

# OBSERVER



## BLOODY BEAUTIFUL!!!

### LUNAR ECLIPSE SEQUENCE OF APRIL 15, 2014

During mid eclipse, with the moon quite dim, many stars can be seen and photographed near the moon. In this view, stars a bit fainter than magnitude 15 were recorded. Stars that faint can be seen visually in telescopes with at least eight inches (20 cm) aperture. Added to the mid eclipse image are other views of the moon during the eclipse. The moon images in partial eclipse, flanking the copper-colored mid-eclipse, nicely demonstrate the round shadow of the Earth, proving the Earth is round.

The bright blue star at lower right is Spica,  $\alpha$  (alpha) Virgo. Celestial north is up in this image (at about the 11:30 position on an analog clock). See [clarkvision.com](http://clarkvision.com) for technical details.

Image © Roger Clark

### Calendar

6.....	First quarter moon
14.....	Full moon
21.....	Last quarter moon
24.....	New meteor shower?
25.....	Venus 2° South of moon
29.....	New moon

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## MAY SKIES

by Dennis Cochran

**S**ky & Tel's annual "Skywatch" issue points out that in May, Mars, Arcturus and Vega make a huge arc across the sky. Because of the meanderings of **Mars**, this is not a constant, expected feature of the May sky. Mars is already high in the southeast in the evening. Right above the Red Planet is the **Virgo Galaxy Cluster** cradled in Virgo's raised arm and topped off, as it were, with the perfect corner shape of Coma Berenices, Bernice's Hair.

The big arc occupies the eastern half of the evening sky. If you have a *Peterson's Field Guide to the Stars and Planets*, look at Chart 27A for details of the Virgo galaxy cluster. It is interesting to ponder the huge assemblage one sees in such a cluster. We have mentioned star clusters in various parts of the sky, but these are just the furniture of a single galaxy, the Milky Way, because the sky we look at is a spiral galaxy seen from

the inside. In between these local details, we can peek out at a whole cluster of such galaxies, the Virgo Cluster. It is mind-boggling to think that each member of the cluster is an entire island universe, as we used to call our galaxy. The hierarchy of the heavens is on display—from far-away galaxies to relatively nearby stars, to one planet, Mars, part of the family of our solar system—all in this one section of sky.

Pointing like a prod into the west end of the Virgo Cluster is the star **Denebola**, the tail-end of **Leo** the Lion. On the east side of the Virgo Cluster is the gap between  $\epsilon$  (epsilon) Virgo, the end of Virgo's arm, and  $\alpha$  (alpha) Com, beyond which waits Arcturus at the bottom of **Boötes** the Herdsman, an elongated kite shape. **Arcturus** is the fourth brightest star in the sky and is described as a cool, red giant. Up the left side of

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# PRESIDENT'S MESSAGE

by Ron Hranac

The Denver Astronomical Society is first and foremost a volunteer organization. Members volunteer for public outreach events such as our monthly open houses and twice-weekly public nights at DU's historic Chamberlin Observatory; Space Day and Colorado Astronomy Day at the Denver Museum of Nature and Science; and star parties and lectures at schools and other community venues. Members volunteer for leadership positions in DAS, serving on the E-Board or in various support roles. Some are busy behind the scenes managing the "plumbing" of the organization—our web site, the Yahoo list-serves, our presence on social media, fixing the occasional on-the-fritz laptop and the monthly newsletter.

There's no question that the backbone of the DAS is its volunteers. Over the decades, hundreds of members have devoted countless thousands of hours to the cause of bringing astronomy to the public. Each year we recognize volunteers who go the extra mile at various DAS activities and events.

During our March 15th spring banquet, E-Board member Chuck Habenicht presented Night Sky Network certificates of appreciation and pins to some 44 folks who volunteered time in at least five DAS outreach events during the prior year. Chuck admits that there are likely others who qualified for this recognition and were inadvertently left off the list. If you volunteer at DAS events, please keep track of the events and the time you spend doing outreach, and let Chuck know so we don't miss someone deserving of a big thanks.

