NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

JUNE 2017

PRESIDENT'S NOTES

Right out of the pulp-fiction sci-fi of my youth…

Saturn still has the same pull on me that it did back then. Those rings, so captivating, were what hooked me on astronomy. As I gazed at them for the first time through my new 60mm Tasco telescope I was teleported onto one of the pieces of rubble making up the rings. In my imagination, the planet filled my entire field of view with vivid colors. To be sure, much (if not all) of the color I saw on the rings and planet back then was due to chromatic aberration from the scope and eyepiece. However, it did not dampen my interest. Today, whenever I can show people Saturn, and age is not an issue here, they are astronomy junkies for the rest of their lives.

As I write this, there is a NASA probe (Cassini) looping around Saturn, shooting astounding images of the rings and upper atmosphere of the giant gas planet. The images show the complexities of the rings are stunning and cloud tops are, well, it will take some time and mental power to decipher their logic. It makes me think back to my Tasco days. Maybe knowing more about the rings' composition would have dulled the fascination I felt. Maybe seeing crisp images from the Cassini probe would have lessened the impact of seeing the planet in my little telescope. Maybe. During outreach events, I do get the occasional disappointed child, but that response is tempered if not turned around completely when more power is applied to the ringed planet. Even if the power is beyond the seeing, and the image is wavy, those beautiful rings save the night.

And those rings, they are nearly as big and as bright as we get to see them right now, at least from Earth. We can sound sour by grumbling that Saturn is quite low in the south, but Saturn is getting close to its June 15 opposition, and it is begging us to look at its splendor. Saturn rises in the southeast sky somewhere around late dusk and is up all night. By midnight, it is well up and ready for you to stare at it as long as you would like. In the next few years, the rings will seem to close again. It is a trick of perspective (but that's ok), as they change very slowly on their nearly 30-year cycle.

SHORT SHADOW FROM NASA'S CASSINI MISSION

Credit: NASA/JPL-Caltech/Space Science Institute May 15, 2017

We also have another event to view, one that happens only during times when opposition and maximum ring visibility coincide, something called call the Seeliger effect. When sunlight falls on the ice particles of the rings they act as mirrors, bouncing light straight back toward the Sun, while the rest of the light is scattered in all directions. At opposition, the Earth is this direct line toward the Sun. That means that Saturn's brightness should increase dramatically for a few nights around opposition, giving us a glorious view. So, no excuses, get out there and stare like a kid with a new telescope, the kid that is in all of us.

Clear Skies, Everybody

Welcome our New Members

Eric Mulkey of Bisbee joined at the June Patterson Public Night. Richard Pattie of Sierra Vista joined via our on-line application. Welcome! We are glad you joined.

At the June Meeting

The June meeting will be held in the Community Room, Student Union building, Cochise College at 7PM on Friday, June 9.

This month's program will feature a talk by HAC member and NASA Solar System Ambassador Ted Forte who will update us on the Cassini mission at Saturn.

After 20 years in space, the Cassini-Huygens mission is at an end. Ted will update us on the mission's highlights, its latest findings, and its "Grand Finale": the final phase of this most successful mission.

Amazon Shoppers

If you are an Amazon shopper, please remember to use the Amazon link on our website www.hacastronomy.org when making your purchase. As an Amazon affiliate, HAC gets an automatic donation when customers enter the Amazon site through the HAC site and make a purchase. Please encourage your friends and family to use it too. There is another program called Amazon Smile where customers can select their favorite charity to receive rewards. HAC is an authorized recipient in that program as well but the rewards are much greater from the Amazon Affiliate (web-site link) program so please take the extra step and enter the Amazon network from the HAC home page.

The August Eclipse

If you will be in Sierra Vista for the August 21 eclipse and can help with an eclipse event at the Sierra Vista Library, please contact Bert Kelher. We hope to have solar scopes set up at the library to share the partial eclipse with the public.

Many of our usual cache of outreach volunteers will be out of town, traveling to the centerline to witness the total solar eclipse, so if you are going to be in town, please consider helping out. If you are new to outreach, this is the perfect opportunity to get your feet wet and discover how much fun sharing our hobby with the public can be.

