

The Prairie Astronomer

October 2018 Volume 59, Issue #10

Jovian Swirls



Night Sky Network



The Newsletter of the Prairie Astronomy Club

The Prairie Astronomer

NEXT PAC MEETING: October 30 at 7:30pm

PROGRAM

Club viewing night

FUTURE PROGRAMS

October: Club Viewing Night

November: How to Buy a Telescope

December: To be announced

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Cover: Clouds in a Jovian jet stream, called Jet N5, swirl in the center of this color-enhanced image from NASA's Juno spacecraft. This image was taken at 5:58 p.m. PDT on Sept. 6, 2018 (8:58 p.m. EDT) as the spacecraft performed its 15th close flyby of Jupiter.

JunoCam's raw images are available at www.missionjuno.swri.edu/junocam for the public to peruse and process into image products.

More information about Juno is online at <http://www.nasa.gov/juno> and <http://missionjuno.swri.edu>.

Photo credit: NASA



The Prairie Astronomy Club:
Fifty Years of Amateur Astronomy

Buy the book! The Prairie Astronomy Club: Fifty Years of Amateur Astronomy.
Order online from [Amazon](https://www.amazon.com) or [lulu.com](https://www.lulu.com).

COMPILED AND EDITED BY MARK DAHMKE

EVENTS



PAC Meeting
Tuesday October 30, 2018, 7:30pm

PAC Meeting
Tuesday November 27, 2018, 7:30pm

PAC Meeting
Tuesday December 25, 2018, 6:30pm

2018 STAR PARTY DATES



Photo by Brian Sivill

	Star Party Date	Star Party Date
January	Jan 12th	Jan 19th
February	Feb 9th	Feb 16th
March	Mar 9th	Mar 16th
April	Apr 6th	Apr 13th
May	May 4th	May 11th
June	Jun 8th	Jun 15th
July	Jul 6th	Jul 13th
August	Aug 3rd	Aug 10th
NSP	Aug 5th -10th	
September	Sep 7th	Sep 14th
October	Oct 5th	Oct 12th
November	Nov 2nd	Nov 9th
December	Nov 30th	Dec 7th

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



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- 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

Meeting Minutes

The meeting was held at Branched Oak Observatory. President Jim Kvasnicka called the meeting to order at 7:30 p.m

Upcoming events:

- PAC star parties October 5 and 12 at the farm.
- October 19: Event at South Pointe Pavillions, Astronomy Scavenger Hunt
- October 27: Homestead National Monument , Howling Homestead

Nominations for club officers were taken. Nominations will continue and then close at the October 30th meeting, followed by election.

President: Jim Kvasnicka announced that, after four years in the office, he would not be running for re-election. Bob Kacvinsky was nominated.

Vice President: Brett Boller (incumbent) and Rick Brown were nominated.

2nd Vice President (Program Chair): Christine Parkyn was nominated.

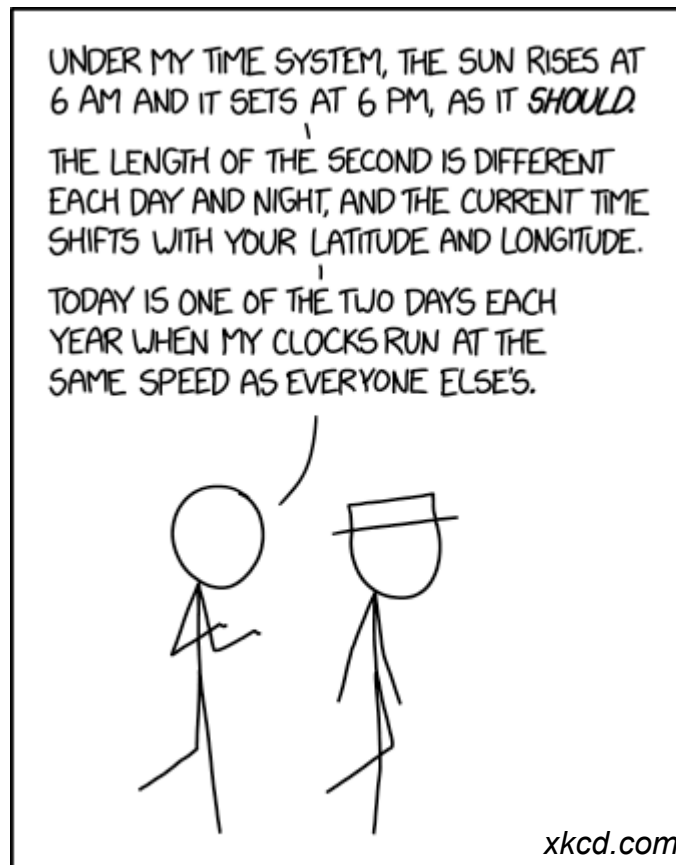
Treasurer: John Reinert (incumbent) was nominated.