The spring banquet also provided an opportunity to present engraved plaques to outgoing E-Board members Johnny Barela and Scott Leach. Outgoing E-Board member and Treasurer Brad Gilman received a nice engraved clock (Brad served as Treasurer for nine years!). This year we introduced a new and very special recognition, the Bill Ormsby Memorial Volunteer Award. The engraved crystal and marble award is the brainchild of DAS Secretary Dena McClung, and was presented to a very deserving Darrell Dodge. Here's the introduction to the presentation of the new award that I read aloud at the banquet:



DAS President Ron Hranac during Solar Day at the Denver Museum of Nature & Science.

Photo courtesy: Jeff Tropeano



## DAS SCHEDULE

### MAY

- 3 Open House (Begins at 8:30 P.M.)  
*Jupiter, Saturn, Mars!*
- 9 DAS General Membership Meeting at Olin Hall (Begins at 7:30 P.M.).  
Speaker: Dr. Frank Eparvier, L.A.S.P. at C.U.—*"Our Dynamic Sun: Space Weather and Our Vulnerability to It."*
- 10 Space Day
- 11 Mothers Day
- 16 E-Board Meeting at Chamberlin (Begins at 7:30 P.M.),
- 30-1 EGK Dark Sky weekend

### JUNE

- 7 Open House (Begins at 8:30 P.M.)  
*Jupiter, Saturn, Mars!*
- 13 DAS General Membership Meeting at Olin Hall (Begins at 7:30 P.M.).  
Speaker: A visit from Software Bisque
- 20 E-Board Meeting at Chamberlin (Begins at 7:30 P.M.),
- 27-29 EGK Dark Sky weekend

*Open House costs: If the skies are clear, \$2 per person (\$5/family), and \$1 per person in the event of inclement weather.*

*Public nights are held at Chamberlin Observatory every Tuesday and Thursday evenings beginning at the following times:*

*March 10 - September 30 at 8:30 P.M.*

*October 1 - March 9 at 7:30 P.M.*

*Costs to non-members are: \$3.00 adults, \$2.00 children and students with ID.*

*Please make reservations via our website ([www.denverastro.org](http://www.denverastro.org)) or call (303) 871-5172.*

### Society Directory

**President:**  
Ron Hranac 303-790-0893  
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### Executive Board Members

Jack Eastman Ed Scholes  
Joe Gafford Sorin  
Chuck Habenicht Jeff Tropeano  
Digby Kirby Dan Wray

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Chamberlin Observatory c/o Ron Hranac  
2930 East Warren Avenue  
Denver, Colorado 80210

*The Executive Board conducts the business of the DAS at 7:30 p.m. at Chamberlin Observatory. Please see the Schedule of Events for meeting dates. All members are welcome.*

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

# MAY SKIES

(CONTINUED FROM PAGE 1)

the kite from Arcturus is **ε (epsilon) Boo**, a green and orange double star. Down-left from Arcturus is **ζ (zeta) Boo**, a double of same-sized white stars.

The hair in **Coma Berenices** is the star cluster **Melotte 111** at 12<sup>h</sup> 20<sup>m</sup> +27°, at the western end of the corner shape just under γ (gamma) Com. In between Melotte 111 and the corner of Coma Berenices is the North Galactic Pole at about 12<sup>h</sup> 56<sup>m</sup> +26°, with a few NGC galaxies west and south of it.

Above β (beta) Com is **Canes Venatici**, two stars that represent hunting dogs. Just northeast of the line between them is **M94**, a spiral galaxy at 12<sup>h</sup> 51<sup>m</sup> +41°. If one continues about 10-12 degrees northeast from the CVn line, one arrives at a small group of galaxies that includes **M51**, the oft-imaged Whirlpool Galaxy and its maybe companion (or fly-by buddy NGC 5195). This is more often found by going southwest down from the end of the Big Dipper's handle. If one searches east of the Com corner about six degrees to 13<sup>h</sup> 40<sup>m</sup> +28° one will find the large globular cluster **M3**. More globular clusters are down at the Alpha end of the down-hanging side of the Coma Berenices corner: **M53 and NGC 5053**, near 13<sup>h</sup> 10<sup>m</sup> +18°.

