The Prairie Astronomer

October 2016 Volume 57, Issue #10

October Program: Club Star Party

The Newsletter of the Prairie Astronomy Club

The Prairie Astronomer

NEXT PAC MEETING: October 25, 7:30pm

At Hyde Observatory

PROGRAM

October: Club star party at Hyde Observatory.

FUTURE PROGRAMS

November: How to Buy a Telescope

December: PAC Holiday Gathering, “The Thirty Meter Telescope” by Larry Stepp @ Mueller Planetarium

Buy the book! The Prairie Astronomy Club: Fifty Years of Amateur Astronomy.
Order online from Amazon or lulu.com.

CONTENTS

EVENTS

PAC Meeting
Tuesday October 25th, 2016, 7:30pm
Hyde Observatory

Howling Homestead, October 29

PAC Meeting
Tuesday November 29, 2016, 7:30pm
Hyde Observatory

PAC Meeting
Tuesday December 27, 2016, 6:30pm
Mueller Planetarium

Newsletter submission deadline November 19

2016 STAR PARTY DATES

Photo by Brian Sivill

	Star Party Date	Star Party Date	Lunar Party Date
January	Jan 1st	**Jan 8th**	
February	Jan 29th	**Feb 5th**	
March	Mar 4th	**Mar 11th**	
April	Apr 1st	**Apr 8th**	Apr 15th
May	Apr 29th	**May 6th**	May 13th
June	May 27th	**Jun 3rd**	
July	**Jul 1st**	Jul 8th	
NSP	**July 31st - Aug 5th**		
August	Jul 29th	**Aug 5th**	Aug 12th
August	Aug 26th	**Sep 2nd**	Sep 9th
September	Sep 23rd	**Sep 30th**	
October	Oct 21st	**Oct 28th**	
November	Nov 25th	**Dec 2nd**	
December	Dec 23rd	**Dec 30th**	

PAC E-MAIL:

info@prairieastronomyclub.org

PAC-LIST:

Subscribe through GoogleGroups.
To post messages to the list, send to the address:

pac-list@googlegroups.com

ADDRESS

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WEBSITES

www.prairieastronomyclub.org
https://nightsky.jpl.nasa.gov
www.hydeobservatory.info
www.nebraskastarparty.org
www.OmahaAstro.com
Panhandleastronomyclub.com
www.universetoday.com/
www.planetary.org/home/
http://www.darksky.org/

Night Sky Network

PAC Meeting Minutes

Minutes for the meeting of Sept. 27, 2016

President Jim Kvasnicka called the meeting to order. 10 members, 1 guest.

We started the meeting with the program on Rick Johnson's astrophotography. A great program from Rick, as usual.

Jim reviewed upcoming events for October. Also, Jim thanked all volunteers for helping out in September, we had 3 events on September 10. They included:

The Wildwood Star Party in Nebraska City, with Dan Delzell, Bob Kasvinski, and Mike Kearns attending.

The Great Scout Out at Homestead National Monument, attended by, Rick Brown, Beth Jenkes, Scott Boharty, Dave Knisely and John Lammers.

Also, a Girl Scout event in Lincoln with Dave Churilla and Jim Kvasnicka. Thank you all who made these events a great success.

Jim provided his monthly observing report with a focus on the constellation Pegasus.

Jim also reviewed benefits and dues for membership in PAC.

Club business,

John Reinert provided a monthly treasurer's report. The base for the Earl Moser Sundial is progressing.

Nominations of club officers:

President:

Vice President: Brett Boller

2nd Vice President:

Treasurer: John Reinert

Secretary:

Jim, Beth, and Lee have declined to run for office this year. Nominations will remain open until the October meeting.

Lee Thomas provided an update on Hyde's telescopes. The C-14 will be replaced with a 14" OTA with a Mathis mount. This will be installed around the first of the year.

Branched Oak Observatory is having a fund raising Star-B-Q at their observatory. They would like about four telescopes from PAC to be there. Also, this will be the premiere of the Boller-Sivill Observatory.

Our October program will be a star party, with members invited to bring their 'scopes and using Hyde's as well. We hope to help members with observing techniques, logs, etc. We hope to see you there.

Brian gave us an update on construction of the Boller-Sivill Observatory. It should be ready for the Oct. 1 Star-B-Q.

Meeting Adjourned.

Respectfully submitted by,

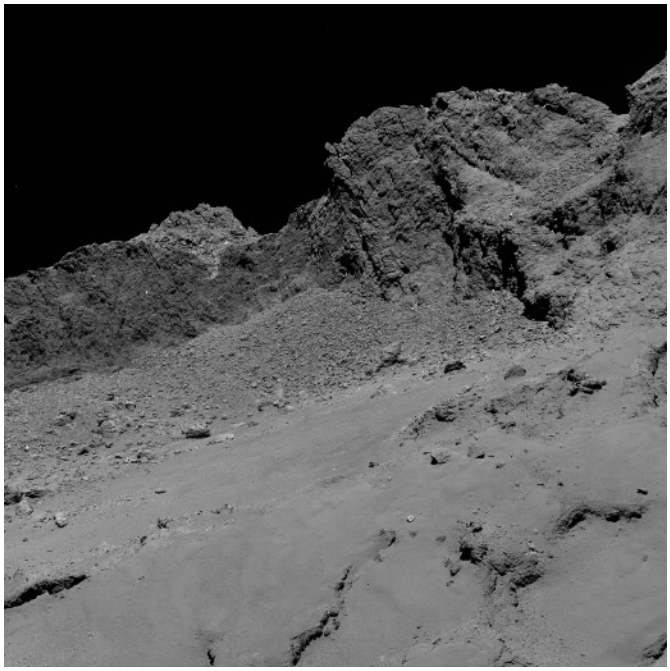
Lee Taylor

Final Descent Images from Rosetta Spacecraft

Comet 67P/Churyumov-Gerasimenko

Rosetta's last image of Comet 67P/Churyumov-Gerasimenko, taken shortly before impact

The OSIRIS narrow-angle camera aboard the Space Agency's Rosetta spacecraft captured this image of comet 67P/Churyumov-Gerasimenko on September 30, 2016, from an altitude of about 10 miles (16 kilometers) above the surface during the spacecraft's controlled descent. The image scale is about 12 inches (30 centimeters) per pixel and the image itself measures about 2,000 feet (614 meters) across.



