Nightfall

Monthly publication of the Huachuca Astronomy Club

JANUARY 2015

President's Notes

The January 2015 Telescope Clinic Was a Success.

Our thanks to all who participated in the January 2015 Telescope Clinic. We met new people, welcomed new members and rescued several under-used telescopes from remaining corner dust collectors. The weather was clear and crisp (code for cold) and although the Moon was bright and wide, everyone did get an opportunity to get a look at Comet Lovejoy through the Patterson's 20", as well as some of their own telescopes.

Ted Forte has more to say about the February meeting elsewhere in the newsletter, but I do want mention that the meeting will be held on February 6, at 7 p.m. in **Room 900 of the Cochise College Library** building. Our guest speaker will be HAC member Alex Woronow from Silver City, NM, speaking on the subject of amateur astro-spectroscopy. This is especially timely, as late last year the Patterson Observatory acquired a Shelyak: Alpy 600 spectrograph and Alpy off-axis guider.

So, do come join us to learn more about the "broad spectrum" of applications of astro-spectroscopy.

New Members Corner

We welcome Kent Blackwell of Virginia Beach, Virginia to the club. Kent is a friend of Ted Forte and has joined HAC from afar just to be a part of our great club. He is a very accomplished and experienced amateur astronomer, the host of the twice annual East Coast Star Party in Coinjock NC and the resident astronomer at the Chesapeake Planetarium. We also welcome Barry West of Sierra Vista who joined in December and Ben Dale who lives outside of Bisbee and joined at the January meeting. The record for long distance membership, however, now belongs to our newest member, Ian Halton of Englehart Ontario! Ian is a friend of the Sanners and will be a winter time visitor to our area. Welcome to HAC! We're glad you joined.

Please Renew Your HAC Membership

Memberships expire each December. Thank you to everyone that has renewed and a special thanks to those that renewed early! If you have not yet paid your dues for 2015 you can bring your payment to a meeting or event or mail your payment to PO Box 922 Sierra Vista AZ 85636. Checks can be made out to Huachuca Astronomy Club or just "HAC".

February Meeting

By Ted Forte

The February meeting of the Huachuca Astronomy Club will be held on February 6 at 7 PM in Room 900 of the Cochise College Library building. Our guest speaker will be HAC member Alex Woronow from Silver City NM.

Dr. Alex Woronow has degrees in astronomy and geology. He was a Research fellow at U. Arizona's Lunar & Planetary Lab and a Professor of Geosciences at the U. Houston. He has held numerous NASA Planetary Research Grants and authored publications on statistical analysis of the surfaces of the Moon and planets. More importantly, he has been an amateur astronomer for almost 52 years, built his own telescopes, and photographed the planets and star systems. He is currently building an observatory near Silver City, NM where he hopes to contribute to professionals who pursue spectroscopy and polarimetry of super novae and nebulae.

Alex's talk is titled **"Amateur Astro-Spectroscopy"**

Facets of the physical and chemical attributes of stars, nebulae, and novae lie exposed to simple spectrographic equipment, affordable to many amateur astronomers. The spectrographic observations made by amateurs can contribute significantly to professional studies, and many "campaigns" organized through amateur interest-groups provide these contributions.

In Astronomy the accessible frequencies of light lie between the near infrared and the violet, bounded by the absorption of more extreme frequencies by the earth's atmosphere, at least for the earth-bound amateur astronomers. To a first approximation, stars emit light continuously across the visible spectrum, but ions, atoms, and molecules punctuate the continuum. Some of the ions and atoms, and a few molecules, may be near the stellar surface, in what is called the "reversing layer," or just below that, where the photons originate, in the stellar photosphere. Others may be in interstellar clouds that lie between us and a star. These three regions, and some significant others, lie open to spectroscopic analyses of pressures, temperatures, large- and small-scale motions, as well as chemical compositions.