The largest spiral galaxy of the Virgo Cluster is **M100** (12<sup>h</sup> 23<sup>m</sup> +16°). Nearby spirals are **M98** (12<sup>h</sup> 13<sup>m</sup> +15°) and **M99** (12<sup>h</sup> 19<sup>m</sup> +14°) near the northwest corner of the swarm. The three big elliptical galaxies, football-shaped and with no disk, at the center of the Virgo Cluster are **M84, M86 and M87** in the region whose center is about 12<sup>h</sup> 28<sup>m</sup> +13°. Another elliptical, **M49**, is at 12<sup>h</sup> 30<sup>m</sup> +8° and the face-on spiral **M61** is at 12<sup>h</sup> 23<sup>m</sup> +4.5°. This region is a busy and beautiful chunk of sky! And then **Saturn** rises.

Not too shabby of a month for observing. ★



**M 101**

Messier 101 (NGC 5457) was discovered by Pierre Méchain on March 27, 1781. Included as No. 26 in his *Catalogue of Peculiar Galaxies*, Halton Arp described it as a "Spiral with One Heavy Arm." It's about 24 +/-2 million light years away. Kyle imaged this in Sedalia, CO, on March 28th, 2014. See him for technical specs.

Image © Kyle Williams



### WELCOME NEW DAS MEMBERS!

- |                   |                    |
|-------------------|--------------------|
| Julie Blackstone  | Ayla Higgins       |
| Rolland Brown     | Daniel Holmes      |
| Chris Campbell    | Richard Osborn     |
| Julia Eddy        | Kelly Schermerhorn |
| Paul Freeman      | David Silbaugh     |
| Christopher Glass | Richard Van Hess   |

### ECLIPSED

Russ and other DAS members captured numerous phases of the total lunar eclipse last month, See page 7 for more beautiful images.

Image © Russell Anderson

## ABOUT THE DAS

Membership in the Denver Astronomical Society is open to anyone wishing to join. The DAS provides trained volunteers who host educational and public outreach events at the **University of Denver's Historic Chamberlin Observatory**, which the DAS helped place on the National Register of Historic

Places. First light at Chamberlin in 1894 was a public night of viewing, a tradition the DAS has helped maintain since its founding in 1952.

The DAS is a long-time member in good standing of the **Astronomical League** and the **International Dark Sky Association**. The DAS's mission is to provide its members a forum for increasing and sharing their knowledge of astronomy, to promote astronomical education to the public, and to preserve Historic

Chamberlin Observatory and its telescope in cooperation with the University of Denver.

The DAS is 501 (c)(3) tax-exempt corporation and has established three tax-deductible funds: the Van Nattan-Hansen Scholarship Fund, the DAS-General Fund and the Edmund G. Kline Dark Site Fund.

More information about DAS activities and membership benefits is available on the DAS website at [www.denverastro.org](http://www.denverastro.org) ★



# MEET YOUR FELLOW ASTRONOMER

by Dena McClung

The DAS presented this month's featured member, Darrell Dodge, with the inaugural Bill Ormsby Memorial Volunteer Award at the spring banquet in March. Since joining the DAS in 2002, Darrell has volunteered an extraordinary amount of time to the club in a wide range of service. He is the chairperson of the Dark Sky Site committee and routinely performs some of the maintenance there; he is the DAS webmaster; he frequently volunteers at Public Nights and Open Houses; he has served as vice president, secretary and as a board member; he is a regular contributor of astrophotography and book reviews to *The Observer*. There are many other ways in which he has served, too many to mention here.

Darrell, the only boy in his family with four younger sisters, grew up in rural Western New York. He was fascinated by an astronomy book owned by his father (who served as navigator on a B-24 Liberator). He recalls that it provided information he would never learn in school, such as "How much would a teaspoon of material from a white dwarf star weigh?" An optional school project for which he created a picture book about the planets and the solar system furthered his interest even more.

When the family moved to the unpolluted nighttime darkness of North Boston, NY, Darrell began spending many late nights alone walking in the mountains under the stars. Since he only had access to a largely useless telescope, he had to settle for naked-eye stargazing.

