

The Observer

The Official Publication of the Lehigh Valley Amateur Astronomical Society

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June 2017

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ad astra*****

At most of our general meetings, we have a speaker from outside our Society for the program. But for our May meeting, we proved that some of our home-grown presenters can be every bit as informative, and entertaining, as anyone from outside. Gary Becker and Pete Detteline did a superb job with their talk about the Great American Eclipse. Thanks guys! I think we all learned a lot and we really enjoyed it.

For our June meeting, we'll be hearing from Jake Ginsburg from the Delaware Valley Amateur Astronomers about how to do astrophotography without spending a fortune.

Something is preventing starlight from reaching the ground

As I am writing this, it is a few days before our scheduled weekend for Megameet, and many of us are preparing for the big weekend. We've examined the ads in *Astronomy* and *Sky and Telescope* for fancy new equipment that we're avoiding buying, lest we jinx any chance of nice weather. We've inspected and carefully adjusted our expectations to make sure that they are not so high they would cause damage when dashed to the ground. And we've checked the calendar for the rain date to see if that second chance would work out for us.

By the time you read this, there will either have been a Megameet, or there will have been a disappointing announcement of a reschedule. The weather predictions have been oscillating on a daily basis between sort of promising, and just dreary. If there was a Megameet, attendees may have had greater difficulty than usual finding each other in the dark and the tall grass, since the weather for mowing in the days before the event looks even less promising than the weather for observing during the event itself.

Something is preventing light from Tabby's Star from reaching Earth

We may not be getting much observing done here in Pennsylvania, but around the world a small army of professional and amateur astronomers have been busy with their instruments pointed towards the constellation Cygnus. [Tabby's Star](#), also known as Boyajian's Star, KIC 8462852, or the "WTF Star" has just entered a new and hotly-anticipated dip in brightness, the first since the wacky light curves from previous events were extracted from the Kepler Space Telescope data. This time, Kepler is not observing the event, but numerous ground-based observatories are scrutinizing it with spectroscopes and other instruments to learn more about what's causing the mysterious behavior. I've been keeping my eye on the [preliminary reports and speculation](#) and so far, there have been no great revelations. Everybody seems to be as perplexed as ever.

An Appreciation

Let's have a "virtual round of applause" for Jim Rittenburg! Jim has been a regular giving talks at our public Star Parties, and for quite a few years he has been the guy who organized the speakers for all of those lectures. And if you came to the LVAAS Holiday Party in the past few years and had some really fine chili, chances are that it was made by Jim.

But all good things must come to an end, and this is no exception. Maybe members of the Big Sky Astronomy Club will get a chance to taste that chili, because the Rittenburgs are relocating to a quite remote location in Montana, near Glacier National Park. BCAS' gain is LVAAS' loss, and we will miss his many contributions. Thank you, Jim, and good luck!

Revitalizing the Forums

The Forums on our website have not seen much use lately, even though would seem to be a pretty good way for our members to keep in touch on certain topics. I have been thinking about reasons why the forums are not getting used much, and to see what can be done to improve them.

Currently, there is a FOR SALE post from Secretary Ron Kunkel, on behalf of a friend, for a [very nice 10" Schmidt-Cassegrain system](#). Also, Kyle Kramm is leading an effort to get our Pulpit Rock Field Meets going again, and has [posted several messages](#) about that. I think one of the problems is that we have too many sources of information these days, and the Forums need to compete for attention; but it is not that easy to access them, so the messages are not seen by many of us. For example, as I write this Ron's post has only been viewed 26 times.

I'm looking at ways to improve this, and so far I've created a "help page" for using the Forums, with some valuable tips to make it easier to keep tabs on what's going on there. You can view it at <http://lvaas.org/staticpages/index.php?page=forumhelp>, or find it as "Forum Help" on the left sidebar, beneath the "Forums" link. (You must be logged in to the website to find it via the menus, just as you must be logged in to post messages to the Forums. If you need help with logging in the website, contact me using the email given under "Website" on the [Contact Us](#) page.) But please, take a look at the new help page, and if you have a suggestion for making the Forums more useful, please contact me.

Fourth Down

One reason I got involved with working on the Forums is that I needed a break from working on the telescopes. Believe it or not, I still have not been able to push the 18-inch repair over the finish line. There were a few last-minute setbacks on that project, along with a bunch of non-LVAAS-related setbacks that chewed up a lot of my time and energy, and in the end I decided I needed a little vacation. I'm not going to bore you with the details — just as I'm giving you a break from The Schlegel Report this month, since there's not much to report — but things are moving forward again and there is still a chance the 18-incher will be fixed before Megameet. Even if it isn't, it's still quite serviceable; it's just tracking at Solar rate instead of Sidereal, which is only a minor inconvenience when observing visually.