Boller-Sivill Observatory - Construction Update

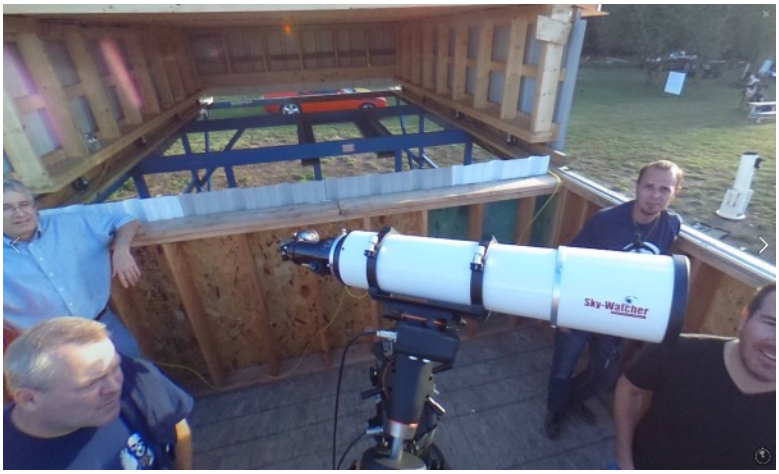
Brian Sivill and Brett Boller

Big happenings at the Boller-Sivill Observatory this month. We rolled the roof away for the very first time!

Fortunately, it was uneventful and went entirely as planned. We managed to accomplish this just hours prior to Branched Oak Observatory's big Star-B-Que and fundraiser - just in the nick of time, really. And a big night it was with 400 plus people in attendance. Another first for that night was BSO's first astrophoto! Brett and I collaborated on making an image of M27, the Dumbell Nebula. Using my Pentax K5-II as the imager and Jason Mulek's 150mm F7 Skywatcher refractor. A 3 minute exposure proved the mount to not be well polar aligned, so we settled on a fairly decent 30 second exposure at ISO1600.

Also this month we installed built-in red LED lighting and set up 9 solar panels connected to a fairly hefty deep-cycle battery. We expect to have as many as six or eight batteries to fully power the facility. For now, we're in good shape. The motor for the roof arrived in the mail late last week as well as a 1000 watt inverter and a new solar charge controller. Enough to keep us busy on electrical systems for a while.

The best news of all is that we can use the facility now!



Branched Oak Observatory Star-B-Q, October 1

Michael Sibbernsen

What an amazing evening! With over 400 in attendance, this not only makes the STAR-B-Q our most successful event yet, it makes this among the largest star parties for the entire state of Nebraska. THANK YOU! I have included just a few pictures from the event in the post with MANY more to come.

We have so many people and organizations to thank.

• Raymono's Pizza Plus and the entire Plaza 79 family for being our Primary Sponsor for the event. Their contribution made this event possible, and their pizza was fantastic! Raymono's Pizza Plus and the Plaza 79 center is located on Highway 79 at the corner of W. Mill Road. raymonospizza.com

• ALL of our other event sponsors:

Carpetland of Lincoln

Lippy's BBQ of Malcolm

TAG Ink & Thread of Lincoln

HobbyTown on Pioneer Woods Drive of Lincoln

Southlake Village Rehabilitation & Care Center, Inc. of Lincoln

Mussman Ag Service Inc. of Raymond

Talon Steel Builders of Lincoln

Mohrhoff Power Equipment of Lincoln

Prism Signs of Omaha

Mark Dahmke Photography of Lincoln

• ALL of the area astronomers who set up their telescopes in the observing field to share their views with the visiting public. A special shout-out to Jeff Huston and Eric Balcom for setting up the two gigantic telescopes for the event. Please come see us again!

• Our Event Volunteers from the local YMCA, Kiwanis Club, and scouting organizations.

• Our AMAZING team of Branched Oak Observatory Associates, who they, themselves, are all volunteers for our facility.

Amelia Squires, Brain Sivill, Brett Boller, Doug Buhrman (our STAR volunteer!), Jeff Guettler, Jason Mulek

• ALL OF YOU. We want to give a special thanks to each and every one of the visitors last night. The community has really come together to support Branched Oak Observatory. We hope everyone had a very special evening.

More photos from the Branched Oak Observatory Star-B-Q.

Left: Star-B-Q at Branched Oak Observatory, October 1.

Below: Ursa Major, taken at the Star-B-Q. Panasonic Lumix GX8, 20mm f/1.7, ISO 1600, 13 seconds at f/2.5.

Both photos by Mark Dahmke.

More photos from the Star-B-Q. The bright trail in the photo below is the International Space Station. Photos by Mark Dahmke.