Darrell was living in Washington, DC when Comet Kahoutek made its appearance in 1977, but his attempts to spot it were thwarted by light pollution and cloudy, grey skies. When he saw the movie "The Gathering," a few years later, he realized that, like the main character, he too loved observing the stars but didn't know many of their names. While waiting to receive an 8-inch Meade Newtonian from

the Boulder Star-Tracker, he learned the constellations and bright star names with binoculars and a planisphere. He used the Meade virtually every night possible for more than a year from his home near the Boulder Open Space. He logged all the Messier objects and a spectacular conjunction of Jupiter and Saturn, among many other things. He wanted to do astrometry, but his clunky telescope mount could not be guided.

Darrell began bicycle racing and found that his astronomy hobby had to suffer since being up all night was not conducive to his strenuous training regimen. However, even while living in light-polluted Lakewood, he was able to see the spectacular comet Hale-Bopp in 1997, and his interest was re-kindled.

Darrell was employed by the National Renewable Energy Lab in a variety of positions related to wind energy research, eventually becoming the program leader. With renewable energy receiving more focus, the nature of the program changed and Darrell decided to take an opportunity of a voluntary retirement and begin a new venture.



Ron Hranac (right) presents the Bill Ormsby Memorial Volunteer Award to Darrell at the Annual Banquet.

Photo courtesy: Digby Kirby

Darrell had recently received therapy for his stuttering and decided to go to graduate school at the University of Colorado to become a speech clinician after enjoying his role as facilitator for a local support group and developing an understanding of the role that subconscious brain activity plays in developmental stuttering and recovery of fluency. He now operates a speech clinic in Greenwood Village, providing therapy for clients who are stuttering or cluttering (another type of fluency disorder). Darrell also produces and sells four types of astronomy observing logs (available at [astrologs.com](http://astrologs.com)), which are in use by

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## PRESIDENT'S MESSAGE

"Thanks so much to those of you who commit your time to the Denver Astronomical Society. Without each of you, the DAS would not be what it is today. Some of you are relatively new but are already making a difference. Others have been around for a very long time and have become pillars of support. And yet another entire group of people, having passed on, made significant contributions before leaving DAS and the planet behind.

"One of those who left us a little over a year ago was a virtual fixture at open houses and other DAS events. Bill Ormsby served in many ways over the years, but many members and guests remember him more recently as the 'Minder of the Chain' at the bottom of the Chamberlin stairway. Good weather or bad, cloudy or clear, Bill faithfully regulated the number of guests admitted to the dome room during open houses, month after month, year after year, for as long as some of us can remember.

"We have decided to honor Bill by creating and presenting the Bill Ormsby Memorial Volunteer Award to a DAS member who has done some incredibly heavy lifting for the organization.

"The person we are recognizing tonight is well-known to most, if not all of you. As soon as I read through this list of accomplishments, you'll likely

(CONTINUED FROM PAGE 2)

figure out fairly quickly who it is. This person volunteers at public nights and open houses; does astrophotography for *The Denver Observer*; promotes DAS events in a variety of venues; writes content for various communications; has served on the E-Board and as an officer; took care of database maintenance; and does dark site development and maintenance including wrangling rattlesnakes; is our webmaster, and recently sorted out the web site's domain registration; generates those Constant Contact messages that keep us informed about the Society's activities; is our ALCOR/Astronomical League correspondent; publishes the roster; has hosted banquets at his church; set up PayPal for memberships, renewals, and events such as tonight's banquet; and so much more."

A very sincere thanks to Darrell and all of our other volunteers for your hard work supporting DAS! We plan to continue the tradition of recognizing DAS volunteers going forward. It's the least we can do as an organization to say "a tip o' the hat for a job well done." ★

# ASTRONOMY OUTREACH AT COMIC AND SCI-FI CONVENTIONS

by Sorin

I've been attending comic and sci-fi conventions for a few years, actually since before I got deep into astronomy. It occurred to me last year (2013) at the *Emerald City Comicon* that there would be a large overlap of the convention attendees that would be interested in astronomy. NASA actually had a large booth setup at that event, which really got me thinking about this.

On the weekend of March 28-30, I was able to test out the idea. I'm a member of the Denver Astronomical Society now, and took the lead to get us a table at *AnomalyCon* (a Steampunk, Doctor Who convention). It's a smaller convention, about 400-500 attendees over three days. In short, this turned out to be very successful outreach event where we gave around 130-150 people a look through a telescope or solar scope.