Patterson Public Nights

Attendance at the Patterson Observatory for public nights has been extraordinary this year. We have experienced rather large crowds and great support from HAC members. Our June 1st event was no exception. About 50 guests enjoyed clear skies and spectacular views of the moon, Jupiter, Saturn and a number of deep sky objects. Almost a dozen HAC members participated. Public Nights are suspended over monsoon and we will not have another one until September 7. If you have not participated in one of these fun, open house observing events, plan to give it a go in the fall. We encourage members to set up scopes, help with the 20 or just attend and engage the public. Your enthusiasm is our greatest asset. Your participation helps to educate our neighbors, encourages membership in our club, and creates allies in our efforts to protect our dark skies. Plus, it's fun and rewarding.

Dine Under the Stars

This year's Dine Under the Stars fundraiser will be held on Saturday, September 30 on the University of Arizona, Sierra Vista campus adjacent to the Patterson Observatory. This is the primary fundraiser for the University South Foundation, the owner of the Patterson Observatory. The Dine Under the Stars event will feature dinner provided by the Outback Steakhouse, live entertainment, a silent auction, a 50-50 raffle and more. The Patterson Observatory is open for viewing during the event (we'll have a moon that night) and staffed by HAC volunteers.

The University South Foundation has a long standing and mutually beneficial association with the Huachuca Astronomy Club. The foundation gets a dedicated and knowledgeable cache of volunteers to operate and maintain the observatory and, in return, the club gets unlimited access to the facility. The Patterson Observatory (named after HAC's first president and founding member David Patterson) is the focus of astronomy outreach and education in Sierra Vista. We are really quite fortunate to have it.

Tickets to Dine Under the Stars are $45 per person. Proceeds from Dine Under the Stars not only help to support the observatory but are used to support the University of Arizona, South. 100% of the money that the foundation receives from fundraisers and donations go toward the foundation's charitable purposes. (All of the foundation's overhead expenses are paid out of the rent received from the university). In 2016 the foundation gave over $88,000 in scholarships to local students, and nearly $15,000 in faculty and staff support. The foundation also provided HAC with a $15,000 budget to upgrade the observatory.

HAC's representative on the foundation's board of directors is Ted Forte. He will be selling DUTS tickets in the fall. Please consider purchasing a ticket, even if you can't attend the dinner. Your purchase not only helps support the university and the observatory but helps Ted fulfill his obligation as a foundation board member.

Star Party Corner
By Ted Forte

The May member star party was hosted by Gary and Arecelis Grue at the Blue Marvel Observatory in Hereford. Members David Roemer, Ted Forte, Keith Mullen, Craig Gundy, Eric and Roberta Allen, Bill Howard, Katherine Zellerbach, Fred Todd, and Max Mirot, were in attendance. Guests Tom and Penny Brondum of Bend Oregon were also there. The Brondum's were in town on a house-hunting trip and hope to be moving to Sierra Vista soon. Gene Mund who lives in Gary's neighborhood, was also a guest at the party.

The group enjoyed beautiful clear skies and pleasant temperatures for the "battle of the twenty fours". Eric and Roberta brought their exquisite homemade 24" f/4 Dobsonian and set up alongside Gary's observatory which itself houses a 24" f/4 Newtonian on a Byers Mount!

We all enjoyed views of Jupiter and comet 2015 V2 Johnson as well as a host of deep sky objects that included an impressive view of Omega Centauri and really incredible

views of M51 and M101 at the zenith. There were rave reviews for several other objects as well. It was well into the wee hours when the party broke up.

The June Member Star Party is scheduled for Saturday June 24th and will be hosted by Glen and Deanna Sanner at Discovery Observatory West, 5000 S. Apache Avenue. Watch the HACLIST group for more details.

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 **May 2017**

The Fizzy Seas of Titan

By Marcus Woo

With clouds, rain, seas, lakes and a nitrogen-filled atmosphere, Saturn's moon Titan appears to be one of the worlds most similar to Earth in the solar system. But it's still alien; its seas and lakes are full not of water but liquid methane and ethane.

At the temperatures and pressures found on Titan's surface, methane can evaporate and fall back down as rain, just like water on Earth. The methane rain flows into rivers and channels, filling lakes and seas.

Nitrogen makes up a larger portion of the atmosphere on Titan than on Earth. The gas also dissolves in methane, just like carbon dioxide in soda. And similar to when you shake an open soda bottle, disturbing a Titan lake can make the nitrogen bubble out.

But now it turns out the seas and lakes might be fizzier than previously thought. Researchers at NASA's Jet Propulsion Laboratory recently experimented with dissolved nitrogen in mixtures of liquid methane and ethane under a variety of temperatures and pressures that would exist on Titan. They measured how different conditions would trigger nitrogen bubbles. A fizzy lake, they found, would be a common sight.

