NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

JANUARY 2018

PRESIDENT'S NOTES

Happy 2018 Everybody:

It is time again; HACer's to make those New Year's resolutions. Resolution 1 is pretty easy: Don't look back at last year's resolutions; check. Number 2 (was probably on last year's list but I didn't look back to check): Create better documentation of my observations and images. Oh sure, I have the metadata on each FITS frame and some data is left on JPEGs, but there are gaps that I need to close and interesting details that I should write down. Visually, I look at a lot more objects than I get around to documenting by imaging or writing about. I chalk that up to plain laziness, because the wonderment is still there, but I don't write it down. This resolution might also include (if you have a new/relatively new scope or eyepieces): Documenting your new vistas and looking through alternative optics at well-known objects. Differences can be important. Seeing objects in wide field eyepieces can give larger context to objects. High power and narrower field eyepieces, lends isolation to objects that change appearances, contrast and sometimes, intellectual understanding. Moreover, even in the vast expanses of familiar space things do change. Comets come and go. Galaxies get out shined by the fleeting death of a single star. Things that are new, document. Things that change, oh yeah, document. Thing revisited, document.

Resolution 3: Mars. Yep, my resolution is to resolve Mars. Mars is coming in for a close pass this year, and I am resolving not miss this revolution (OK, orbit). This year will be an especially close pass, the closest pass since 2003, and one that will not be without pain and torment. Before I go any further, let's get the "as big as the Moon" thing out of the way. Mars will not be as big as the Moon. The Moon is about one-half of a degree as seen from the Earth. Mars will be in the realm of arc-seconds. In these terms, the Moon is about 1800 arc-seconds. At its closest and largest, Mars will be slightly less than 25 arc-seconds. Mars at its best will appear much smaller than many of the Moon's craters.

Anyway, I plan to start watching and imaging Mars about mid-February when it will still be feebly dim and small (5.60 arc seconds), and end late in December when it resumes being a little red flake in the eyepiece. But the real prime time will occur from, let's say, June 1, when it has become three time larger (15.3 arc-seconds across) and can be seen (rightfully, as the world it is) through August, when it mushrooms to 24.33 arc-seconds in size, and brighter than everything else (but Venus) in a moonless night. Then, continue on viewing and imaging the planet until at least October 1 when it has shrunk back to 15.81 arc seconds. You've probably noticed a flaw in my ability to carry out this resolution. My old nemesis, weather, will probably be howling in July and August, and OK, possibly September as well. But I intend to try in any case. This might mean road trips north or west to get a dry look. I've already begun working on a travel kit and thinking of the old friends to visit in July and August, OK, and September.

This year I also resolve (Resolution 4) to do a little more science: send in a lot more comet shots to Seiichi Yoshida's comet website and hopefully do a few more asteroid occultation timings. These are small things but good practice.

Last (Resolution 5!) on my short list is to do more outreach, and know more about what it is I'm looking at when I show it to the public. Everything out there except the aerostat is further away than a tank of gas for sure, but there is so much more we know and the public could know. This year it will be about transmitting that info to them, while still having fun, of course.

As Always, Clear Skies Everybody

At the January Meeting

Our speaker is Tom Polakis of the Saguaro Astronomy Club (SAC) who will give a talk titled: "CCD Photometry from Inside the Light Dome - Leisure Time Activity for a Retired Engineer"

In the past couple years, Tom Polakis has very actively pursued photometry with his CCD imaging equipment in Tempe. During that time, he has determined rotation periods of asteroids, measured brightness and colors of eclipsing binary and pulsating variable stars, and created light curves of exoplanets and an active quasar along the way. Much of this work has been or will be published in refereed journals. The first half of his presentation describes the fundamentals of photometry, his equipment and acquisition of images, and data reduction. Then the talk moves on to show a number of examples of his work that illustrate how measuring something as simple as the variation of light and color teaches us so much about stellar and Solar System astronomy.

Tom Polakis became an amateur astronomer on the night of the 1977 Perseid meteor shower. He is a Contributing Editor for Astronomy Magazine, in which he has written many stories about the hobby and the profession. His interests are astronomical travel, visual observing, and all types of photography.