I was joined by fellow DAS members Karen Tabo and her daughter Elpheg Israel, Isaac Fluss and Dena McClung. The convention set us up with a table in the artists area that gave us good foot traffic. We decided to setup telescopes Friday evening with the good weather. This was not on the convention schedule, but we had about 50 people including some of the convention and hotel

staff come out for telescope viewing that night. We were able to find a section of the parking lot that was reasonable for setting up the scopes and getting good views of Jupiter, Orion, and Mars as it rose later in the evening.

Isaac also setup his scope with a solar filter during the day on Saturday for about three hours and gave about 40 people a look at some of the sunspots. Saturday night when we were on the schedule for stargazing was unfortunately clouded out, and people were asking about this both at our table and of the convention organizers, so there was clear interest. Sunday Isaac brought out his scope with solar filter again and counted 43 viewers in about two hours before the skies clouded over.

I also conducted a panel presentation titled "Wild and Wonderful Facets of the Universe" where we had about 15 attendees for this despite the fact that it overlapped with the costume contest, which was the premiere event of the evening.

Overall, we had a very positive reception at the convention. We handed out a total of about 140 club flyers and encouraged many folks to come visit our regular public night events. We also had organizers from two other conventions approach us about offering observing opportunities at their events.

I haven't heard about other astronomy clubs pursuing this opportunity with Comic Cons and Sci-Fi Cons, and it's a great missed opportunity to reach a wonderfully curious, imaginative, and fun group of people!

Our next convention will be StarFest (<http://starfestdenver.com>), May 2-4! The DAS will again be setup with a table, and we will be bringing out telescopes both Friday and Saturday evening. I'm also scheduled to present a panel on Saturday May 3rd at 10 A.M. If you're interested in participating at the table or setting up a telescope, please e-mail [realSORIN@gmail.com](mailto:realSORIN@gmail.com).

A version of this article was also published on: <http://soggyastronomer.com>. ★



The DAS table at the AnomalyCon event.

Photo courtesy: Sorin



In full Dr. Who regalia, Sorin presents his talk at the AnomalyCon event.

Photo courtesy: Libby Clarke

## MEET YOUR FELLOW ASTRONOMER

people all around the world, and designs, builds, and maintains several websites.

Darrell graduated, started his clinic and joined the DAS in close succession. He bought a small telescope and realized the importance of aperture when he and his significant other, Loraine, visited Lowell Observatory and couldn't see the Leo Trio in dark Flagstaff, Arizona skies. He took his new 9.25-inch SCT to the dark sky site, receiving a warm welcome from Larry Brooks and others, in 2002. He was amazed to observe more objects in one night than he had over several years. He developed his own system for star-hopping and optimizing the efficiency of his viewing sessions. During a stargazing trip with Loraine to

Kartchner Caverns State Park near Tucson, he showed the late winter Messier objects to a woman who had never looked through a telescope. She later wrote to tell him that the experience had changed her entire perception of the universe, and how dramatically it had altered the course of her life.

Darrell decided that he needed to learn how to talk about astronomy, and acquire some specific skills, before volunteering with the public. He completed the Astronomical League's Master Observer Program, selecting the most challenging observing programs he could find. He has participated in a variety of outreach programs at area schools and was

a Colorado Astronomy Day coordinator for several years.

Darrell began doing astro-photography in 2010, using a DSLR to obtain the images that frequently grace these pages. He is getting ready to transition to an astronomy camera.

For Darrell, the most rewarding thing about being a DAS member is the fulfillment of a need to be involved in astronomy, and his opportunity to interact with and help people. While he enjoys working with others, his greatest joy in astronomy is spending all night with his telescope, camera, and the universe.

By the way, that teaspoon of white dwarf material would weigh just less than 15 tons. ★

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## NASA'S Space Place

## THE POWER OF THE SUN'S ENGINES

by Dr. Ethan Siegel

A Space Place Partners' article

Here on Earth, the sun provides us with the vast majority of our energy, striking the top of the atmosphere with up to 1,000 watts of power per square meter, albeit highly dependent on the sunlight's angle-of-incidence. But remember that the sun is a whopping 150 million kilometers away, and sends an equal amount of radiation in all directions; the Earth-facing direction is nothing special. Even considering sunspots, solar flares, and long-and-short term variations in solar irradiance, the sun's energy output is always constant to about one-part-in-1,000. All told, our parent star consistently outputs an estimated  $4 \times 10^{26}$  watts of power; one *second* of the sun's emissions could power all the world's energy needs for over 700,000 years.