This presentation will renew our understanding of light's interaction with its environment, look at the range of the equipment and software that amateurs use in their spectrographic observations, and survey some of the recent campaigns amateurs have undertaken in support of professional spectrographic studies.

Please Join us for Dinner before the meeting.

We will meet at the Outback Steak House (99 South Highway 92) at 5PM on the night of the meeting to share dinner with Alex and Karen. Everyone is invited but we need to have your RSVP so we can reserve enough space. Please contact Ted Forte [tedforte511 at gmail dot com] by the 5th.

Comet Lovejoy and Orion

By David Roemer

Alert! There is a nice comet, suitable for viewing.

South of Orion, you can now see a beautiful comet: Q2 Lovejoy. Lovejoy is up comfortably early in the evening sky, an easy naked-eye object that looks beautiful in binoculars and small telescopes. In larger scopes, the coma looks like a very bright galaxy, with a big bright central region that's slightly oval. Stretching out from the coma is a faint straight fanning ion tail. While viewing, try moving the bright head of the comet to the edge or even slightly out of your field of view, this may allow you to better see and follow the ion tail as it trails away from the coma.

Be sure to look at the images of Comet Lovejoy captured by HAC members on the next page. This comet offers an excellent photo opportunity.

Now back to our regularly scheduled article.

For those of you new to the hobby, observing in the constellation of Orion is a great way to begin. For those of us who have been viewing for years it still imparts a strong magnetism. I don't have enough space to go into all the wonderful objects in Orion, but I want to mention three giant stars, and the overall context of the constellation to begin your journey. If you can stand the cold on these long winter nights, start your tour where I left off last month, the red supergiant Betelgeuse (looks golden to me). Betelgeuse (or Alpha Orionis) shines with an apparent magnitude of 0.45 and is the ninth brightest star in the night sky. The second brightest star in Orion, it is so large that if it were put in place of our star its surface would extend past the asteroid belt, possibly to the orbit of Jupiter and beyond, wholly engulfing Mercury, Venus, Earth, and Mars.

Next, turn your gaze toward icy blue-white Rigel. Rigel (or Beta Orionis) is the brightest star (at magnitude is 0.18) in the constellation Orion and the seventh brightest star in the night sky. A telescopic double star (Rigel B can be seen in a 6" or larger scope), it is actually a component of a triple star group. As it is both bright and moving through a region of nebulosity, Rigel lights up several dust clouds in its vicinity, especially IC 2118 (the Witch Head Nebula) that lies in the constellation of Eridanus to the southwest.

The last of the stars I want to talk about is the blue giant Alnitak (or Zeta Orionis), the "east"-most of the three belt stars. Not the sword stars where the Orion Nebula is located, but the belt. Alnitak is the 31st brightest star in our sky and shines at a magnitude of 1.7. Alnitak is itself a beautiful triple star system. The elements of this group have apparent magnitudes of 1.7, 4, and 4.21. There are probably still other stars in this system that haven't been found or confirmed as of yet, and for good reason. The area surrounding Alnitak is saturated with dust and gases, which brings me to the last, point of this column.

Now known as the Orion Molecular Cloud Complex, the entire Orion constellation is within a huge bubble-like region centered on the belt stars and the great Orion nebula (M42, M43) and extending well outside the simple boundaries of the constellation. This region is a giant cloud of interstellar gas and dust that is within our Milky Way galaxy. This cloud is believed to have formed when a density wave moved through the Orion arm of the galaxy, compressing gases and dust and triggering a major star-forming region that we see in several of Orion's nebulae. The complex's physical size is about 1,600 light years away and several hundred light years across. Long exposures show incredible complexity throughout the region, with most of the nebulosity actually continuous. One of the finest deep sky images I have ever seen frames this area and illuminates it in all its glory. Imaged by the astro-artist Rogelio Bernal Andreo it can be seen at
http://deepskycolors.com/astro/JPEG/RBA_Orion_HeadToToes.jpg

Keeping an Eye on Storms and More

By Kieran Mulvaney

In late July 2013, Tropical Storm Flossie barreled furiously toward Hawaii. The question was not if it would strike, but when and where it might do so.