The meeting will be held in the Community Room of the Student Union Building at 7 pm on Friday January 12.

2018 HAC Dues

The treasurer will be collecting dues at the January meeting. Thank you to all that already have paid your 2018 dues. If you are unsure of what (or if) you owe, please see Ted at the meeting. Regular (individual) dues are $25 ($20 for active duty military), family dues are $35 ($25 for active duty military) and a student (with valid student ID) pays just $10 a year. Please make checks payable to "Huachuca Astronomy Club".

You can also mail your check to PO Box 922 Sierra Vista 85635 or pay with your credit card or Pay Pal account by going to www.hacastronomy.org and clicking on the "Renew" button in the "Join" pulldown menu.

Outreach Volunteers Needed

By Ted Forte

We have a very active outreach schedule this year. We could use your help. First up is the "Public Night" at the Patterson Observatory on Thursday, January 18. We have been attracting large crowds at these open-house observing sessions. We need members that can bring telescopes to share the view with our guests, but we also need members to play host and direct traffic. Don't feel like you have to be an expert. Your enthusiasm for astronomy and the night sky is all you need to make someone's Patterson visit memorable.

On Saturday, January 20, we will conduct a telescope clinic at Patterson starting at 3 pm. We have invited the public to bring their telescopes to get one-on-one help with set up and alignment. The clinic will only be a success if we get YOU to come and help someone. Please put it on your calendar and try to make it.

On Wednesday, January 24, we are scheduled to conduct an astronomy event at Loretto Catholic School in Pirtleville (Douglas). This will be an excellent opportunity to hone your outreach skills- a first quarter moon will present the easiest of targets. This event will probably start about 6 pm (the time will be updated on Haclist if that changes) and last just an hour or two. If you have never before shared a view of the moon with a youngster who has not looked through a telescope before, you are in for a real treat. You will no doubt meet adults too that will be simply awestruck. It is a very rewarding experience – one you shouldn't deny yourself.

In February, we will participate in "Cave Fest" at Kartchner Caverns State Park. We'll make a day of it on Saturday February 3, setting up telescopes to view the sun from about 8 am until 6 pm. Don't have a solar telescope? No problem – some of our regulars bring two and the club owns a PST that you can check out (first come first serve). Cave Fest is a chance to engage people and try to improve awareness about the scourge of light pollution. Kartchner's recent designation as a "Dark Sky park" is the perfect segue for that discussion.

The February Patterson public night is on Thursday the 22nd and the evening before is another opportunity to "bring astronomy to the people" by participating in "Stem Night" at Coronado Elementary.

And the list goes on throughout the year.

If you are new to the hobby, I heartily encourage you to give outreach a try. In my experience, the members that dive into outreach early on tend to get the most out of our hobby and develop a life-long passion for learning, teaching, and sharing. I hope to see some new faces at one or more of these events.

This article is provided by NASA Space Place.

With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology.

Visit spaceplace.nasa.gov to explore space and Earth science!

Space Place Article December 2017

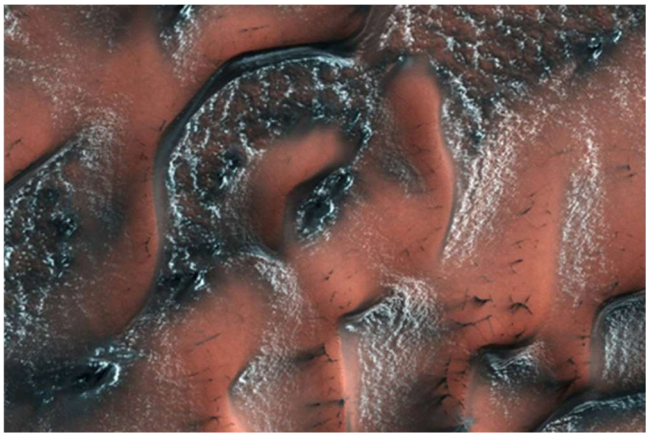
Studying Storms from the Sky

By Linda Hermans-Killiam

There are many places on Earth where it snows, but did you know it snows on other worlds, too? Here are just a few of the places where you might find snow beyond Earth:

Mars

The north pole and south pole of Mars have ice caps that grow and shrink with the seasons. These ice caps are made mainly of water ice—the same kind of ice you'd find on Earth. However, the snow that falls there is made of carbon dioxide—the same ingredient used to make dry ice here on Earth. Carbon dioxide is in the Martian atmosphere and it freezes and falls to the surface of the planet as snow. In 2017, NASA's Mars Reconnaissance Orbiter took photos of the sand dunes around Mars' north pole. The slopes of these dunes were covered with carbon dioxide snow and ice



NASA's Mars Reconnaissance Orbiter captured this image of carbon dioxide snow covering dunes on Mars. Credit: NASA/JPL/University of Arizona

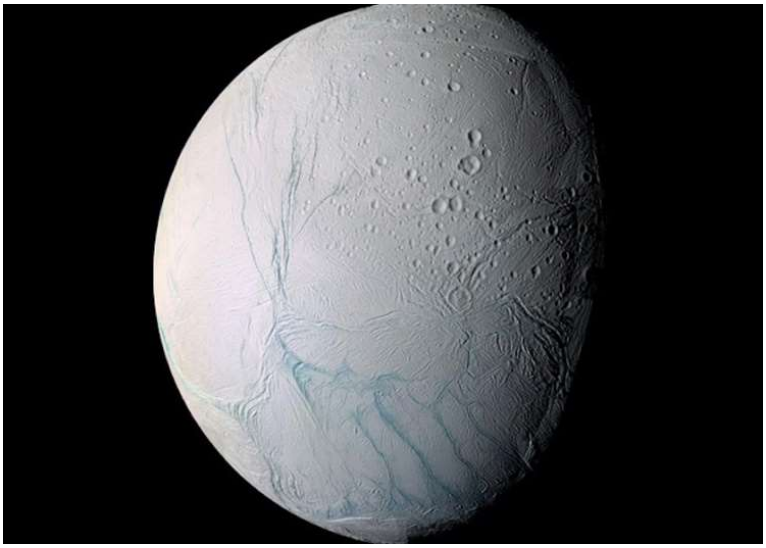
A Moon of Jupiter: Io

There are dozens of moons that orbit Jupiter and one of them, called Io, has snowflakes made out of sulfur. In 2001, NASA's Galileo spacecraft detected these sulfur snowflakes just above Io's south pole. The sulfur shoots into space from a volcano on Io's surface. In space, the sulfur quickly freezes to form snowflakes that fall back down to the surface.

A volcano shooting molten sulfur out from the surface of Io. Credit: NASA/JPL-Caltech

A Moon of Saturn: Enceladus

Saturn's moon, Enceladus, has geysers that shoot water vapor out into space. There it freezes and falls back to the surface as snow. Some of the ice also escapes Enceladus to become part of Saturn's rings. The water vapor comes from a heated ocean which lies beneath the moon's icy surface. (Jupiter's moon Europa is also an icy world with a liquid ocean below the frozen surface.) All of this ice and snow make Enceladus one of the brightest objects in our solar system.