That's a literally astronomical amount of energy, and it comes about thanks to the hugeness of the sun. With a radius of 700,000 kilometers, it would take 109 Earths, lined up from end-to-end, just to go across the diameter of the sun once. Unlike our Earth, however, the sun is made up of around 70% hydrogen by mass, and it's the individual protons—or the nuclei of hydrogen atoms—that fuse together, eventually becoming helium-4 and releasing a tremendous amount of energy. All told, for every four protons that wind up becoming helium-4, a tiny bit of mass—just 0.7% of the original amount—gets

converted into energy by  $E=mc^2$ , and that's where the sun's power originates.

You'd be correct in thinking that fusing  $\sim 4 \times 10^{38}$  protons-per-second gives off a tremendous amount of energy, but remember that nuclear fusion occurs in a *huge* region of the sun: about the innermost quarter (in radius) is where 99% of it is actively taking place. So there might be  $4 \times 10^{26}$  watts of power put out, but that's spread out over  $2.2 \times 10^{25}$  cubic meters, meaning the sun's energy output *per-unit-volume* is just 18 W / m<sup>3</sup>. Compare this to the average human being, whose basal metabolic rate is equivalent to around 100 watts, yet takes up just 0.06 cubic meters of space. In other words, **you emit 100 times as much energy-per-unit-volume as the sun!** It's only because the sun is so large and massive that its power is so great.

It's this slow process, releasing huge amounts of energy *per reaction* over an incredibly large volume, that has powered life on our world throughout its entire history. It may not appear so impressive if you look at just a tiny region,

but—at least for our sun—that huge size really adds up!

Check out these “10 Need-to-Know Things About the Sun”: <http://solarsystem.nasa.gov/planets/profile.cfm?Object=Sun>.

Kids can learn more about an intriguing solar mystery at NASA's Space Place: <http://spaceplace.nasa.gov/sun-corona>. ★

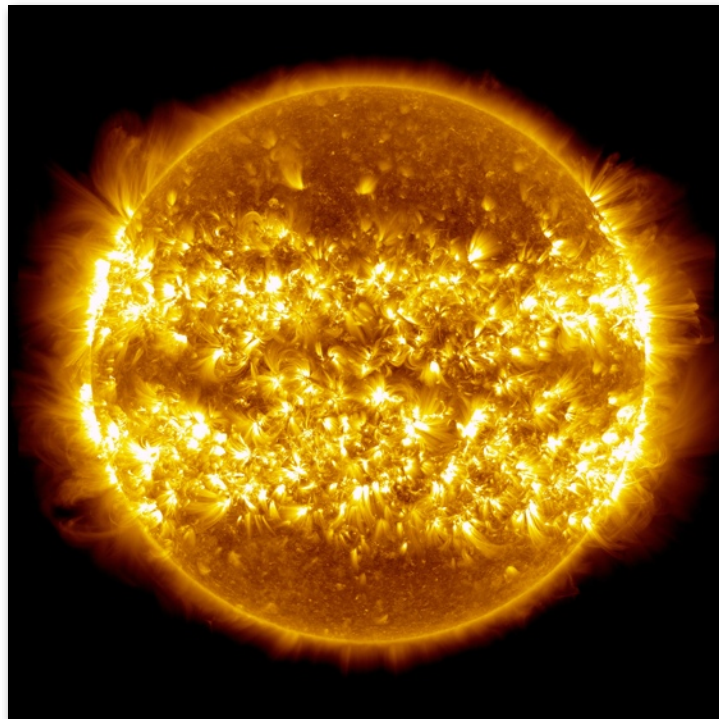


Image credit: composite of 25 images of the sun, showing solar outburst/activity over a 365 day period; NASA / Solar Dynamics Observatory / Atmospheric Imaging Assembly / S. Wiessinger; post-processing by E. Siegel.