So keep looking up, keep pressing onward, and enjoy those clear skies whenever we get them. Ad Astra!

— Rich Hogg

** We have had some **new Drive Keys** made up that have been re-cut to be a better match for the key switches on our telescopes, and we would like to get everyone to switch to the new key in order to cut down on the wear and tear on our switches. So, if you have been issued a Drive Key, and in particular if you use it frequently, please plan to bring it to an LVAAS event in the near future to trade it in for an upgraded key.*

General Meeting Minutes of May 7, 2017 held at South Mountain, Allentown

Director Rich Hogg brought the meeting into session at 7:03 p.m. He noted the usual agenda for the meeting; speaker, a short break, to be followed by the usual information session to include the introduction of new members, a brief treasurer's report, and other possible items of interest. He also announced the availability of new drive keys for the various club telescopes. This is a drive key replacement/ trade-in program designed to improve the longevity of the drive key lock mechanism. He also announced that the last of the 2017 LVAAS calendars are now on sale for \$5.00 each.

Rich then introduced the speakers for the evening, Peter Detterline and Gary Becker. Both are former Directors of LVAAS and both are also life members. Both are retired teachers/ planetarium directors and between them they have in excess of 74 years teaching. Their topic for the evening was the upcoming August 2017 solar eclipse. One of the points they discussed was the short duration of this eclipse because the sun's shadow is only about 65 miles wide, compared to the more typical 120 mile wide shadow. Thus the length of maximum duration is only about 2 minutes and 40 seconds. They also emphasized location matters, as in a location with clear weather is paramount. The best chance for clear weather is west of the Mississippi river. Their preferred site to witness the eclipse is Wyoming, with their backup site being Idaho. The ingress and egress parts of the eclipse last about 1 1/2 hours each and they recommend using binoculars with solar filters to observe this part of the eclipse. It is only during totality that you can view the eclipse naked eye. Their advice for photographing the sun during these ingress and egress phases is one which shows the limb darkening effect. For weather monitoring they recommend a phone app called BloomSky Weather for local 5 minute updates. For monitoring the circumstances of the eclipse itself they recommend Eclipse Chaser Mobile. Lastly they recommend that you have extra water, access to shade, emergency toilet facilities, and extra gasoline on hand.

The presentation ended at 8:18 p.m., a break followed and at 8:30 p.m. Rich brought the meeting back to attention. Gwyn Fowler filled in for her dad to conduct membership readings. First readings were conducted for Paul Zvarik, Gabriel Zvarik, and Olivia Zvarik. Second readings were conducted for Lou Spilko, Julie Knode, Ethan Knode, and John Katinis. Gwyn then also presented a brief Treasurer's report. She reported income for the month of \$6833.59, most from the First Energy road lease. Expenses for the month were \$1151.

Rich announced that MegaMeet was scheduled for the Labor Day Weekend of May 26-28 and that now a raindate of June 16-18 had also been planned. He also mentioned that Kyle Kramm was reinstituting Pulpit Rock Field Meets and he would act as the coordinator. The first Field Meet is scheduled for Saturday June 18 and the gate will be manned from 6:30 to 7:00 p.m. for those people who don't have a gate key. Kyle has established an email of kmanlvaas@gmail.com for coordinating Field Meets.

Frank Lyter gave an update on the 40" mirror. The mirror has now been cored. The next step is to verify that the coring has not changed the mirror figure. If the figure has not changed, then coating of the mirror is possible for June or July, and then the mirror would go back to Lockwood to make the secondary mirror.

The meeting adjourned at 8:44 p.m.

Minutes were prepared and submitted by Secretary, Ron Kunkel.

General Meeting: Open to the Public

Sunday, June 11, 2017 at 7 p.m.

Grady Planetarium, LVAAS Headquarters

620B East Rock Rd., Allentown PA 18103

"Astrophotography Doesn't Need to be Expensive"

Featuring Jake Ginsburg, DVAA



Jake Ginsburg is an attorney and amateur astrophotographer who resides in Lower Gwynedd. Jake currently serves as the Chair of Publicity of the Delaware Valley Amateur Astronomers.



The 2017 Astroimaging Calendar is still available! Copies will be available at the meeting, on sale for \$5.00 each.

**Megameet has been rescheduled to June 16 - June 18.
Check website for updates**

Ron's Ramblings

Ron's Ramblings is a monthly series of articles describing some recent or otherwise important event in astronomy. The ramblings will attempt to describe both the astronomical event and its significance. Obviously, the description will be that of a rambling amateur astronomer.