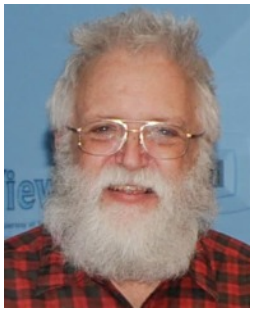
Observatory Update: Asteroid Nagincox

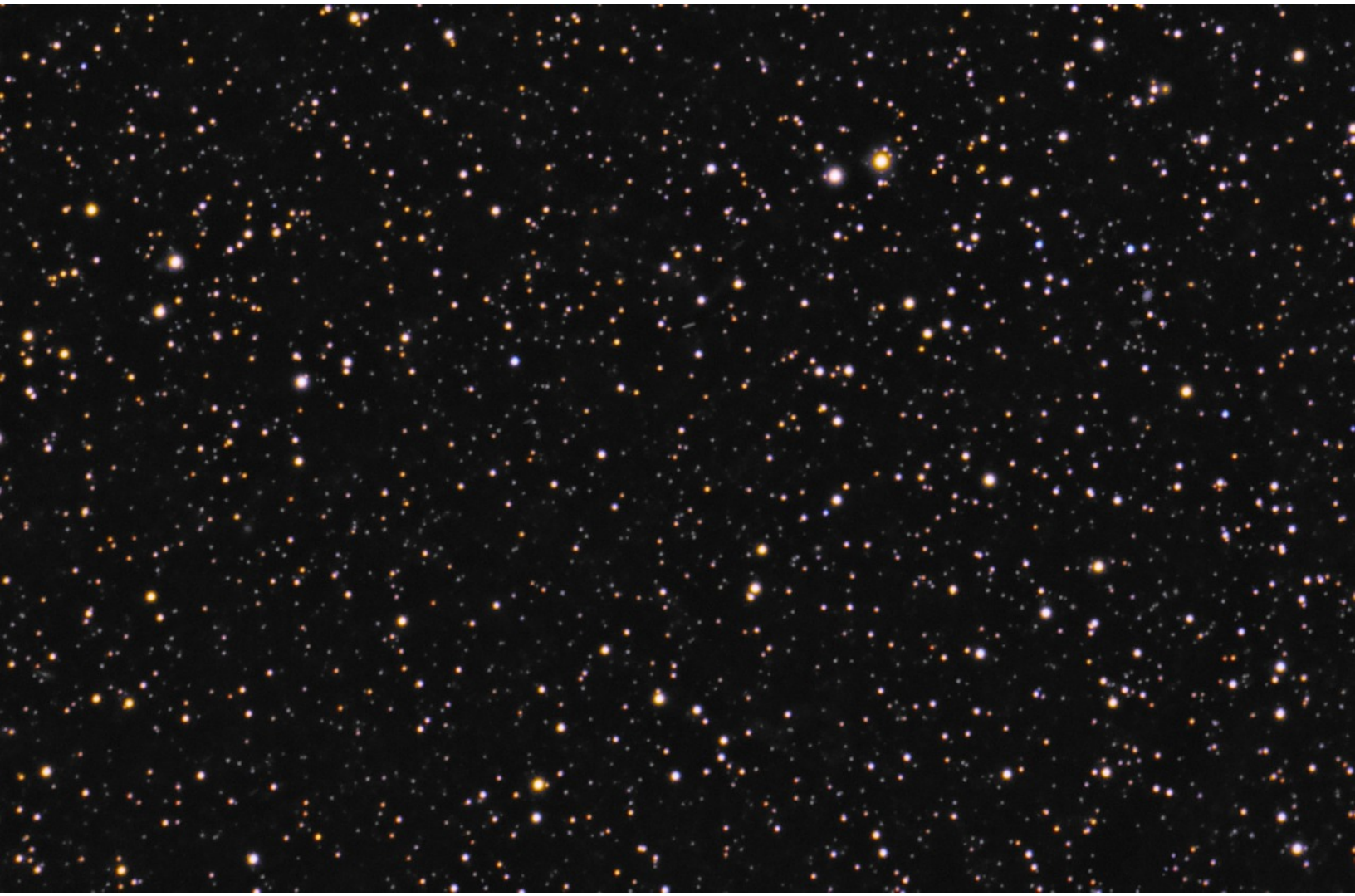
Rick Johnson

Normally I don't take main belt asteroids, only near earth ones as they pass by but I made an exception here. I doubt many have heard of Nagin Cox, but you should have. The naming citation for the asteroid named for her gives only part of the story. Here that is:

"(14061) Nagincox = 1996 CT7
Nagin Cox (b. 1965) is a system engineer and a manager on multiple interplanetary robotic NASA missions, including Galileo, the Mars Exploration Rover and the Kepler telescope, which searches for earth-like planets around other stars. She is currently on the mission operations team for Mars Curiosity Rover."

She has been brought in to solve why a mission failed or rescue one in trouble. She much prefers to prevent problems before they occur. If you ever get a chance to hear her speak on the subject I highly recommend you attend. You will learn a lot about both screw-ups and successes. She's a very entertaining and instructive speaker. She also goes into rather dangerous (for a woman) countries at the behest of the state department to speak on woman's education, something that can be quite dangerous to promote in the places she's been. Thus her efforts at science education and women's education make her very deserving of an asteroid, I just wish it could have been a

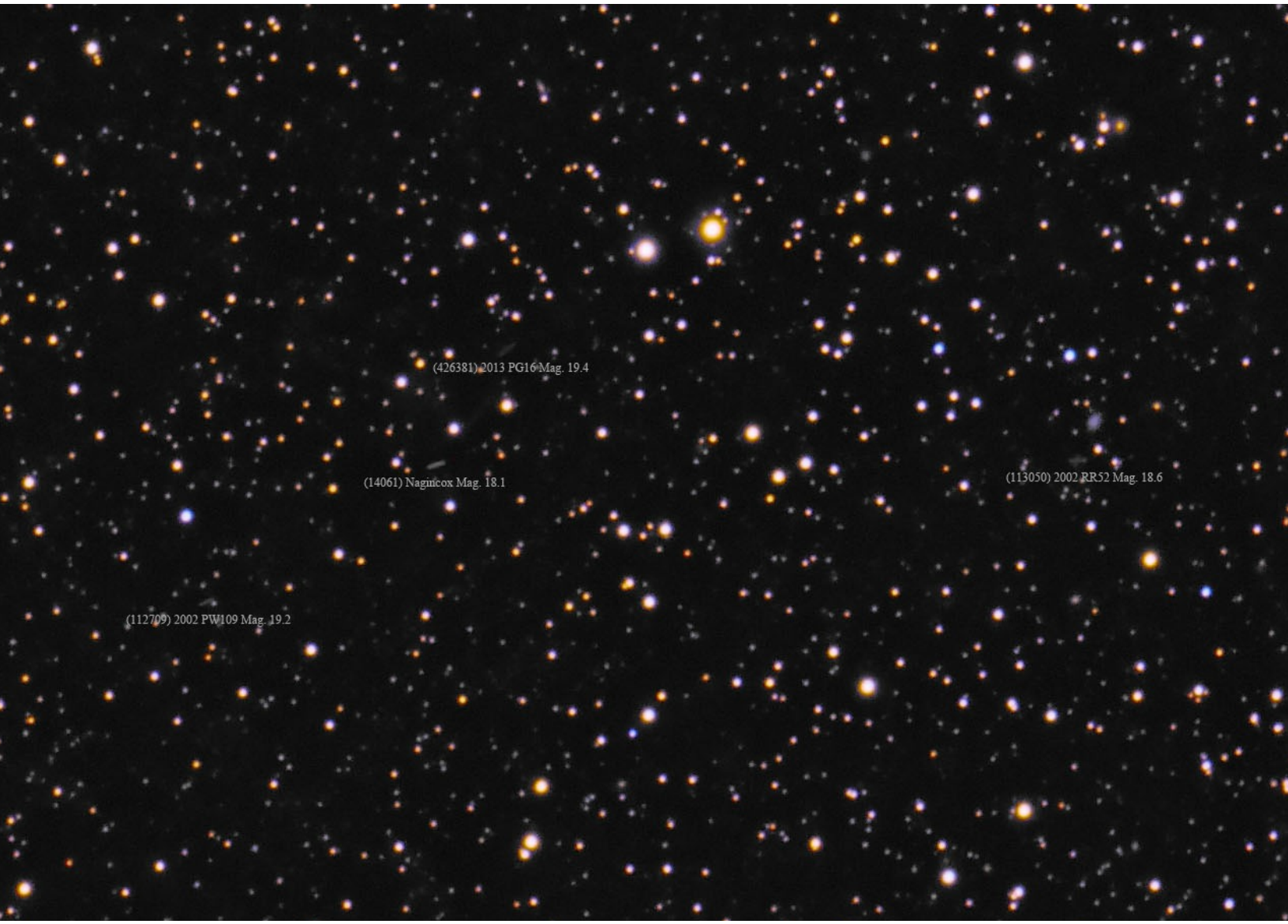




brighter one as she's earned it.