On Titan, the liquid methane always contains dissolved nitrogen. So when it rains, a methane-nitrogen solution pours into the seas and lakes, either directly from rain or via stream runoff. But if the lake also contains some ethane—which doesn't dissolve nitrogen as well as methane does—mixing the liquids will force some of the nitrogen out of solution, and the lake will effervesce.

"It will be a big frothy mess," says Michael Malaska of JPL. "It's neat because it makes Earth look really boring by comparison."

Bubbles could also arise from a lake that contains more ethane than methane. The two will normally mix, but a less-dense layer of methane with dissolved nitrogen—from a gentle rain, for example--could settle on top of an ethane layer.

In this case, any disturbance—even a breeze—could mix the methane with dissolved nitrogen and the ethane below. The nitrogen would become less soluble and bubbles of gas would fizz out.

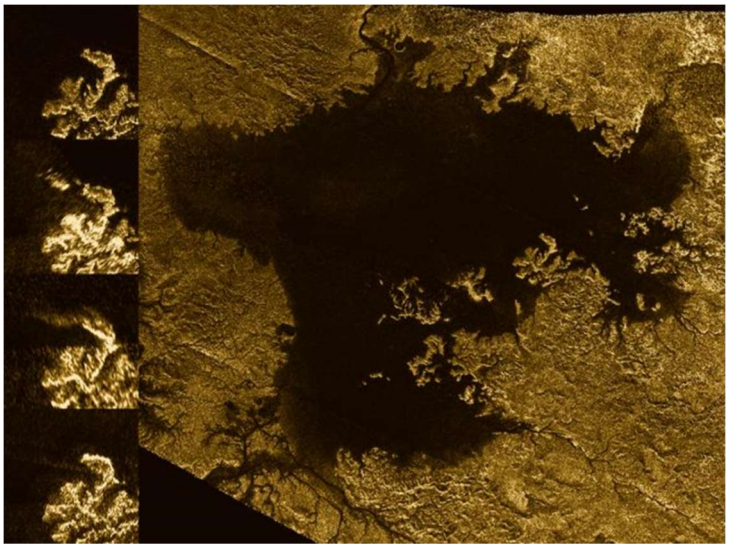
Heat, the researchers found, can also cause nitrogen to bubble out of solution while cold will coax more nitrogen to dissolve. As the seasons and climate change on Titan, the seas and lakes will inhale and exhale nitrogen.

But such warmth-induced bubbles could pose a challenge for future sea-faring spacecraft, which will have an energy source, and thus heat. "You may have this spacecraft sitting there, and it's just going to be fizzing the whole time," Malaska says. "That may actually be a problem for stability control or sampling."

Bubbles might also explain the so-called magic islands discovered by NASA's Cassini spacecraft in the last few years. Radar images revealed island-like features that appear and disappear over time. Scientists still aren't sure what the islands are, but nitrogen bubbles seem increasingly likely.

To know for sure, though, there will have to be a new mission. Cassini is entering its final phase, having finished its last flyby of Titan on April 21. Scientists are already sketching out potential spacecraft—maybe a buoy or even a submarine—to explore Titan's seas, bubbles and all.

To teach kids about the extreme conditions on Titan and other planets and moons, visit the NASA Space Place: https://spaceplace.nasa.gov/planet-weather/



Caption: Radar images from Cassini showed a strange island-like feature in one of Titan's hydrocarbon seas that appeared to change over time. One possible explanation for this "magic island" is bubbles. Image credits: NASA/JPL-Caltech/ASI/Cornell