Making Supermassive Black Holes

The discovery of supermassive black holes in the early epoch of the universe, in the first billion years after the Big Bang, has been a puzzling problem for astrophysicists. How could such massive black holes form in such a short period of time? Now recent modeling which takes into account the coupling of radiation and matter appears to have solved the problem in a unique way. Apparently stellar mass black holes don't form and then grow to supermassive size, rather under special conditions supermassive stars can form and produce massive black holes which then can merge in a relatively short time to produce the supermassive black holes seen in the early epoch of the universe.

Previous modeling indicated that supermassive black holes have limits that determined how fast and how large they grow. And those models indicated that stellar mass black holes could not grow into the supermassive black holes seen in the center of early epoch galaxies in the short times required. But scientists from the Los Alamos National Laboratory, using computer codes developed for modeling radiation and matter coupling in nuclear bombs, modeled the formation of early stars. By taking into account how the radiation and stellar matter interact, they found that really massive stars could form under certain conditions. And these massive stars, stars weighing many thousands of solar masses, could then form relatively large black holes that could then quickly merge and grow into the supermassive black holes seen in the centers of these early epoch galaxies.

Another interesting result of this modeling also shows that the simulated supermassive black holes interact with galaxies in the same ways that is observed in nature, including star formation rates, galaxy density profiles, and thermal and ionization rates in gases. So not only does the new simulation form supermassive black holes but it also shows how these black holes are driving the very dynamics observed in galaxies.

References:

Joseph Smidt. (2017, March 3). The formation of the first quasars in the universe. Retrieved from <https://arxiv.org/pdf/1703.00449.pdf>

The end of my ramblings until next month-
Ron Kunkel



by Gary A. Becker



Eclipse Viewing on the Cheap

Preparation for the total solar eclipse that sweeps across our country on Monday, August 21 should be occurring now. In fact, if you are interested in obtaining lodging along the path of totality, where the moon completely covers the sun, accommodations were already difficult to obtain during the **summer of 2016**. However, enthusiasts all across the continental US will be treated to a partial solar eclipse, where part of the sun will be covered by the moon.

Anytime a partial solar eclipse is occurring, or for that matter anytime the sun is visible, presents a dangerous situation for retinal damage if the sun is observed directly without any appropriate filtration. It seems that everyone knows this, but during eclipse mania, the public wants to sneak a peek. The glance may turn into a stare, and that is where significant eye damage can occur. In addition, the extreme brightness of the sun will foil any unfiltered attempts to see the dark moon covering Sol. For younger children, I suggest a projection system which is easy to construct and to use. Obtain a long box, maybe in the range of two to three feet. On one of the long ends of the box, cut a hole several inches in diameter and tape to its surface a piece of aluminum foil perforated with a small pinhole. The optimum ratio of pinhole size to box length is 1 to 400. On the other end, glue or tape several thicknesses of white paper to the back of the box, or paint it white to act as a screen. Then cut a rectangular opening, perhaps three inches long by one inch wide near the screen of the box as a peephole to allow the screen to be visible. The child takes the box and puts it on his shoulder with his back towards the sun, the pinhole aperture facing Sol. On a clear day, the pinhole will project a safe image of the partially eclipsed sun onto the screen.

Here are other ways of creating pinhole images of the sun which are even easier. Take a colander and a white bed sheet. Hold the colander in the direction of the sun, and allow its holes to project images of the partially eclipsed sun onto the bedding, or let the motions of leaves on a tree project thousands of solar images onto a white sheet which is placed beneath it. Even the holes in a Ritz cracker will work, if you don't eat the snack. These are simple, inexpensive, and extremely safe methods to view a partial solar eclipse. Pictures are online at astronomy.org/StarWatch/June/index-6-17.html#6-4-17.



From the LVAAS Archives:

June, 1967: Pulpit Rock Priorities, Sirius B, and the Cold War Almost Gets Hot

by Sandy Mesics

The ink on the deed to Pulpit Rock wasn't even dry yet, but the Board of Governors drew up a list of Pulpit Rock priorities and some policies in June 1967. The list looked like this:

1. Road maintenance (They didn't have Ron Kunkel around yet!)
2. The 12 inch Cassegrain (at the time, housed in the Kaweck Observatory, now mothballed)
3. Observation area
4. HQ building (this was never built: See last month's Observer)
5. Power supply (soon to be resolved when power came to Pulpit Rock)
6. Policing (continues to this day)
7. 20 inch telescope (this would eventually become the Schlegel-McHugh Observatory)
8. 10 inch reflector housing (eventually became the Spacek Observatory)
9. "Musts" gate, signs, insurance, fire extinguishers (note that a restroom didn't even make the list!)