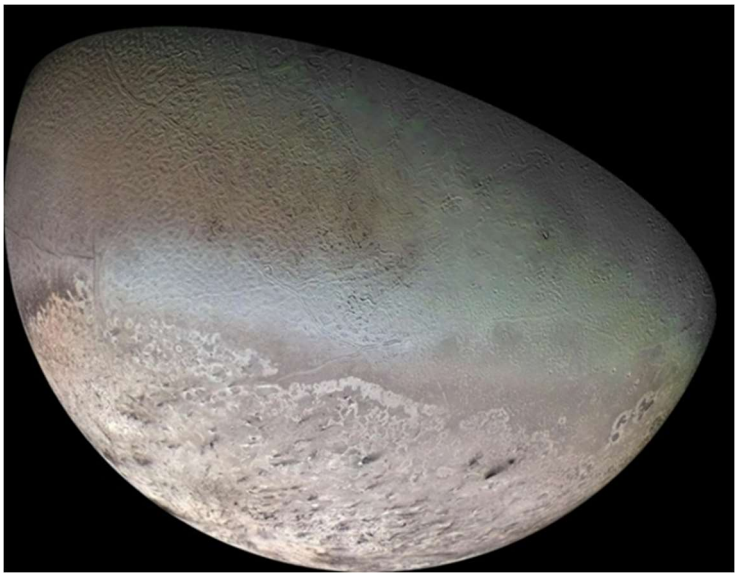


Enceladus as viewed from NASA's Cassini spacecraft. Credit: NASA

A Moon of Neptune: Triton

Neptune's largest moon is Triton. It has the coldest surface known in our solar system. Triton's atmosphere is made up mainly of nitrogen. This nitrogen freezes onto its surface

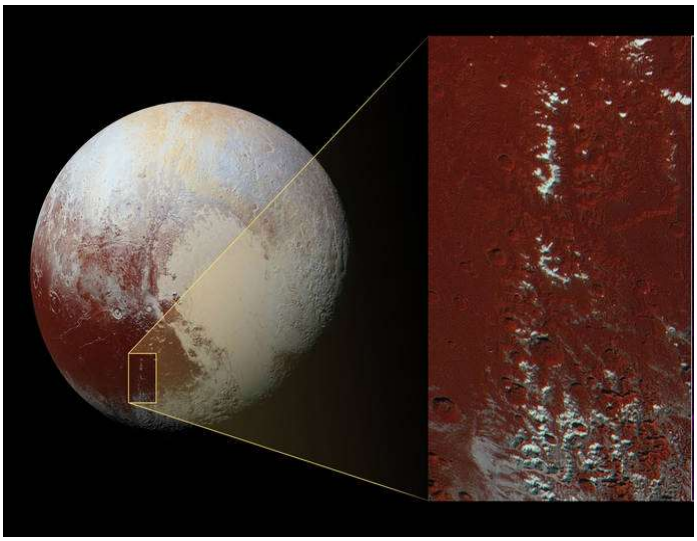
covering Triton with ice made of frozen nitrogen. Triton also has geysers like Enceladus, though they are smaller and made of nitrogen rather than water.



The Voyager 2 mission captured this image of Triton. The black streaks are created by nitrogen geysers. Credit: NASA/JPL/USGS

Pluto

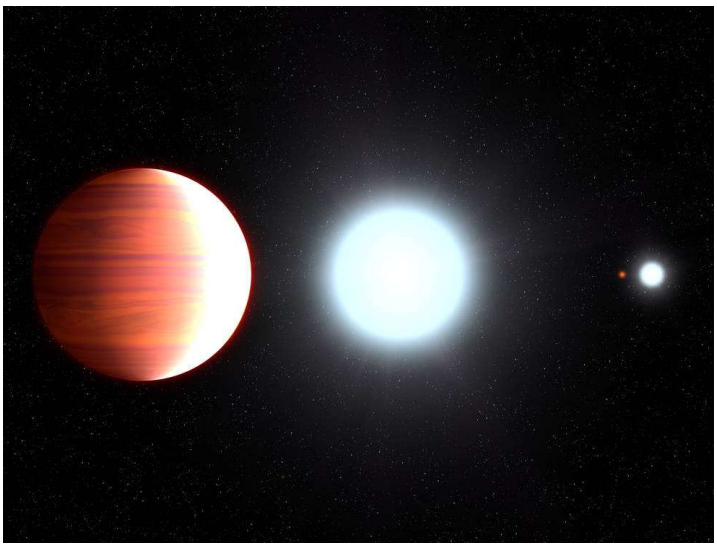
Farther out in our solar system lies the dwarf planet Pluto. In 2016, scientists on the New Horizons mission discovered a mountain chain on Pluto where the mountains were capped with methane snow and ice.