During the afternoon hours of July 29, forecasts predicted landfall later that week on the state's Big Island; however, by the time residents of the 50th state awoke the following morning things had changed. NOAA's Central Pacific Hurricane Center warned that the islands of Oahu, Molokai and Maui were now at a greater risk.

This overnight recalculation was thanks to the Day/Night Band viewing capabilities of the Visible Infrared Imaging Radiometer Suite, or VIIRS, on board the Suomi National Polar-Orbiting Partnership (Suomi NPP) satellite. VIIRS is able to collect visible imagery at night, according to Mitch Goldberg, program scientist for NOAA's Joint Polar Satellite System (JPSS), of which Suomi NPP is a part. That means it was able to spot some high-level circulation further north than expected during the nighttime hours. This was an important observation which impacted the whole forecast. Without this forecast, said the Hurricane Center's Tom Evans, "we would have basically been guessing on Tropical Storm Flossie's center."

Polar-orbiting satellites, like Suomi NPP and the future JPSS-1 and JPSS-2 (scheduled for launch in 2017 and 2021, respectively), sweep in a longitudinal path over Earth as the planet rotates beneath them—scanning the globe twice a day. VIIRS, the imager that will be aboard all the JPSS satellites, images 3,000 km-wide swaths on each orbit, with each swath overlapping the next by 200 km to ensure uninterrupted global coverage. This high-resolution, rapidly updating coverage allows researchers to see weather patterns change in near real-time.

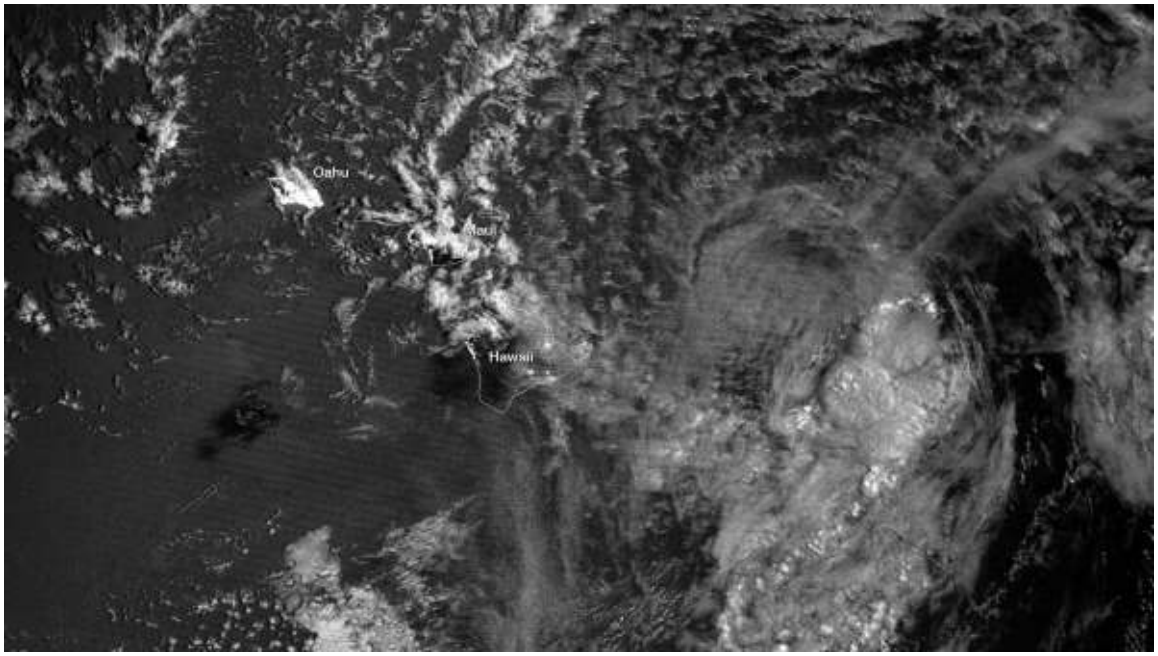
Instruments on Suomi NPP allow scientists to study such long-term changes too—things like, "the patterns of sea surface temperature, or coral bleaching," says Goldberg. They are even used by the World Bank to determine how much energy is burned off and wasted from natural gas flares on oil drilling platforms.