Policies included: No fires, and smoking only in designated areas.

Sara Lee Lippincott and Sirius B

If you think the planetarium gets crowded during general meetings these days, consider this item from 1967: Sara Lee Lippincott from Swarthmore College's Sproul Observatory spoke to 65 members and guests at the general meeting. Ms. Lippincott graduated from the University of Pennsylvania, and earned her M.A. degree from Swarthmore College, where she worked closely with Dr. Peter van de Kamp from 1945 to 1972, and



Figure 1. Ms. Sara Lee Lippincott

became observatory director in 1972, when van de Kamp retired.

Lippincott was briefly married to television pioneer Dave Garroway (the Today Show) from 1980-1982. Garroway, who suffered from lifelong depression and complications from open heart surgery, committed suicide in the couple's home at age 69. As of this writing, Ms. Lippincott, age 96, lives in the suburbs of Philadelphia.

From The History of LVAAS, 1967: "Miss Sara Lee Lippincott delighted her audience at the General Meeting by choosing a subject which holds great fascination for all amateur astronomers, the companion star of Sirius.

Assuming a chatty and informal manner, she outlined the objectives and problems of the program at Sproul Observatory in connection with Sirius B, while at the same time avoiding references to involved mathematical formulae and theoretics that might have left some of our less advanced members and guests in a blue funk.

“Miss Lippincott traced the history of the observations of Sirius B and touched on the mechanics of calculating the orbits of A and B. The objectives of the program are twofold. 1. To separate the shift in Sirius B’s spectrum caused by the Doppler shift of the star’s motion from that resulting from the energy required by the photons to break free of the dwarf’s great gravitational attraction and 2. Defining the actual orbital motion of B independent of A.

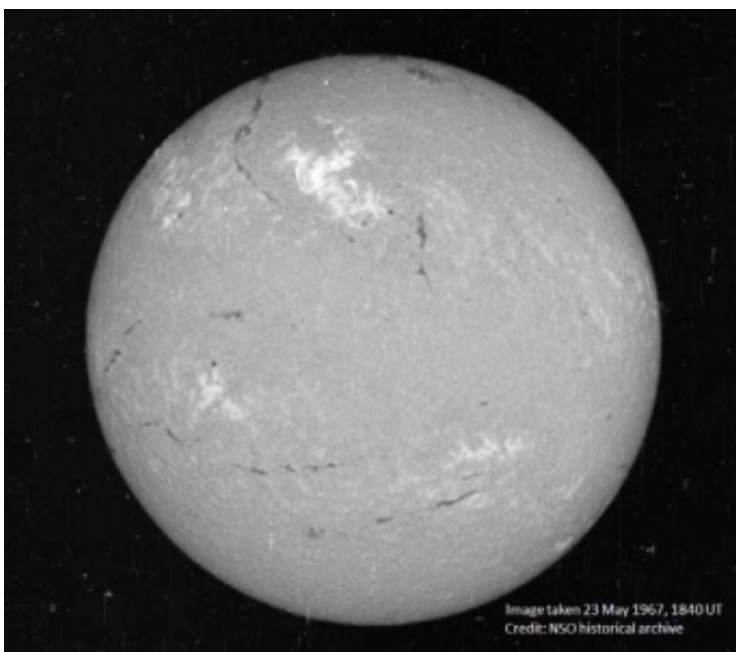
“She then discussed observational evidence of Sirius B having been a red giant as recently as 200 AD, but indicated reluctance to accept this. She agreed to the possibility that B was a double star in itself, as suggested by one of the members of the society.” *Today, we think Sirius B, the second white dwarf star to be discovered, was a red giant 120 million years ago, and there is no evidence of it being a double star. However, because Sirius B is one of the most massive white dwarfs discovered, it’s surface gravity is huge, which results in an observable gravitational red shift.*

Not surprisingly, because Swarthmore’s Sproul Observatory, housing a 24-inch refractor, was located just 18 miles from Center City Philadelphia, “the poor seeing was described as being the greatest observational (photographic) hazard for much of the results of the Sproul program is dependent upon measuring the distances between the primary star and its companion on the photographic images.”

The Cold War Almost Gets Hot

LVAAS member Preston Smith’s sighting of a record length string of sunspots (he estimated 194,400 miles) was preceded by a fairly active auroral display the night before (May 25-26, 1967). Activity was greatest in the northeast and the northwest with streamers extending to and beyond the zenith, the waves of diffuse motion rising in greenish-white and (pale) green patterns, with an occasional flash of red. It was the first Lehigh Valley observers had seen in a long time. The aurora was seen as far south as New Mexico, and the solar activity that caused this display, which Preston also observed, almost resulted in the cold war with the Soviet Union becoming a hot war.

