

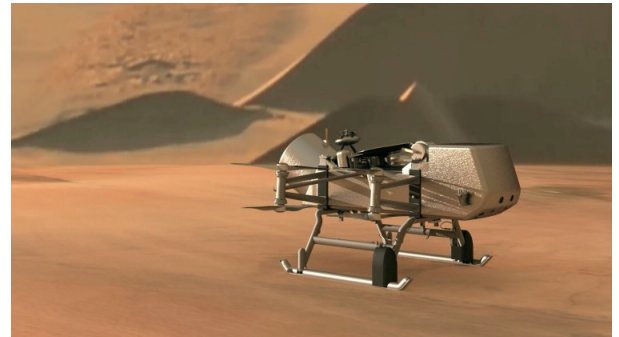


October, 2019

November Meetings

The next monthly MAS meeting will be held on **Friday, November 15th**, from 7 PM at the Observatory. This is going to be a combined Board/Membership meeting. During the first hour's Board Meeting organizational and Observatory related issues will be discussed. Every member is welcome to attend. During the second half, starting at 8 PM **Dennis Roscoe, PhD** will give a presentation entitled: **A Dragonfly on Titan.**

"Titan is the largest moon of Saturn and the second largest moon in our solar system. It has a Nitrogen based atmosphere that is rich in organic compounds that are the building blocks of life. NASA will send a flying spacecraft to Titan's surface called Dragonfly to explore the moon and search for life. Dr. Roscoe will detail the Dragonfly mission."



The **First Wednesday** How To Meeting will be on **November 6th at 7:30 PM**. The agenda is open, you can ask any astronomy related question, learn how to use the Club's equipment, or bring out your own that you need some help with.

The **PixInsight Focus Group** for those interested in astrophoto processing will convene on **Wednesday, November 13th at 7 PM**

As always, the Observatory is open on Saturday nights, and also when posted on the Google Group.

Holiday Party

The 2019 Christmas Party will be on **Saturday, December 7th at 4:00 PM** at the Observatory, New Berlin. Pizza and soda will be served. Donations of \$5/person or \$8/family is appreciated. Please bring along a side dish or dessert to share.

Please join us with your family. Let's celebrate the Winter Holidays together.

Renew Your Membership for 2020!

MAS depends on its members and their dues to help sustain the largest amateur astronomy club in the US that has been around for the past 87 years!

There are several renewal methods you can choose from. To do it online just follow this link: <http://www.milwaukeeastro.org/sendmsg/onlineRenew.asp>. The renewal form can also be printed out and send it back along with a check made payable to The Milwaukee Astronomical Society.

If you are wondering whether you need to renew your MAS membership, simply look for your name on this list: <http://www.milwaukeeastro.org/membership/membersRenewed.asp>. If your name is there, your membership is active through 2020.

Thank you for being a member of the Milwaukee Astronomical Society.

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Observatory Report

The new sign has been put up in the parking lot and looks great! There has also been a new address marker installed next to the driveway at the road making finding the Observatory easier.

The annual inspection of the fire extinguishers was done last month, the only problem found was A-Building was short one extinguisher from what the inspector's recorder show. Other than that, like the fire department's inspection, which was preformed last month there were no problems.

Members have been getting out when it is clear to make good use of the Club's equipment both at night and during the day, to image the inner planets.

Respectfully Submitted,
Paul Borchardt, Observatory Director

Treasurer's Report

\$5,265.17	Starting Balance as of 09/18/2019
	Expenditures
\$10.17	PayPal fees
\$168.15	Maintenance project
\$397.72	Periodic expenses
\$122.82	Annual expenses
\$948.67	Other expenses
\$92.79	WE Energies
\$36.00	Water/Sewer
\$1,776.32	TOTAL Expenditures
	Revenue
\$79.00	Private donations
\$810.00	Membership dues
\$124.00	Public donations
\$50.00	Key deposit
\$2.00	Grants
\$1,065.00	TOTAL Revenue
\$4,553.85	Ending Balance as of 10/16/2019

Respectfully Submitted,
Sue Timlin, Treasurer

Membership Report

Since the last Report we received 21 renewals and 4 new applications. We welcome Tom Christy & Family, Joy and Kevin Roll, Brandon Kostka & Family, and Kathleen Vazquez. The total number of active members is 182.