Trying to get this image was a major struggle. When I was told she had no image of her asteroid and was asked by a friend of hers to get one I'd just had a perfect night (one of only a couple all year) the night before the request. After that nothing but clouds. A sucker hole opened on June 5 (UT) long enough to get 30 minutes of luminance data. The asteroid had just started retrograde motion so was moving slowly. Too slow to show much motion in 30 minutes. It's moving faster now but is lost to the trees from my location until next year. Nearly a month after getting the luminance data I was able to use sucker holes on various nights to get fairly good red and green frames (one each) of the star field the asteroid was in. Being very low by now and working between trees I finally got a blue frame but it was through strong haze and very weak. Bringing it up to match the others added a ton of noise. To get better blue I did pixel math to create a pseudo blue based partly on the blue I did get and extending the difference between the red and green frames. Result is fairly good for

Nagin Cox. Photo Courtesy NASA.



the star field. It was balanced by using NOMAD data and eXcalibrator. I think it fairly accurate. Doesn't help it was in Scorpio a constellation too low for me to work in at my 47 degrees north except on perfect nights.

Turned out there were three other asteroids near by though they are fainter. The annotated image details them but I don't put much confidence in the Minor Planet Center's magnitude estimates for the two nearest Nagincox. One seems to be brighter than their prediction while the other much fainter. Certainly they differ by far more than the 0.2 magnitude difference the center predicted. I think her asteroid's magnitude estimate is reasonable as is the other one.

Out of curiosity I looked up the distances to the asteroids at the time the image was taken. Turns out Nagincox was much further from earth and the sun that the others. Heres the breakdown in AU with distance from the earth listed first followed by its solar distance. One AU is just under 150 million kilometers (the mean distance the earth is from the sun) or a bit under 93 million miles for the metrically challenged.

(14061) Nagincox 1.705 2.707
(426381) 2013 PG16 0.920 1.925
(112709) 2002 PW109 1.068 2.072
(113050) 2002 RR52 0.971 1.975

The Hidden Glaciers of Mars

Matt Williams, Universe Today

In the northern hemisphere of Mars, between the planet's southern highlands and the northern lowlands, is a hilly region known as Colles Nilli. This boundary-marker is a very prominent feature on Mars, as it is several kilometers in height and surrounded by the remains of ancient glaciers.

And thanks to the Mars Express mission, it now looks like this region is also home to some buried glaciers. Such was the conclusion after the orbiting spacecraft took images that revealed a series of eroded blocks along this boundary, which scientists have deduced are chunks of ice that became buried over time.

The Mars Express images show a plethora of these features along the north-south boundary. They also reveal several features that hint at the presence of buried ice and erosion – such as layered deposits as well as ridges and troughs. Similar features are also found in nearby impact craters. All of these are believed to have been caused by an ancient glacier as it retreated several hundred million years ago.

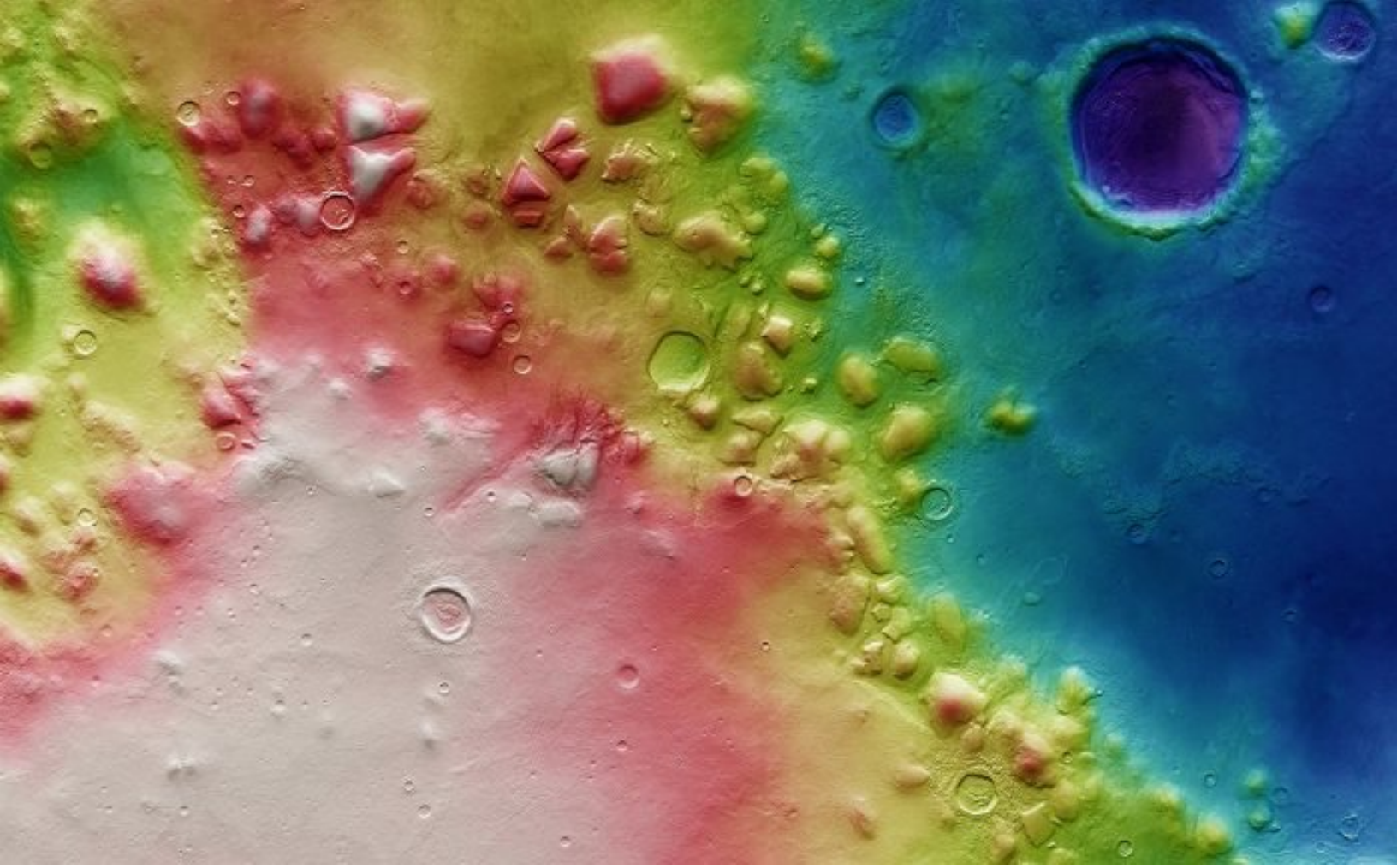
It is further reasoned that these remaining ice deposits were covered by debris that was deposited from the plateau as it eroded. Wind-borne dust was also deposited over time, which is believed to be the result of volcanic activity. This latter source is evidenced by steaks of dark material deposited around the blocks, as well as dark sand dunes spotted within the impact craters.