## JOB JAR

## MERCHANDISE SALESPERSON

The DAS has a new goal for 2014. There's a supply of small club merchandise, such as mugs and pins and possibly t-shirts (in the future), that we'd like to sell at Open Houses. Technically they've been available at the ticket desk, but it's time to advertise them more openly on their own table, as a means to support our non-profit organization. If you're looking for a way to participate in Open House, mingling with club members and the public in a lighted room with very little physical activity required, this spot is for you! Let any of your officers know if you'd like to man the “trinket table” for the club, and perhaps work with quarter-master Ed Scholes whenever we need to get some new stuff made.

## FINANCE COMMITTEE MEMBER

A volunteer is needed to become the third member of a new finance committee which provides financial oversight and guidance to DAS.

**If you would like to volunteer for any of these positions, please contact [president@denverastro.org](mailto:president@denverastro.org).**

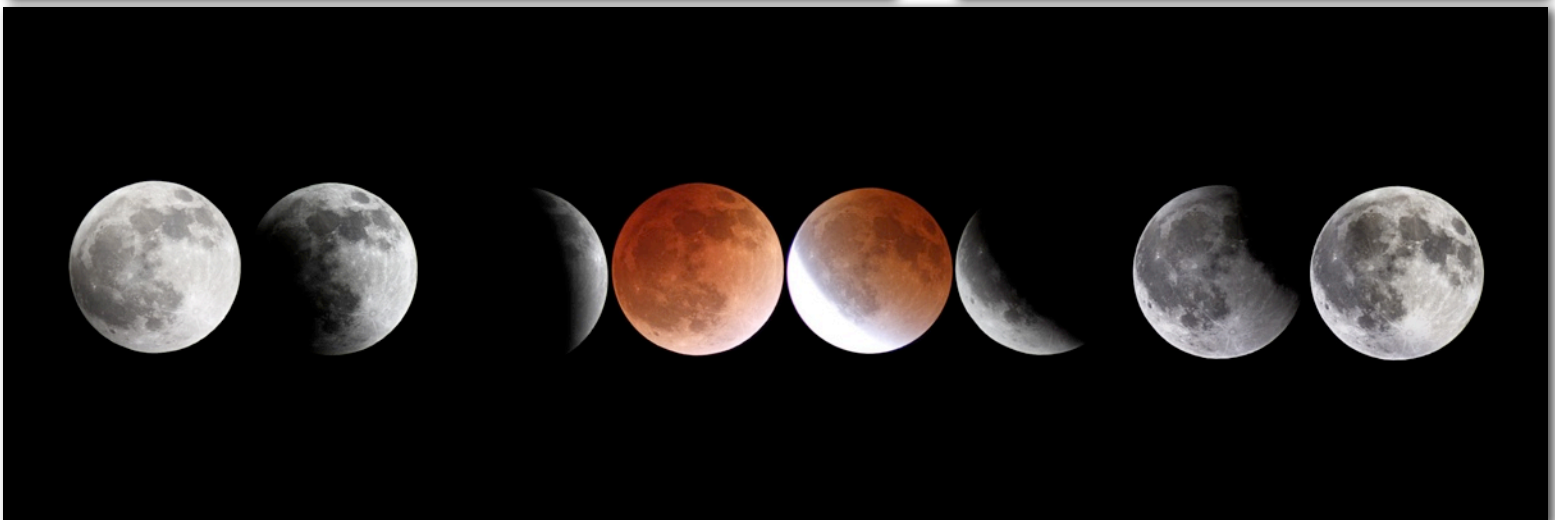
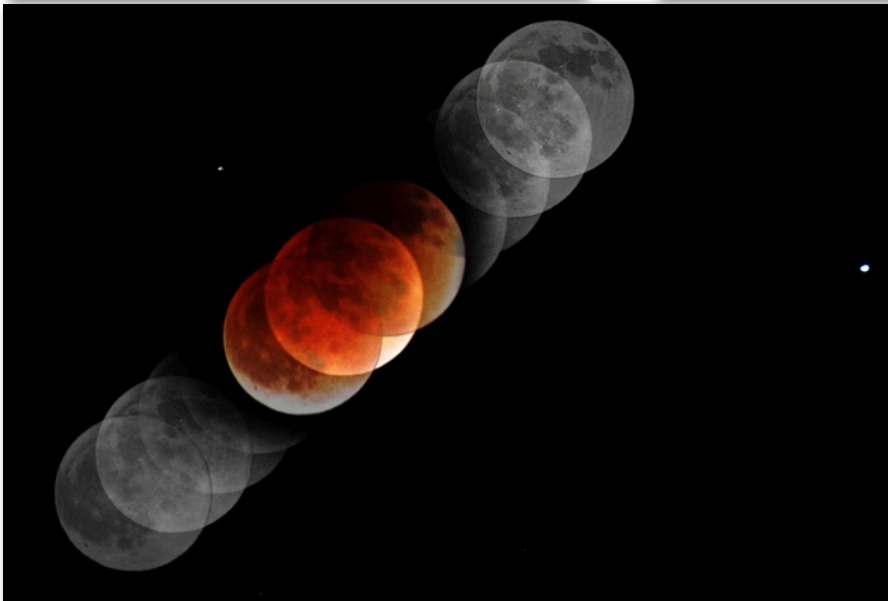