While scientists are excited by the JPSS series' wide range of capabilities, the ability to address pressing immediate concerns is, for many, the most tangible value. That was certainly the case in July 2013, when thanks to Suomi NPP, authorities had ample time to close ports and facilities, open shelters, activate emergency procedures, and issue flash flood warnings. Despite heavy rains, high surf, and widespread power outages, accidents and injuries were few. By the time the storm passed, Hawaii was soaked.

But it was largely unharmed.

Learn more about JPSS here: http://www.jpss.noaa.gov.

Kids can learn all about how hurricanes form at NASA's Space Place: http://spaceplace.nasa.gov/hurricanes



S-NPP captured this image of Tropical Storm Flossie heading toward Hawaii using its VIIRS Combined Day-Night Band sensor. Credit: NOAA.

Sierra Vista Lighting and Sign Code Revision.

The process of revising the lighting and sign codes for the City of Sierra Vista has begun again.. The city P&Z staff presented draft language at a working meeting of the Planning and Zoning commission on January 6. The subject will be reviewed again on January 20th where there will be some outdoor demonstrations of lighting fixtures, brightness levels and transition times for the commission's consideration.

The proposals presented at the January 6 meeting were relatively dark-sky friendly. As the process continues, however, we need to remain actively involved to insure that the gains are not lost. We are still a long way from City Council approval.

Please stay vigilant. We will do everything we can to keep you informed. Please monitor the HACLIST Yahoo group and try to attend as many of the public hearings as you can. The sky you save may be your own.