The snowy Cthulhu (pronounced kuh-THU-lu) mountain range on Pluto. Credits: NASA/JHUAPL/SwRI

Beyond Our Solar System

There might even be snow far outside our solar system! Kepler-13Ab is a hot, giant planet 1,730 light years from Earth. It's nine times more massive than Jupiter and it orbits very close to its star. The Hubble Space Telescope detected evidence of titanium oxide—the mineral used in sunscreen—in this planet's upper atmosphere. On the cooler side of Kepler-13Ab that faces away from its host star, the planet's strong gravity might cause the titanium oxide to f**all down as "snow."**



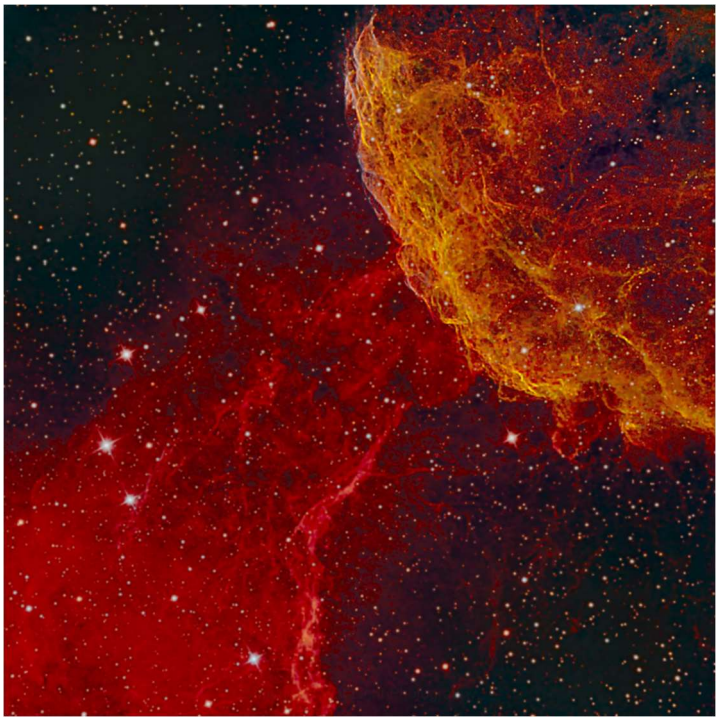
This is an artist's illustration of what Kepler-13Ab might look like. Credit: NASA/ESA/G. Bacon (STScI)

Want to learn more about weather on other planets? Check out NASA Space Place: https://spaceplace.nasa.gov/planet-weather

Pictures from HAC Members

Comet Heinze by David Roemer

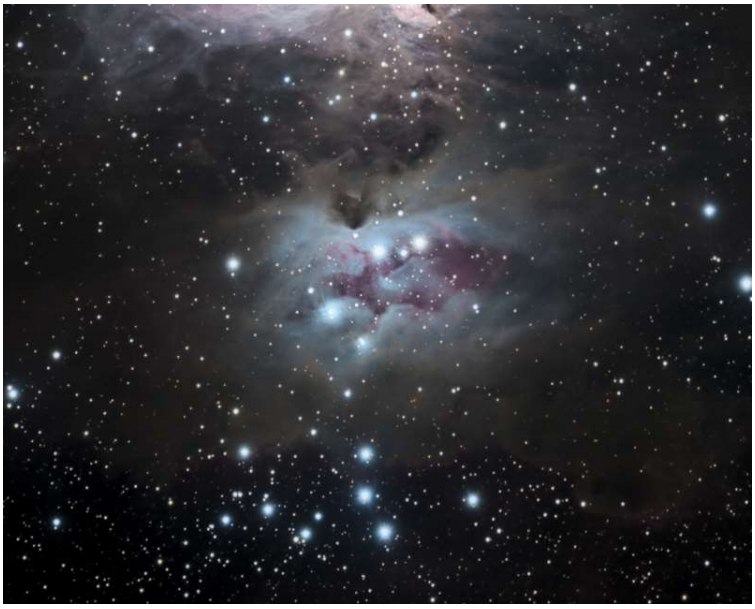
IC 443 By Alex Woronow



NGC 2419 by David Roemer

NGC 2174 and NGC 2127 (IC 2159) by David Roemer

NGC 1973 Running Man Nebula by Richard Pattie



M78 by Richard Pattie

NGC 253 by Glen Sanner

Want Ads

For Sale: Meade 10" 2120 OTA with HTMC

I bought it on Cloudy Nights from a guy in Wickenburg, had the secondary professionally cleaned at Starizona in Tucson. The OTA comes with either a Celestron 1.25 visual back or a 2" rotating visual back, an adjustable focus finder as shown in the picture, and a Vixen style dovetail bracket. Of course, there is also a front cover.