Click [here](#) to go to the full video captured by Jeff Tropeano of the total lunar eclipse on April 15, 2014.

Image © Jeff Tropeano

# DAS SKYSHOOTERS CAPTURE A BLOOD MOON

Intrepid DAS astrophotographers stayed up *very* late for last month's total lunar eclipse. Their incredible results grace this page. Thanks, guys! Clockwise from upper right: Sequence with Mars above the moon, David Shouldice; Blood moon, Ricardo Viera; Eclipse sequence, Ricardo Viera; Sequence composite, Don Lynn; and totality by Sorin.



## MAY SPEAKER:

## DR. FRANK EPARVIER


**Talk: “Our Dynamic Sun: Space Weather and Our Vulnerability to It.”**

Dr. Frank Eparvier is a Senior Research Scientist at the University of Colorado’s Laboratory for Atmospheric and Space Physics in Boulder. He has a B.S. degree in Physics and Mathematics from the University of Wisconsin (1985) and a Ph.D. in Astrophysical, Planetary, and Atmospheric Sciences from the University of Colorado (1991). He is principal investigator on the EUV (extreme ultraviolet) and X-Ray Irradiance Sensors (EXIS) on the NOAA GOES-R satellite series, instrument and project scientist on the EUV Variability Experiment (EVE) on the NASA Solar Dynamics Observatory (SDO), instrument lead on the EUV monitor on the NASA MAVEN mission to Mars, and instrument scientist on the Solar EUV Experiment (SEE) on the NASA TIMED mission. His research interests are in the areas of solar irradiance variability and its effects on the upper atmospheres of the Earth and other planets. ★

## FROM THE EDITOR:

Every now and then I have some extra space with which I can thank, profusely, those who consistently add to the quality of this publication. Dennis Cochran, without your timely and consistent “Monthly Skies” column, the membership might not know what to look for each month! You deserve big smooches! Dena McClung, thank you for your friendship, and finding and introducing members to the DAS community. Your write-ups are wonderful and provide personality for a *large* membership. I hope these columns contribute to a sense of togetherness for people. Sorin, I love the way you write. Jack Eastman, thank you for your star party “reviews!” Ron Hranac, your extra proofreading is fantastic and always appreciated. Darrell Dodge, what can I say? Your proofreading skill, continual “on demand” photography and your ability to “ground” me are qualities that remind me I am blessed to know you. To my son, Zack, for his very behind-the-scenes willingness to contribute the occasional illustration (on demand) and keen critiques to the design of the *Observer*: Thanks, babe, for letting me abuse your degree! *And to the photographers!* Roger Clark, Darrell Dodge, Jeff Tropeano, Digby Kirby, Sorin, Kyle Williams, Ricardo Viera, Russell Anderson, Joe Gafford, Donald Lynn, David Shouldice, Alan Erickson, Brian Kimball (I know, you’re not a member) and, many more: Thank you for always saying, “Sure, you can use my image.” Without all of you, this would just be an average, instead of extraordinary, newsletter. Thank you all. —Patti Kurtz



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