Respectfully Submitted,
Jeff Kraehnke, Committee Chair

Meeting Minutes

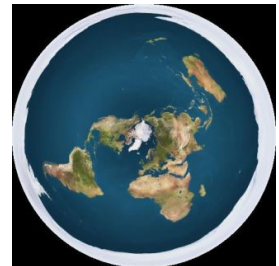
The meeting was held on October 18th at the MAS Observatory, New Berlin and was called to order at 7:05PM by Lee Keith Vice President.

Minutes, Treasurer's Report and Observatory Director's Report electronically submitted ahead of the meeting were approved. **Membership Committee Report** was submitted electronically ahead of the meeting. Membership applications of Tom Christy & Family, Joy and Kevin Roll Family, Brandon Kostka, and William Goes were approved.

Old Business – Maintenance: The yearly maintenance work is finished. Budget was \$2425 , plus allocated \$75 (rounding up to \$2500), plus additional \$200 budgeted for observatory sign, totaling \$2700; after expenditures (\$ 2331.16), remaining budget allocation is \$368.84. *Solar camera:* The ASI174, DMK51, and Blackfly S are still being considered, but the Blackfly is the best suited for our needs. However, their own software should be used, which is not considered to be a good situation. This issue is still on the table, but will be looking for more options.

New Business – Snowplowing: Paul announced that we will not be borrowing the plow we've been using in the past. We need to find someone who will plow the eastern half of the parking lot and the driveway up to the front garage, anytime accumulation reaches three inches. For pathways from the lot to all the sheds/domes and Quonset, we'll go back to using the snow blower. Members who know of someone who would take the job are asked to contact them to get an estimate of the cost. Sue has someone to ask, but is not sure of their reliability. *Hot water in bathroom :* We are looking at a Bosch Electric Mini-Tank, 2½ gallon capacity for \$150, or 4 gallon capacity for \$175. It would be put only in the handicapped bathroom, as the electrical circuit can only support one water heater. Motion was made and carried to allocate \$225 to purchase the water heater and any needed piping and electrical supplies. **Announcement** – Sue is doing a talk for the Eagle Library on October 19.

Program – Lee Keith gave a short presentation on the upcoming Mercury transit, which will be occurring on November 11. Then Lee gave another presentation, The Flat Earth Society.



Respectfully Submitted:
Sue Timlin, Acting as Secretary

Summer Maintenance Projects

In October we put up the new Parking lot sign, and replaced the damaged entrance sign. We also repaired the damaged siding/soffit around the northwest corner of the Z-building.

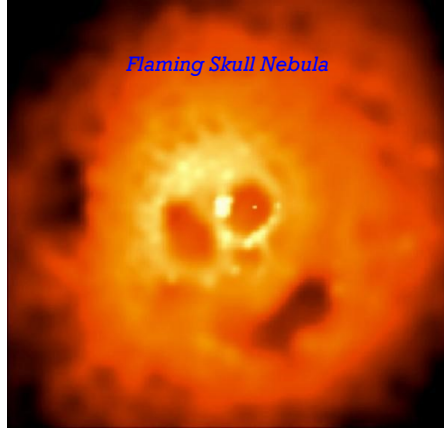
For our Members' convenience, a Bosch ES-4 electric mini tank water heater has been installed for the handicap bathroom sink.



Observatory News

Scary Sky Open House on October 25

The MAS had its first Halloween themed open house on October 25th. Fortunately, it was a rare clear night with calm winds but it was cold with

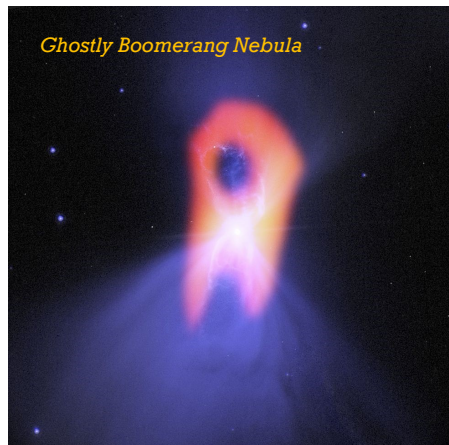


Flaming Skull Nebula

temps in the 40's and sinking quickly. Sue Timlin headed the Halloween Decoration Committee and put up several scary lights and haunted and animated candy dishes in each dome and filled them with treats for the many children that came out. Only a couple members were costumed; Sue Timlin was a Devil and Dennis Roscoe was Zorro (without his sword). (Sorry if I missed anyone) All the domes were open and personned. The open house started at an unusually early 6PM and lasted to 9PM.