Asking $500

Contact Carl Swanson at (480)600-7353 or cswanson@gotsky.com

For Sale: Meade EXT60AT never used before, includes tri-pod.

Asking $200.00 B/O
Contact Keith Mullen at 266-4230

For Sale: Meade 10" LX200 classic telescope

In very good condition, with tripod, 120v AC and 12v DC power converters with 25' power cords, dew shield, 8x50 finder scope, electric focuser, piggy back bracket, and soft sided carrying case. Also includes a set of Meade CCD color filters, Meade CCD 3.3 focal reducer and CCD variable T-adapter. Plus some other equipment.

Asking $ 1,800.
Contact Bob Stroxtile at strox@ssvecnet.com or call 520-249-0875.

For Sale: Pier Tech electric telescoping pier with Lati-wedge made for the latitude of Sierra Vista

All the hardware, bolts, nuts, washers and plates are with the pier. Pier Tech can make new legs for it to make it correct for anywhere in the world. The pier and wedge have never been used and the only time the pier was out of the box was to take the photos. New today, the pier and wedge are $3,400. Asking $2,800.

Contact Bob Stroxtile at strox@ssvecnet.com or call 520-249-0875.

For Sale: Meade Starfinder 8" Reflector Telescope

Will sell at a very reasonable price. Included are a Telrad Finder, Filters, and additional Lenses.

Contact Mr. Jim Moses at (520) 803-0913 or by email jjmoses2@gmail.com

For Sale: Planewave CDK14 corrected Dall-Kirkham telescope.

Includes the OTA, new November 2014, optional truss rod shroud and optional upper dovetail and the accessories that were included with the telescope (primary to secondary spacing tool). There is NO FOCUSER the adapter for an Optec TCFS3i is included. I also have the factory wooden shipping crate. The telescope has been in use every clear night in the observatory in Sonoita. This is an outstanding instrument and a great imaging scope.

For Sale: Celestron Celestar 8 inch S/C Deluxe - $1200.

Will also sell pieces individually

Contact Rhonda and Terry Taylor at (520) 366-2378 or by email at twrl2@yahoo.com. Or See Craigslist at http://sierravista.craigslist.org/bar/4523742100.html

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 images through the scope are at Mshadephotography.com.

Contact Mike J. Shade at mshade@q.com

Club Officers and Contacts

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Farpoint Astronomy http://www.farpointastro.com/

Starizona http://starizona.com/

HAC Jan/Feb Calendar of Events

SU	MO	TU	WE	TH	FR	SA
31 	**1 Jan 2018** 9:24 pm Happy New Year!	**2**	**3**	**4**	**5**	**6**
7	**8** 5:25 pm	**9**	**10**	**11**	**12** HAC Meeting Student Union	**13** Member Star Party- RISS Obs Mercury/Saturn 0.6°
14 Saturn 3° S of moon	**15** Mercury 3° S of moon	**16** 9:17 pm	**17**	**18** Patterson Public Night 6 pm	**19**	**20** Telescope Clinic at Patterson 3pm
21	**22**	**23**	**24** 5:20 pm Loretto Catholic School	**25**	**26**	**27**
28	**29**	**30**	**31** 8:27AM Ceres at opposition	**1 Feb**	**2**	**3** Kartchner Cave Fest 8A- 6P
4	**5**	**6**	**7** 10:54 AM Jupiter 4° S of moon	**8** Mars 4° S of moon	**9** HAC Meeting Student Union	**10**
11 Saturn 2° S of moon	**12**	**13**	**14**	**15** 4:05 PM	**16**	**17** Member Star Party
18	**19** 	**20**	**21** Coronado Elem Stem Night 6 PM	**22** Patterson Public Night 6 PM	**23** 3:09 AM Pie in the Sky JCMS 6pm	**24**
25	**26**	**27**	**28**	**1 Mar** 7:51 PM	**2**	

All event 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