing under the main asteroid belt and the orbit of Mars until it swings just inside Earth's own orbit. After that, it heads back toward the outer solar system. Objects in these types of orbits have multiple possible origins; it might once have been a comet, or it could have strayed from a population of dark objects in the main asteroid belt.

2016 WF9 will approach Earth's orbit on Feb. 25, 2017. At a distance of nearly 32 million miles (51 million kilometers) from Earth, this pass will not bring it particularly close. The trajectory of 2016 WF9 is well understood, and the object is not a threat to Earth for the foreseeable future.

A different object, discovered by NEOWISE a month earlier, is more clearly a comet, releasing dust as it nears the sun. This comet, C/2016 U1 NEOWISE, "has a good chance of becoming visible through a good pair of binoculars, although we can't be sure because a comet's brightness is notoriously unpredictable," said Paul Chodas, manager of NASA's Center for Near-Earth Object (NEO) Studies at the Jet Propulsion Laboratory in Pasadena, California.

As seen from the northern hemisphere during the first week of 2017, comet C/2016 U1 NEOWISE will be in the southeastern sky shortly before dawn. It is moving farther south each day and it will reach its closest point to the sun, inside the orbit of Mercury, on Jan. 14, before heading back out to the outer reaches of the solar system for an orbit lasting thousands of years. While it will be visible to skywatchers at Earth, it is not considered a threat to our planet either.

NEOWISE is the asteroid-and-comet-hunting portion of the Wide-Field Infrared Survey Explorer (WISE) mission. After discovering more than 34,000 asteroids during its original mission, NEOWISE was brought out of hibernation in December of 2013 to find and learn more about asteroids and comets that could pose an impact hazard to Earth. If 2016 WF9 turns out to be a comet, it would be the 10th discovered since reactivation. If it turns out to be an asteroid, it would be the 100th discovered since reactivation.

What NEOWISE scientists do know is that 2016 WF9 is relatively large: roughly 0.3 to 0.6 mile (0.5 to 1 kilometer) across.

It is also rather dark, reflecting only a few percent of the light that falls on its surface. This body resembles a comet in its reflectivity and orbit, but appears to lack the characteristic dust and gas cloud that defines a comet.

"2016 WF9 could have cometary origins," said Deputy Principal Investigator James "Gerbs" Bauer at JPL. "This object illustrates that the boundary between asteroids and comets is a blurry one; perhaps over time this object has lost the majority of the volatiles that linger on or just under its surface."

Near-Earth objects (NEOs) absorb most of the light that falls on them and re-emit that energy at infrared wavelengths. This enables NEOWISE's infrared detectors to study both dark and light-colored NEOs with nearly equal clarity and sensitivity.

"These are quite dark objects," said NEOWISE team member Joseph Masiero, "Think of new asphalt on streets; these objects would look like charcoal, or in some cases are even darker than that."

NEOWISE data have been used to measure the size of each near-Earth object it observes. Thirty-one asteroids that NEOWISE has discovered pass within about 20 lunar distances from Earth's orbit, and 19 are more than 460 feet (140 meters) in size but reflect less than 10 percent of the sunlight that falls on them.

The Wide-field Infrared Survey Explorer (WISE) has completed its seventh year in space after being launched on Dec. 14, 2009.

Data from the NEOWISE mission are available on a website for the public and scientific community to use. A guide to the NEOWISE data release, data access instructions and supporting documentation are available at:

<http://wise2.ipac.caltech.edu/docs/release/neowise/>

Access to the NEOWISE data products is available via the on-line and API services of the NASA/IPAC Infrared Science Archive.

A list of peer-reviewed papers using the NEOWISE data is available at:

<http://neowise.ipac.caltech.edu/publications.html>

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San Francisco Amateur Astronomers Application for New or Renewing Membership

1. Memberships, with dues payment, are for one year running from standard renewal dates of 1 July to 30 June and 1 January to 31 December.
2. Submitting appropriate dues in April, May, June, July, August, September, 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

*SFAA is a 501(c)(3) nonprofit organization. Membership dues are tax-deductible as allowed by law.

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.