Similar features are believed to exist within many boundary regions on Mars, and are believed to represent periods of glaciation that took place over the course of eons. And this is not the first time buried glaciers have been spotted on Mars.

For instance, back in 2008, the Mars Reconnaissance Orbiter (MRO) used its ground-penetrating radar to locate water ice under blankets or rocky debris, and at latitudes far lower than any that had been previously identified. At the time, this information shed light on a long-standing mystery about Mars, which was the presence of what are called "aprons".

These gently-sloping rocky deposit, which are found at the bases of taller features, were first noticed by NASA's Viking orbiters during the 1970s. A prevailing theory has been that these aprons are the result of rocky debris lubricated by small amounts of ice.

Combined with this latest info taken from the northern



Color-coded topographic view of the Colles Nili region, showing the relative heights and depths of terrain. Credit: ESA/DLR/FU Berlin

hemisphere, it would appear that there is plenty of ice deposits all across the surface of Mars. The presence (and prevalence) of these icy remnants offer insight into Mars' geological past, which – like Earth – involved some "ice ages".

The Mars Express mission has been actively surveying the surface of Mars since 2003. On October 19th, it will be playing a vital role as the Exomars mission inserts itself into Martian orbit and the Schiaparelli lander makes its descent and landing on the Martian surface.

Alongside the MRO and the ExoMars Orbiter, it will be monitoring signals from the lander to confirm its safe arrival, and will relay information sent from the surface during the course of its mission.

The ESA will be broadcasting this event live. And given that this mission will be the ESA's first robotic lander to reach Mars, it should prove to be an exciting event!

Further Reading: ESA

November Observing: What to View

Jim Kvasnicka

This is a partial list of objects visible for the upcoming month.

Planets

Venus: Sets about 2 hours after the Sun to start November and 3 hours after the Sun to end the month. Venus increases in brightness to -4.2 in magnitude.
Saturn: Starts the month just 5° to the right of Venus, visible about 30 minutes after sunset. It's really too low for good telescopic viewing and not visible by months end.
Mercury: To the lower right of Venus at magnitude -0.5.
Mars: Dims from 0.4 to 0.6 magnitude in eastern Sagittarius and Capricornus.
Uranus / Neptune: In Pisces and Aquarius.
Jupiter: Rises 2½ hours before the Sun to start the month.

Messier List

M27: The Dumbbell Nebula in Vulpecula.
M30: Class V globular cluster in Capricornus.
M56: Class X globular cluster in Lyra.
M57: The Ring Nebula in Lyra.
M71: Class XII globular cluster in Sagitta.
M72: Class IX globular cluster in Aquarius.
M73: Y shaped asterism in Aquarius.

Last Month: M11, M16, M17, M18, M24, M25, M26, M55, M75
Next Month: M2, M15, M29, M31, M32, M39, M110

NGC and other Deep Sky Objects

NGC 253: The Silver Coin Galaxy in Sculptor.
NGC 278: Galaxy in Cassiopeia.
NGC 288: Class X globular cluster in Sculptor.
NGC 457: The E.T. Cluster in Cassiopeia.
NGC 752: Open cluster in Andromeda.
NGC 891: Edge on galaxy in Andromeda.
NGC 7662: The Blue Snowball planetary nebula in Andromeda.

Double Star Program List

Iota Trianguli: Yellow and rose colored stars.
Gamma Arietis: Two equal white stars.
Lambda Arietis: Yellow primary with a pale blue secondary.
65 Piscium: Yellow pair.
Psi 1 Piscium: Equal bluish white pair.
Zeta Piscium: Bright white and yellow stars.
Alpha Piscium: Close pair of white stars.
Gamma Andromedae: Almach, gold and greenish-blue pair.

Challenge Object

NGC 7782 Galaxy Group: NGC 7782 is the brightest in a group of five galaxies that include NGC 7778, NGC 7779, NGC 7780, and NGC 7781 in Pisces.

Focus on Constellations: Cassiopeia

Jim Kvasnicka

Cassiopeia the Queen has the familiar “W” or “M” pattern superimposed over the brilliant star field of the Milky Way. Cassiopeia is a rather modest constellation with 600 square degrees. It is especially rich in open clusters that range from tiny groups of stars embedded in rich star fields making them difficult to see, to some of the finest open clusters in the sky. The constellation has an assortment of planetary nebulae, a few galaxies, and some colorful double stars. Cassiopeia contains two Messier objects in M52 and M103, both are open clusters. Cassiopeia is a circumpolar constellation best seen in November.

Showpiece Objects

Open Clusters: M52, M103, NGC 457, NGC 654, NGC 663, and NGC 7789
Galaxies: NGC 278
Multiple Stars: Eta Cassiopeiae, Iota Cassiopeiae (Triple)

Mythology

In Greek mythology, Cassiopeia and Cepheus were the king and queen of Ethiopia, the parents of Princess Andromeda. Cassiopeia was very vain and boasted that she was more beautiful than the Sea Nymphs. This upset Poseidon the God of the Sea who sent the terrible sea monster Cetus to destroy their land. The only way Poseidon would spare their land was if Cassiopeia and Cepheus offered their daughter Andromeda as a sacrifice to Cetus. They chained Andromeda to the rocky shore and as the sea monster Cetus was getting closer down flew Perseus on Pegasus who killed the sea monster, rescued Andromeda and married her.