Talking with many people after the program, by far the most memorable object was Saturn and its rings. We need to arrange for Saturn to be visible during all our open houses!

Speaking of the program, entitled "The Most Haunted Celestial Objects in the Entire Universe", I gave a record **four** (!) installments to the continuous stream of guests we had that night! I even had



Ghostly Boomerang Nebula

someone come in just before 9PM and ask for a program. It consisted of mostly images taken by our active & productive imagers along with an explanation of each on its own slide. I also included some scary constellations and a picture of the black hole recently imaged in M87. Over the great sound system in our

newly renovated auditorium (it still amazes me) were a wide variety of moans, screams, yelling, squeaky doors, thunder, meowing cats, barking & howling dogs and a few festive Halloween favorites like "Monster Mash" and "They Only Come Out at Night" by The Smashing Pumpkins. (Yes, that's really the name of the band, big in the 80's & 90's that I felt had to be included.)

One advantage to the timed program (each slide was only 20 seconds) is that the program does not run long



Witch Head Nebula

(just 22 minutes) and more people can see the entire program without coming in during the middle and missing the beginning not to mention we can handle more people with a shorter program.

I think we can judge the popularity of the program due to the loud applause after each presentation and the thank you's I received especially

after the first (and largest) show. There was one show where one young girl got up and danced



Death Eater Nebula

in the aisle! One group of young Cub Scouts was apprehensive at the beginning with all the scary sound effects but later were laughing at some of the sounds and pictures.

I think we have a hit on our hands and should definitely repeat this in future years! And play up the Halloween theme with costumes and treats. I had a lot of fun with the pictures and sounds and talking with the children as well as many people who said they were moved to join due to the theme and program.

Lee Keith

In the Astronomical News

A Visit to Watery Super-Earth Alien Planet K2-18 b Would Be Super-Strange

The alien planet K2-18 b would be a truly exotic vacation destination.

Two research teams just announced the detection of water vapor in the air of K2-18 b, a "super-Earth" that lies about 110 light-years from our planet. This is a landmark discovery, because the alien world is potentially habitable, apparently orbiting its star at the right distance for liquid water to exist on the planetary surface.

But this doesn't mean that K2-18 b is Earth-like; in fact, the two worlds are quite different. K2-18 b is about 2.3 times wider than Earth and eight times more massive, for example, and it orbits a red dwarf, a star much smaller and dimmer than our own sun.

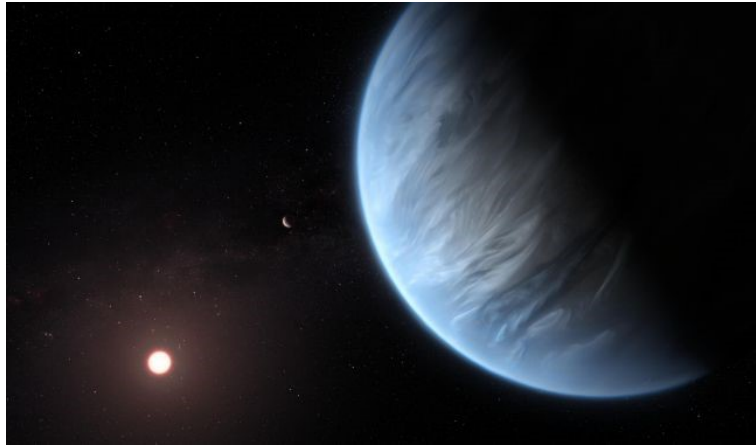
K2-18 b, which was discovered in 2015, orbits relatively close to its host star, completing one lap every 33 Earth days. So, the planet could be tidally locked, always showing one face to the red dwarf, just as *Artist's impression of planet K2-18b, its host star and an accompanying planet.* Earth's moon always shows us its near side. If that's the case, then K2-18 b would have a day side and a night side, with a strip of permanent twilight separating the two.

But we don't know if that's the case, and the uncertainty continues from there.

One of the research teams, led by Angelos Tsiaras of University College London's Centre for Space Exochemistry Data (CSED), determined that water vapor makes up between 0.01% and 50% of K2-18 b's atmosphere. With such a big range, it's tough to characterize the exoplanet; it could be completely flooded, for instance, or a world with lakes and oceans but lots of exposed land, study team members said.