Pictures from HAC Members

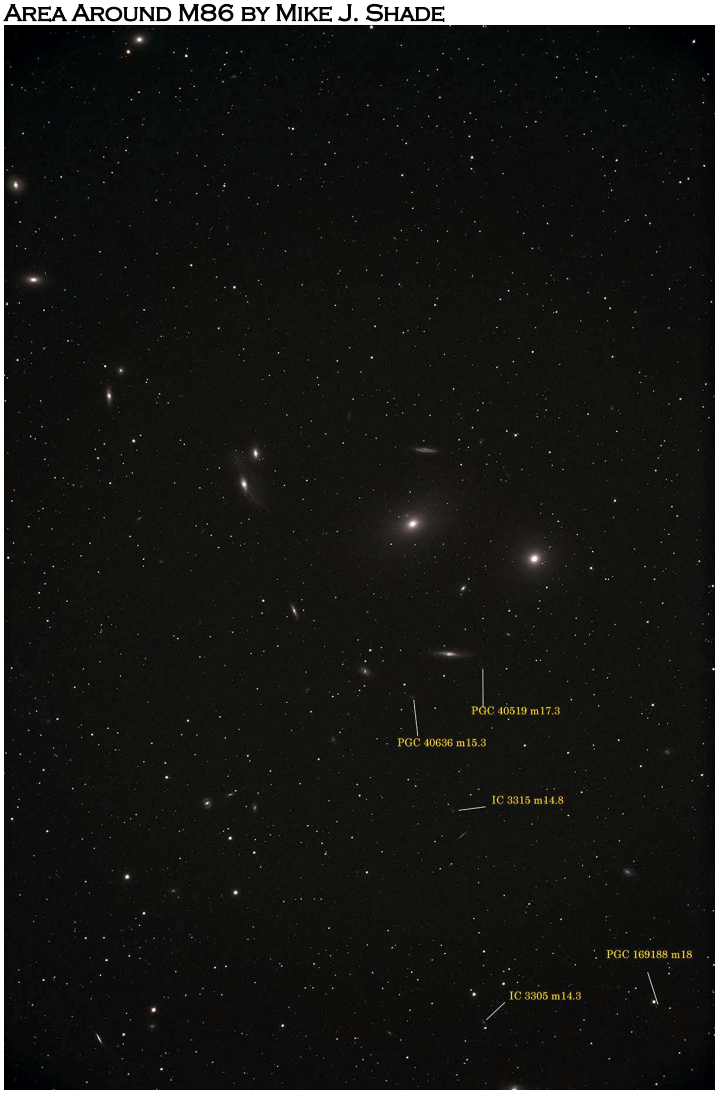
Markarian Chain by Jay LeBlanc

Rho Oph Pano by Jay Leblanc

M101 by David Roemer

NGC 4244 by David Roemer

Area Around M86 by Mike J. Shade



WANT ADS

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 (they do not come with one, you need to add one) but the adapter for an Optec TCFS3i (which is the focuser I used) 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

FOR SALE: 8" CELESTRON NEX STAR

Good condition with all original accessories.

Contact Mae Childs at maechilds2014@aol.com

CLUB OFFICERS AND CONTACTS

President: David Roemer
Vice President: Chris Ubing
Secretary: Rick Burke
Treasurer: Ted Forte
Past President: Bob Gent

Board Members-at-Large

Gary Grue | Ken Kirchner | Bert Kelher | Ken Duncan

***Nightfall* Editor:** Cindy Lund alund@juno.com
Webmaster: Ken Kirchner
Facebook Editors: Bert Kelher and Craig Gundy
MSP Coordinator Keith Mullen

Website: http://www.hacastronomy.org
Facebook: http://www.facebook.com/HuachucaAstronomyClub
Email: info@hacastronomy.org

PLEASE SUPPORT OUR SPONSORS

Our sponsors have been keeping us supplied in door prizes for some years. If you have not contacted them lately, please consider this. They have a lot of great astronomical products that we all need.

For more information on products and contact information, their websites are:

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

HAC Jun/Jul Calendar of Events

SU	MO	TU	WE	TH	FR	SA
4 June	**5**	**6**	**7**	**8**	**9** 9:10am HAC Meeting Student Union	**10**
11	**12** Boys & Girls Club 9:30am Solar Viewing	**13**	**14** 	**15** Saturn at opposition	**16**	**17** 7:33am
18 	**19**	**20** Venus and Moon 2°	**21** Summer solstice 12:24am	**22** Moon occults Aldebaran 5:59am	**23** 10:31pm	**24** Member Star Party
25	**26**	**27** Library Group at Patterson 10am	**28**	**29**	**30** 8:51pm Asteroid Day	**1 July**
2 Juno at opposition	**3**	**4** 	**5**	**6** Saturn 3° S of Moon	**7**	**8**
9 12:07am	**10** Pluto Opposition	**11**	**12**	**13**	**14** HAC Meeting Student Union	**15**
16 3:26pm	**17**	**18**	**19**	**20** Venus 3° N of moon	**21**	**22**
23 5:46am	**24**	**25** Mercury 0.9° S of moon	**26**	**27**	**28** Jupiter 3° S of moon	**29** Delta Aquariid Meteors
30 11:23am Delta Aquariid Meteors	**31** Delta Aquariid Meteors	**1 Aug**	**2**	**3**	**4**	

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