Number of Objects Magnitude 12.0 and Brighter

Galaxies: 3
Globular Clusters: 0
Open Clusters: 52
Planetary Nebulae: 2
Dark Nebulae: 0
Bright Nebulae: 1
SNREM: 0

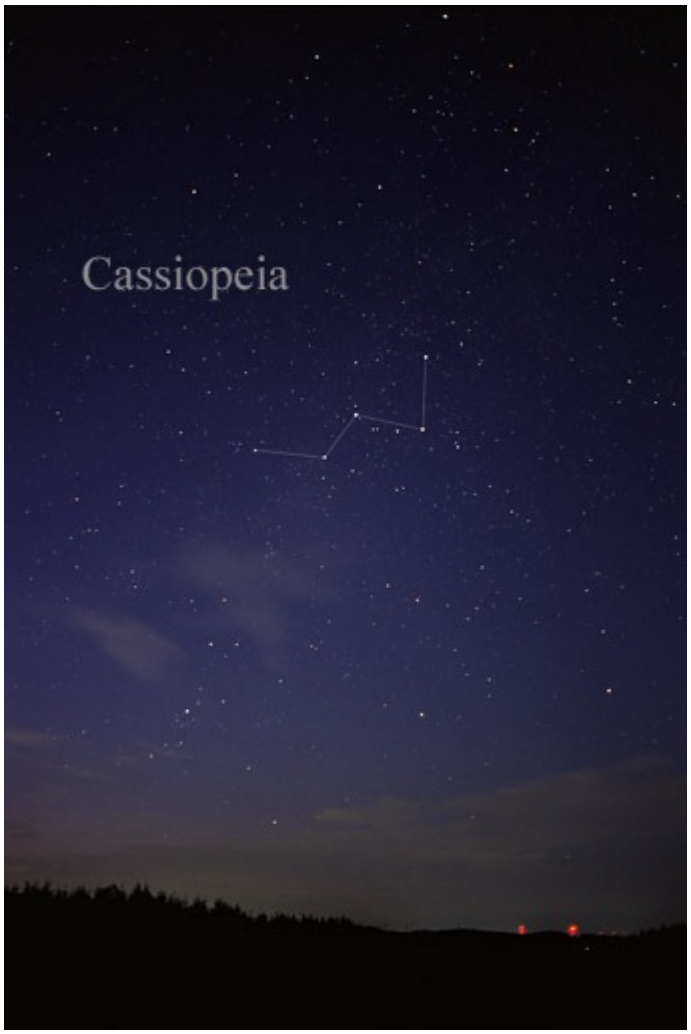


Photo: Till Credner - Own work: AlltheSky.com

2017 PAC Star Party Dates

	Star Party Date	Star Party Date	Lunar Party Date
January	Jan 20th	**Jan 27th**	
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NSP	**July 23rd - July 28th**		
August	**Aug 18th**	Aug 25th	
September	Sep 15th	**Sep 22nd**	Sep 1st
October	Oct 13th	**Oct 20th**	
November	Nov 10th	**Nov 17th**	
December	Dec 15th	**Dec 22nd**	

Dates in **BOLD** are closest to the New Moon.

Lunar Party dates are possible dates and not official.

Lunar Party sites to be determined.

The Great American Total Eclipse
August 21, 2017

Planning your eclipse trip? Take a look at Fred Espanak's presentation on YouTube:

https://www.youtube.com/watch?v=K4KnxE6yAuI

Is Proxima Centauri's 'Earth-like' Planet Actually Like Earth at All?

Ethan Siegel

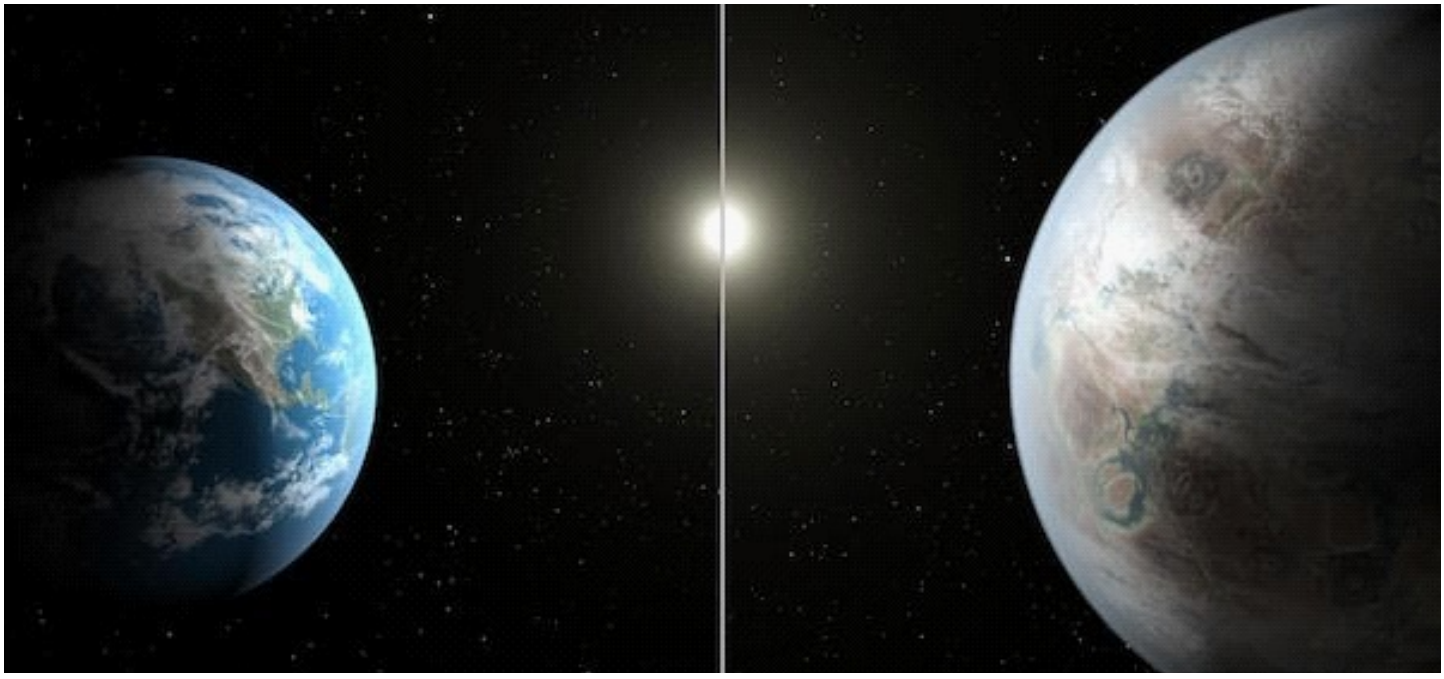
This article is provided by NASA Space Place.
With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology.
Visit spaceplace.nasa.gov to explore space and Earth science!