Images of Comet Lovejoy

Taken by HAC Members

Comet Lovejoy
By David Roemer and Craig Anderson

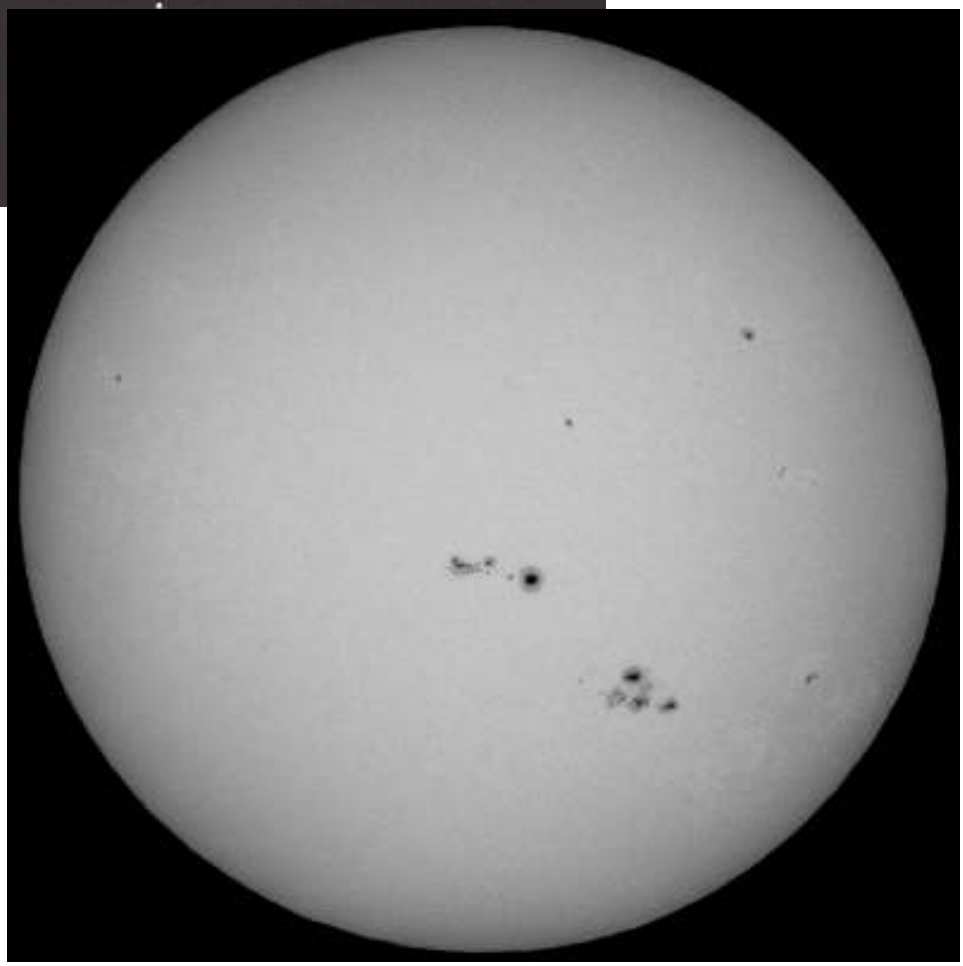
Comet Lovejoy and M79
By Bob Gent

Comet Lovejoy Wide Field
By Ed Erbeck Jr.

Other Images

By HAC Members

M79
By Bob Gent



Sunspots
By Ed Erbeck Jr.

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FOR SALE: Older Optical Guidance Systems 12.5" f/9 Ritchey-Chretian telescope. Very good Paul Jones ceramic optics, Robofocus secondary focuser, will include Takahashi collimating telescope. Some of the image through the scope are at Mshadephotography.com.
Contact Mike J. Shade at mshade@q.com

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HAC Calendar of Events for January-February 2015

SU	MO	TU	WE	TH	FR	SA
28 11:31 AM Uranus 1° S. of Moon	**29**	**30**	**31**	**1 January** **Happy New Year!**	**2** 7PM HAC Meeting Telescope Clinic Patterson Obs.	**3** 7 PM Quadrantid Meteors Peak
4 9:53 PM	**5**	**6** 4:56AM Double Shadow Transit	**7**	**8**	**9** 7:41PM Double Shadow transit	**10**
11	**12**	**13** 2:46 AM	**14** Mercury at greatest elongation E (19°)	**15**	**16** Saturn 1.9° S of Moon 8:51PM Double Shadow transit	**17** Member star party TBD
18	**19** 2 PM Mars 0.2° S of Neptune	**20** 6:14 AM	**21**	**22** 6:15PM Public Night Patterson Obs.	**23** 9:34PM Double Shadow Transit 11:28PM Triple Shadow Transit	**24**
25 Uranus 0.6° S of Moon	**26** 9:48 AM Pie in the Sky JCMS 6:30-8:30P	**27**	**28**	**29** Aldebaran 1.2° S of Moon. 4 PM Juno at Opposition	**30**	**31**
1 February Venus .08° S of Neptune	**2**	**3** 4:09 PM	**4**	**5**	**6** 7PM HAC Meeting Library Room 900 Jupiter at opposition	**7**
8	**9**	**10**	**11** 8:50 PM	**12**	**13**	**14**
15	**16** Mercury greatest elongation W (27°)	**17**	**18** 4: 23 PM	**19**	**20**	**21** Mars 1.5° S Moon, Venus 0.5° s of Mars Member Star party
22	**23** Aldebaran 1° S of Moon	**24**	**25** 10:14 AM	**26** 6:45 PM Public Night Patterson Obs.	**27**	**28**

All times MST. Join Haclist to keep up to date with all of the Huachuca Astronomy Club events
Send an email to: haclist-subscribe@yahoogroups.com