The other research group, led by Björn Benneke of the Institute for Research on Exoplanets at the Université de Montréal, posited another scenario. These scientists suggested that K2-18 b consists of a planetary core surrounded by a huge, hydrogen-dominated atmosphere that contains mere smidges of water vapor. Such a world wouldn't have a surface, at least not the kind we're

used to here on Earth. The planet's temperature is also uncertain. Tsiaras' team estimated a surface temperature of between minus 100 and 116 degrees Fahrenheit (minus 73 to 47 degrees Celsius). K2-18 b's gravitational pull is better understood, because we know the planet's mass and diameter. If most of the exoplanet is solid rock and ice, a visitor to the world's surface would feel 37% heavier than he or she feels on Earth. (K2-18 b's higher mass is mostly offset by its greater size in this regard, because the gravitational force decreases with the square of the distance from a planet's center.)



Artist's impression of planet K2-18b, its host star and an accompanying planet.
Credit: ESA/Hubble, M. Kornmesser

The picture would be more complicated if K2-18 b is mostly atmosphere, as envisioned by Benneke's team. In that case, the gravitational pull would depend on the size of the planet's core. But the force of that pull wouldn't really matter from your perspective; the massive atmosphere would

generate such high pressures that you'd be squished wherever you tried to stand.

Tsiaras pointed out that K2-18 b has a sibling that orbits closer to the host star. From the surface of K2-18 b, this other planet might look like Venus does in Earth's sky.

And then there's the star itself, which would look quite different from our own sun.

"You would see a red star rather than an orange-yellow one," Ingo Waldmann of CSED, a member of Tsiaras' team, said during the telecon.

Red dwarfs tend to be more active than sun-like stars, more frequently unleashing powerful flares. K2-18 b's parent star is quiescent by red dwarf standards, Waldmann said, but the star may still bathe the planet in higher quantities of damaging ultraviolet radiation than we're used to. "For life on Earth, that would be bad — we'd all get cancer relatively quickly," Waldmann said. "But, you know, life there may have evolved differently. So, it's hard to tell."

Mike Wall at space.com

Adopt a Telescope Program - Signup Sheet

	Adopter	Scope	Location
1	Sue Timlin/John Hammetter	18" F/4.5 Obsession	Wiesen Observatory
2	Steve Volp	12.5" F/7.4 Buckstaff	B Dome
3	Robert Burgess	12.5" F/9 Halbach	A Dome (Armfield)
4	Russ Blankenburg	18" F/4.5 Obsession	Albrecht Observatory
5	Jeff Kraehnke	14" F/7.4 G-scope	Z Dome
6	Lee Keith/Tom Kraus	12" F/10 LX200 EMC	Tangney Observatory
7	Herman Restrepo/Colin Boynton	10" F/6.3 LX200	Ray Zit Observatory
8	Tamas Kriska	Stellarvue SVQ 100 F/5.8	Jim Toeller Observatory
9	Paul Borchardt	Solar scope	SkyShed POD



MAS Observatory

18850 Observatory Rd
New Berlin, WI 53146

www.milwaukeeastro.org

At Your Service

Officers / Staff

President	Tamas Kriska	414-581-3623
Vice President	Lee Keith	414-425-2331
Treasurer	Sue Timlin	414-460-4886
Secretary	Agnes Keszler	414-581-7031
Observatory Director	Paul Borchardt	262-781-0169
Asst. Observatory Director	Jeff Kraehnke	414-333-4656
Newsletter Editor	Tamas Kriska	414-581-3623
Webmaster	Gene Hanson	262-269-9576

Board of Directors

Jim Bakic	414-303-7765
Scott Berg	262-893-7268
Russ Blankenburg	262-938-0752
Clark Brizendine	414-305-2605
Jason Doyle	414-678-9110
John Hammetter	414-519-1958
Jeff Kraehnke	414-333-4656
Jim Schroeter	414-333-3679
Gabe Shaughnessy	262-893-4169
Steve Volp	414-751-8334
Mike Wagner	262-547-3321

November Keyholders

11/02	Jeff Kraehnke	414-333-4556
11/09	Tamas Kriska	414-581-3623
11/16	Tom Schmidtkunz	414-352-1674
11/23	Sue Timlin	414-460-4886
11/30	Jim Bakic	414 303-7765