<https://astronomynow.com/2016/08/10/solar-storm-of-1967-nearly-took-us-to-brink-of-war/>



By May 23, professional observatories reported a flare in visible light, and unprecedented levels of radio waves being emitted by the Sun. This activity disrupted some of our Ballistic Missile early Warning Systems in North America, which if done intentionally would be an act of war. Since the military was aware of the solar activity, and the “jamming” abated as solar radio emissions waned, the situation did not escalate. But as a result, the military built a stronger space weather forecasting system.

Highlights of the June Sky

by

Carol Kiely



There is nothing better than sitting back on chair in the garden on a warm evening and watching the stars appear as the twilight disappears. One of the first objects to appear will be Jupiter, a planet that has been receiving a lot of attention lately. Earlier this year NASA's Juno spacecraft flew over Jupiter's south pole and the data is now being processed. The images of swirling clouds are amazing!



Image credit: NASA/JPL-Caltech/SwRI/MSSS/Betsy Asher Hall/Gervasio Robles and NASA Image Gallery
https://www.nasa.gov/mission_pages/juno/images/index.html

Most of the visible cloud tops contain ammonia and hydrogen sulphide. The multiple swirling cloud structure is very different from the single swirling storm at Saturn's south pole. We cannot, of course, see such detail with land-based telescopes, but on a clear night it is possible to see several cloud bands on the planet. You should also see if you can find Jupiter's four largest moons - Io, Ganymede, Europa and Callisto - and note how their positions change as they orbit the planet. Then take a moment to remind yourself that the Juno spacecraft is also orbiting the planet and sending data 421 million miles back to Earth!

An hour after sunset Saturn will rise in the eastern sky. On June 15th, Saturn will be in opposition which means that the earth will fly between the ringed planet and the Sun.

A warm evening this time of year is also a good time to remind yourself of some of the Greek legends. Both Hercules and Leo are visible and so too are the constellations that represent Princess Ariadne's wedding crown and Queen Berenice's hair. Hercules contains the most spectacular globular cluster in the night sky, M13. You should compare its appearance with two other globular clusters, M3, in Canes Venatici, and M5, in Serpens Caput. There is also another globular cluster in Hercules, M92.

If you have a good view of the southwestern horizon, just after sunset, you may still be able to see all of

Hydra - the largest constellation in the celestial sphere. Starting from his head in the west and moving along his body, you will come across the constellations Crater, the Cup, and Corvus, the Crow. Almost half way between the upper left-hand star of Corvus and Jupiter lies the Sombrero Galaxy. If this is not challenging enough for you why not set your sights on a cluster in Hercules, known as Abell 2151, where every point of light is not a star, it's a galaxy. You will need a camera attached to your scope to see this.

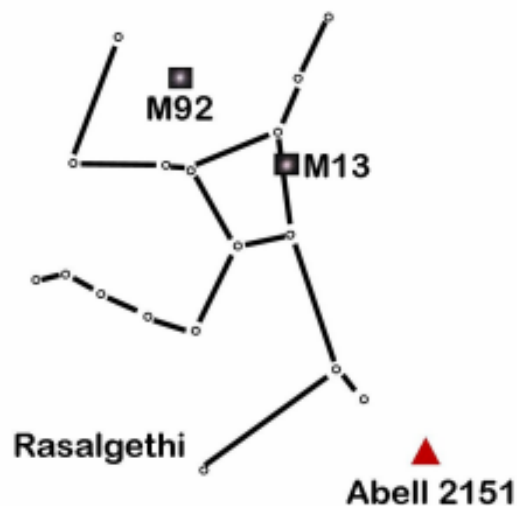
And now for a little bit of lunacy.....

Do you remember the full moons we saw last year in October, November and December? They were deemed "supermoons" because they appeared slightly larger and brighter than usual due to the Moon being less 225,000 miles from Earth. Well, this month, the opposite is going to happen, there will be a "micromoon". On Friday June 9th, the full moon will appear less bright and slightly smaller than usual. This is because on that day the moon will be over 252,302 miles from Earth.

In April, at the end of a lecture, someone asked me if the full moon was going to appear pink that month because they had heard that the April moon was called the Pink Moon. My answer, of course, was 'no'. The only time you see the moon turn pink (or red) is during a lunar eclipse. The name "Pink Moon" is a traditional name for the April moon and comes from the pink flowers that appear in many places at that time of year. June's full moon is sometimes called the Strawberry Moon because this is the month when strawberries are harvested. In Europe, it is sometimes called the Rose Moon because June is the month when the roses begin to bloom. You can find a list of traditional names for the moon in the Farmers' Almanac, or at:

<https://farmersalmanac.com/full-moon-names>.