Just 25 years ago, scientists didn't know if any stars—other than our own sun, of course—had planets orbiting around them. Yet they knew with certainty that gravity from massive planets caused the sun to move around our solar system's center of mass. Therefore, they reasoned that other stars would have periodic changes to their motions if they, too, had planets.

This change in motion first led to the detection of planets around pulsars in 1991, thanks to the change in pulsar timing it caused. Then, finally, in 1995 the first exoplanet around a normal star, 51 Pegasi b, was discovered via the "stellar wobble" of its parent star. Since that time, over 3000 exoplanets have been confirmed, most of which were first discovered by NASA's Kepler mission using the transit method. These transits only work if a solar system is fortuitously aligned to our perspective; nevertheless, we now know that planets—even rocky planets at the right distance for liquid water on their surface—are quite common in the Milky Way.

On August 24, 2016, scientists announced that the stellar wobble of Proxima Centauri, the closest star to our sun, indicated the existence of an exoplanet. At just 4.24 light years away, this planet orbits its red dwarf star in just 11 days, with a lower limit to its mass of just 1.3 Earths. If verified, this would bring the number of Earth-like planets found in their star's habitable zones up to 22, with 'Proxima b' being the closest one. Just based on what we've seen so far, if this planet is real and has 130 percent the mass of Earth, we can already infer the following:

It receives 70 percent of the sunlight incident on Earth, giving it the right temperature for liquid water on its surface, assuming an Earth-like atmosphere.
It should have a radius approximately 10 percent larger than our own planet's, assuming



An artist's conception of the exoplanet Kepler-452b (R), a possible candidate for Earth 2.0, as compared with Earth (L). Image credit: NASA/Ames/JPL-Caltech/T. Pyle.

it is made of similar elements.
It is plausible that the planet would be tidally locked to its star, implying a permanent 'light side' and a permanent 'dark side'. And if so, then seasons on this world are determined by the orbit's ellipticity, not by axial tilt.

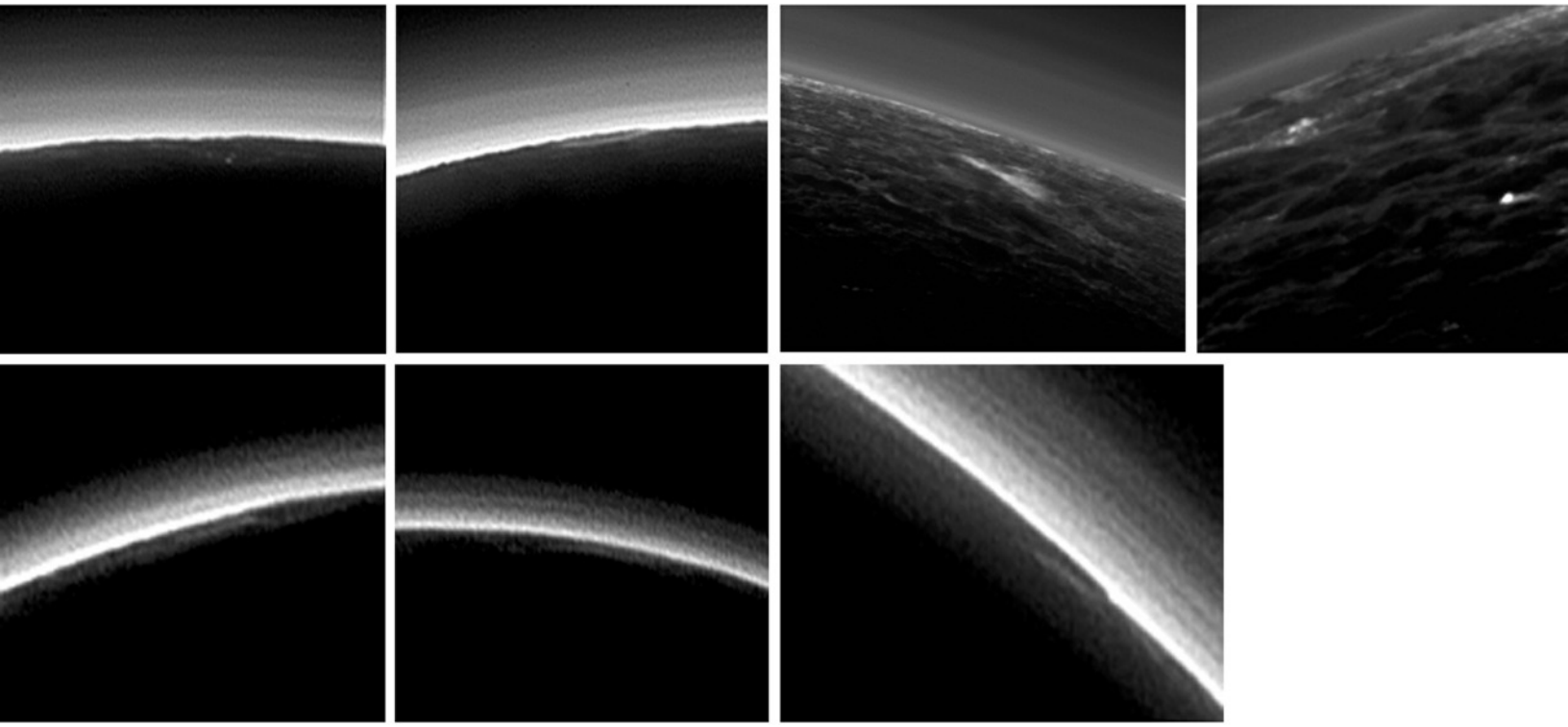
Yet the unknowns are tremendous. Proxima Centauri emits considerably less ultraviolet light than a star like the sun; can life begin without that? Solar flares and winds are much greater around this world; have they stripped away the atmosphere entirely? Is the far side permanently frozen, or do winds allow possible life there? Is the near side baked and barren, leaving only the 'ring' at the edge potentially habitable?

Proxima b is a vastly different world from Earth, and could range anywhere from actually inhabited to completely unsuitable for any form of life. As 30m-class telescopes and the next generation of space observatories come online, we just may find out!