HERCULES



Happy Stargazing!



*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!*

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."

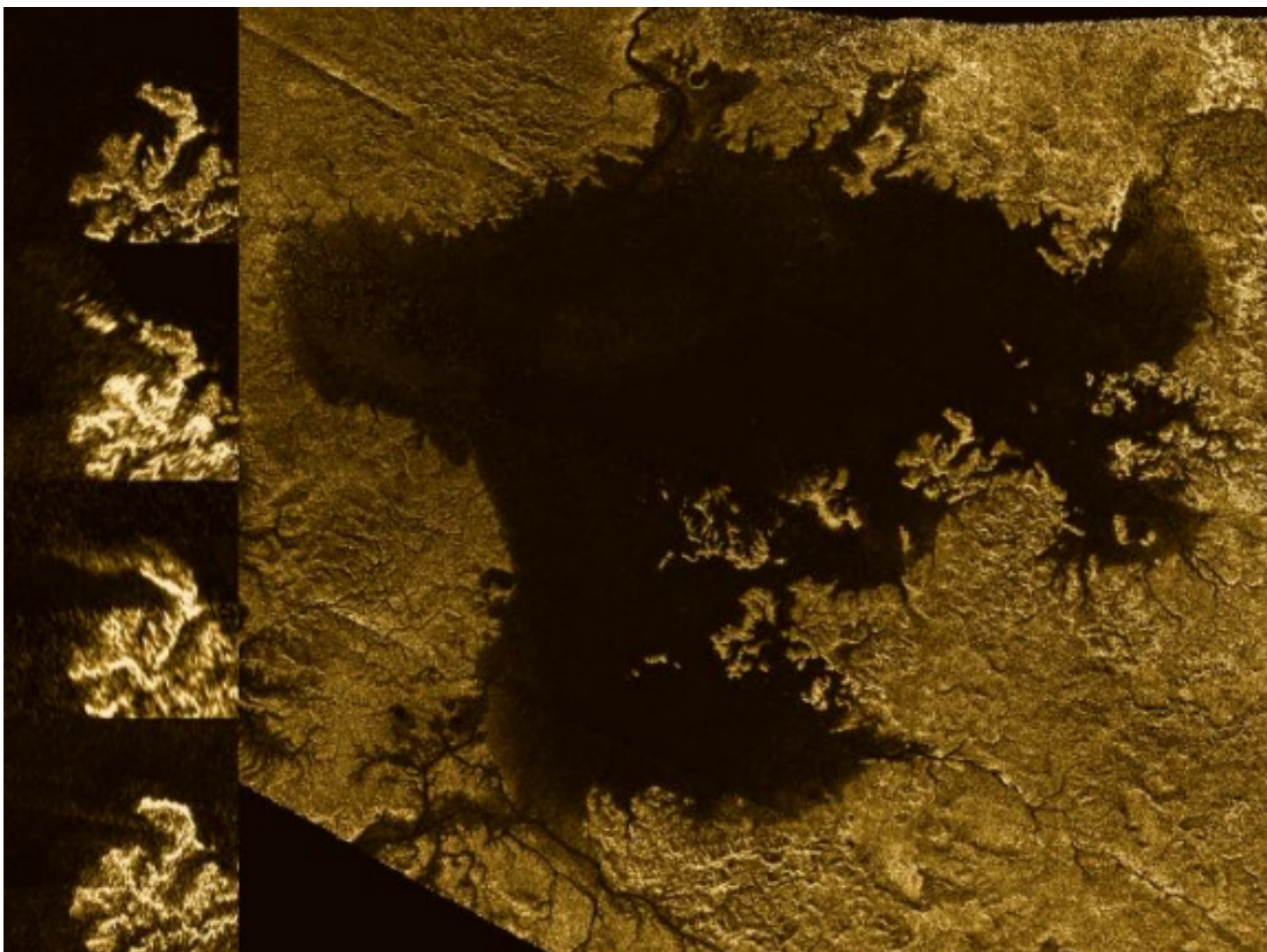
Bubbles could also arise from a lake that contains more ethane than methane. The two will normally mix, but a less-dense layer of methane with dissolved nitrogen—from a gentle rain, for example—could settle on top of an ethane layer. In this case, any disturbance—even a breeze—could mix the methane with 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/>



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

Oh, Snap!



<https://www.youtube.com/watch?v=08LBltePDZw&feature=youtu.be>

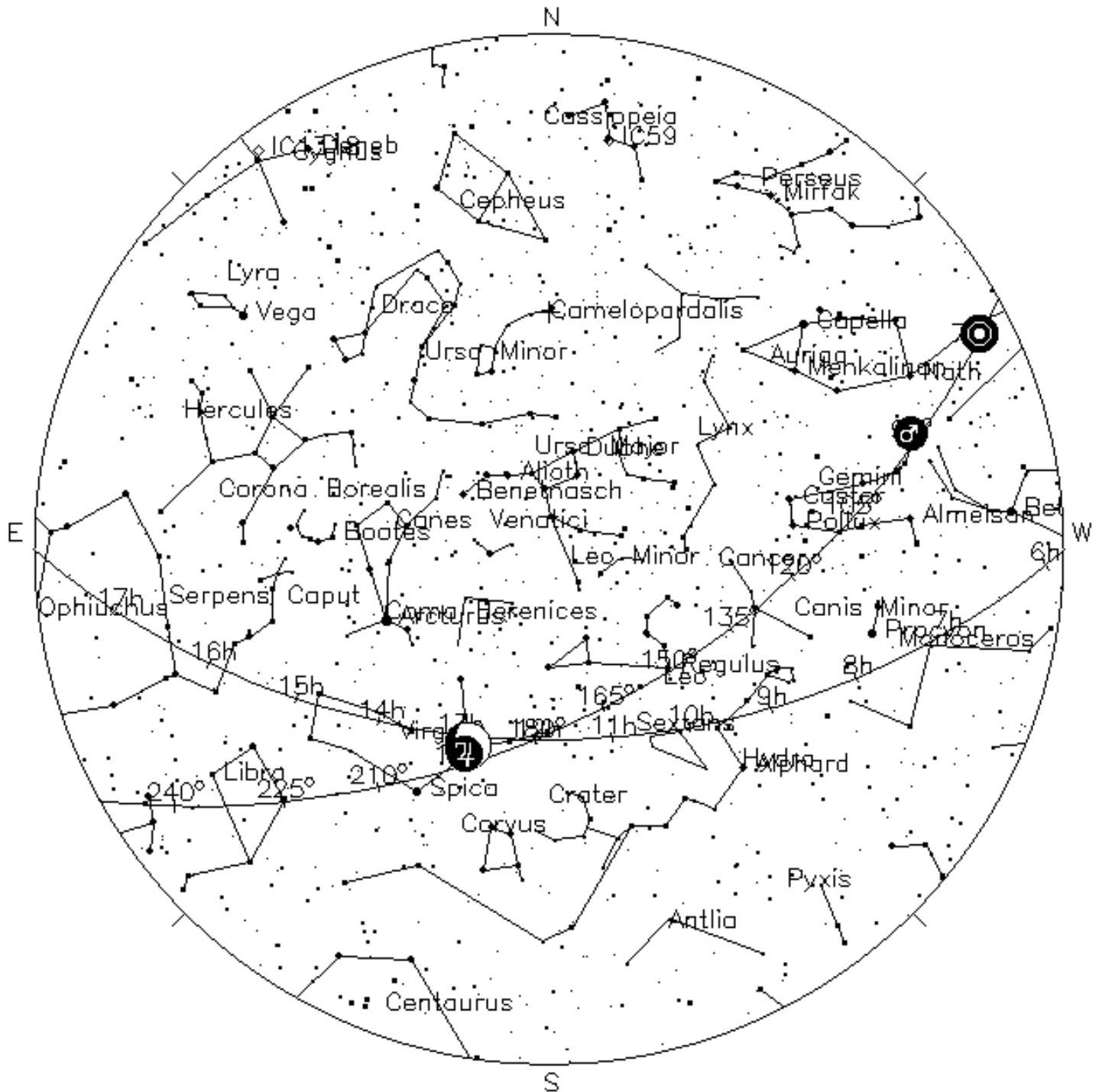
"...A survey of 400,000 of the nearest galaxies was mapped in three dimensions. This is what our (nearby) Universe looks like, and as you can see, it really is mostly empty space..." - contributor Ethan Siegel.

Extracted from [forbes.com](https://www.forbes.com/sites/startswithabang/2017/05/03/there-is-sound-in-space-thanks-to-gravitational-waves/#bd964bb40491);

<https://www.forbes.com/sites/startswithabang/2017/05/03/there-is-sound-in-space-thanks-to-gravitational-waves/#bd964bb40491>

Please submit your contributions to editorlvaas@gmail.com

Sky above 40°33'58"N 75°26'5"W at Sun 2017 June 4 0:00 UTC



Your Sky was implemented by John Walker in January and February of 1998. The calculation and display software was adapted from Home Planet for Windows.