Looking to teach kids about exoplanet discovery? NASA Space Place explains stellar wobble and how this phenomenon can help scientists find exoplanets: http://spaceplace.nasa.gov/barycenter/en/

Partly Cloudy on Pluto?

Pluto's present, hazy atmosphere is almost entirely free of clouds, though scientists from NASA's New Horizons mission have identified some cloud candidates after examining images taken by the New Horizons Long Range Reconnaissance Imager and Multispectral Visible Imaging Camera, during the spacecraft's July 2015 flight through the Pluto system. All are low-lying, isolated small features -- no broad cloud decks or fields -- and while none of the features can be confirmed with stereo imaging, scientists say they are suggestive of possible, rare condensation clouds.



From the Archives: October, 1977

NEW CLUB PRESIDENT'S FIRST MESSAGE TO MEMBERS

The October meeting will mark the start of another year for our club, our 18th. We also have a new slate of officers which were elected at the last meeting. Well, a couple of the officers are new or at least hold new offices. The new man on the block is Ron Veys who is our Vice President.

I want to thank Vicki for allowing us the benefit of her husband's services as President for the past year. While Larry will not be an official officer this year, I know we will still benefit from his ideas and advice. Thanks, Larry, for a fine job.

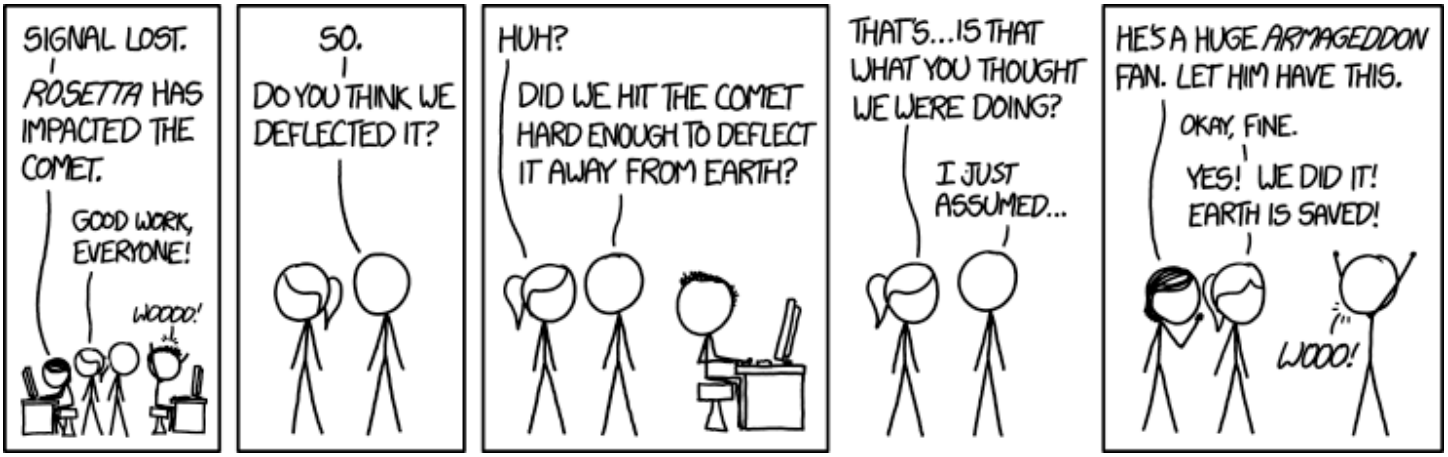
This month's meeting will also mark the beginning of a new club responsibility, that of manning the new Hyde Memorial Observatory. We will have four public nights including the dedication during November. The following months will involve three or more public nights per month as well as the possibility of some special group showings. Besides being a responsibility, the club can reap large benefits from the observatory. Gateway shows did help to attract new members. An outstanding example of such a member is Earl Moser. Earl has served as President a number of times. The ultimate sacrifice has been made by his front lawn in the cause of star parties.

The new observatory can be an even better source of new members. With the observatory and its related publicity potential, the club is coming out of the dark and into the limelight.

I think a first grader who saw a slide show I gave at Belmont school summed it up best. Dawn's comment was, "We learned something about space--what we never thought of doing." The Hyde Memorial Observatory has great potential to spark such an interest in "...what (the general public) has never thought of doing." Let us make the best of it.

--Rick Johnson

THE OCTOBER MEETING OF THE PRAIRIE ASTRONOMY CLUB WILL BE HELD AT MUELLER PLANETARIUM, UNIVERSITY OF NEBRASKA-LINCOLN, TUESDAY NIGHT, OCTOBER 25 AT 7:30 P.M. REMEMBER, THIS MEETING ONLY WILL NOT BE AT OLIN HALL!



xkcd.com

CLUB MEMBERSHIP INFO

REGULAR MEMBER - $30.00 per year. Includes club newsletter, and 1 vote at club meetings, plus all other standard club privileges.

FAMILY MEMBER - $35.00 per year. Same as regular member except gets 2 votes at club meetings.

STUDENT MEMBER - $10.00 per year with volunteer requirement.

If you renew your membership prior to your annual renewal date, you will receive a 10% discount.

Club members are also eligible for special subscription discounts on Sky & Telescope Magazine.

CLUB TELESCOPES

To check out one of the club telescopes, please contact a club officer. Scopes can be checked out at a regular club meeting and kept for one month. Checkout can be extended for another month if there are no other requests for the telescope, but you must notify a club officer in advance.

100mm Orion refractor: David Pennington
10 inch Meade Dobsonian: Lee Taylor
13 inch Truss Dobsonian: Available

CLUB APPAREL

Order club apparel from cafepress.com:

Shop through Amazon Smile to automatically donate to PAC:

amazonsmile

CLUB OFFICERS

President	Jim Kvasnicka (402) 423-7390 jim.kvasnicka@yahoo.com
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The Prairie Astronomer is published monthly by the Prairie Astronomy Club, Inc. Membership expiration date is listed on the mailing label. Membership dues are: **Regular $30/yr, Family $35/yr**. Address all new memberships and renewals to: **The Prairie Astronomy Club, Inc., PO Box 5585, Lincoln, NE 68505-0585**. For other club information, please contact one of the club officers listed to the right. Newsletter comments and articles should be submitted to: **Mark Dahmke, P. O. Box 5585, Lincoln, NE 68505 or** mark@dahmke.com**,** no less than ten days prior to the club meeting. The Prairie Astronomy Club meets the last Tuesday of each month at Hyde Memorial Observatory in Lincoln, NE.