The GIF output file generation is based upon the ppmtogif module of Jef Poskanzer's pbmplus toolkit, of which many other components were used in creating the images you see here.

ppmtogif.c - read a portable pixmap and produce a GIF file

Based on GIFENCOD by David Rowley [mgardi@watdscu.waterloo.edu].

Lempel-Zim compression based on "compress"

Modified by Marcel Wijkstra [wijkstra@fwi.uva.nl]

Copyright © 1989 by Jef Poskanzer.

Check out additional features of **Your Sky** at : <http://www.fourmilab.ch/yoursky/>

JUNE 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				01 First Quarter Moon	02	03 Star Party
04	05	06	07	08	09 Full Moon	10
11 General Meeting - South Mountain 7:00 PM	12	13	14	15	16 MegaMeet	17 Last Quarter Moon
18 Deadline for submissions to the Observer	19	20	21	22	23 New Moon	24
25 LVAAS Board of Governors Meeting	26	27	28	29	30 First Quarter Moon	

JULY 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						01
02	03	04	05	06	07	08 General Meeting/Picnic - 5:00 PM South Mountain
09 Full Moon General Meeting/Picnic - (rain Date)	10	11	12	13	14	15
16 Last Quarter Moon	17	18	19	20	21	22
23 Deadline for submissions to the Observer New Moon	24	25	26	27	28	29 Star Party
30 First Quarter Moon LVAAS Board of Governors Meeting	31					

2017 LVAAS Event Calendar

*** Lunatics and Stargazers has been discontinued until further notice**

2017 LVAAS Event Calendar												
	Sundays			Thursday	Friday	Saturday	Monday	Multi-Day Weekends	Moon Phase			
	General Meeting time	location	Board meeting	Astro- Imaging	Lunatics and Stargazers	Star Parties	Scouts at S. Mountain	Scouts at Pulpit R.	New	First	Full	Last
January	2:00 PM 8	Muhlenberg	29	12	no mtg	no mtg		no camping	27	5	12	19
February	2:00 PM 12	Muhlenberg	26	9	no mtg	no mtg		no camping	26	3	10	18
March	2:00 PM 12	Muhlenberg	26	9	3 & 31	4		no camping	27	5	12	20
April	9	S.M.	30	13	no mtg	1		7 – 9	26	3	11	19
May	7	S.M.	21	11	5	6		19 – 21	25	2	10	18
June	11	S.M.	25	no mtg	2	3		9 – 11	23	1 30	9	17
July	05:00 PM 8	S.M.	30	no mtg	28	29		14 – 16	23	30	9	16
August	12	Pulpit	27	no mtg	25	26		4 – 6	21	29	7	14
September	10	S.M.	24	7	29	30		8 – 10	20	27	6	13
October	8	S.M.	29	5	27	28		6 – 8	19	27	5	12
November	2:00 PM 12	S.M.	26	2	no mtg	25		3 – 5	18	26	4	10
December	2:00 PM 9	Grace Community	17	7	no mtg	no mtg		no camping	18	26	3	10

MegaMeet June 16 - June 18

July, Aug & Dec are Saturday meetings with rain date on Sunday
 Jan., Feb., and March meetings are at Muhlenberg College
 August meeting is at Pulpit Rock
 December meeting / Holiday Party is at at Grace Community Church
 All meetings 7 P.M. unless otherwise noted

Publishing images is a balancing act!

When preparing your images for publication in The Observer, please consider the following guidelines:

Put the quality in:

- ▶ Considering the "print" size of the image, make sure you have at least 150 pixels/inch.
- ▶ Use a reasonably good quality for the JPEG compression ratio.

But watch the "waistline"!

- ▶ Don't go too much above 200 pixels/inch max.
- ▶ Use the lowest JPEG quality that still looks good!
- ▶ Shoot for <300KB for a 1/2 page image or <600KB for a full page.

Tip: If you're not Photoshop-savvy, you can re-size and compress undemanding images ("human interest", not astroimages), with an online tool such as

<http://www.ivertech.com/freeOnlineImageResizer/freeOnlineImageResizer.aspx>. It will also tell you the pixel size and file size of your original, even if you don't download the processed copy.

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Members please use above email address for submissions.

Society members who would like to submit articles or images for publication should kindly do so by the Sunday before the monthly meeting of the BOG (please see calendar on website) for the article to appear in the upcoming month's issue. PDF format is preferred. Early submissions are greatly appreciated. Articles may be edited for publication. Your comments and suggestions are welcome.

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