Secretary: Lee Thomas (incumbent) said he would yield to anyone who wanted the position. Bill Lohrborg and Elaine Bai were nominated.

Jim was given a round of applause for his service as president, and said he would continue as Observing Chair.

Meeting adjourned at 7:45 for pizza, followed by a tour of the facilities at Branched Oak Observatory.

Lee Thomas



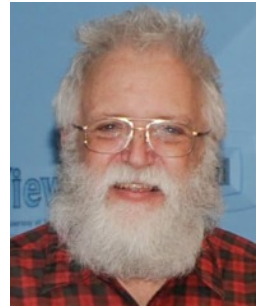
TIME STANDARDS ARE SO UNFIXABLY MESSY AND COMPLICATED THAT AT THIS POINT MY IMPULSE IS JUST TO TRY TO MAKE THEM WORSE.

GN 20.16.3.02 is a small reflection nebula surrounded by the much larger DB 82/IC1318A. The field is located in Cygnus about 1.8 degrees northeast of Sadr. I couldn't find anything on the reflection nebula, not even a distance estimate. Most put the nebula associated with Sadr at 2000 to 5000 light-years. But how the reflection nebula relates to the HII region isn't mentioned. I suspect the reflection nebula is due to a bright star embedded within the HII region.

There is a dark nebula or patch southwest of the reflection nebula. I wasn't able to find it in any catalog though it is quite obvious. Less obvious is the much larger dark area to the NE of the reflection nebula just beyond the edge of the brighter red nebulosity. It is rather round with a bright blue star seen against it. It is DOBASHI 2453. Just above it is a larger dark region which is DOBASHI 2465. On my right edge is a line of 4 bright stars with a scattering of

fainter ones behind the group. This is the open star cluster [FSR2007] 0226.

My limited field doesn't begin to see all of IC 1318A. For that see Jim Thommes excellent wide-field view of the nebula at



Full image at 1" per pixel

<http://jthommes.com/Astro/IC1318NW.htm> . His image uses a lot of HII data which I didn't take. His annotated image shows a lot of the identifications of the bright nebula within IC 1318A.

This is yet another smoke damaged image. I took the green data when a denser cloud went over so it was very weak. I was able to use only one of the green frames and it was much weaker than the blue filter. Blue

was hit too hard for eXcalibrator to salvage so I had to sort of fake the blue then use it to help the green. That means my color is very highly suspect but at least it looks fairly good. Also, the smoke caused some severe halos around all but the redder stars. I spent most of a day dealing with the halos. Oddly they weren't seen in the RGB frames but were in all luminance frames. After taking the

luminance I had to stop as the smoke was too thick for even the red filter. After an hour it cleared enough to take the color frames but hit again when taking the green data. By then I was in bed and didn't know it was clobbered. This one may be worth revisiting once the clouds and smoke go away.



November Observing: What to View

Jim Kvasnicka

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

Planets

Jupiter: Sets about an hour after the Sun to start November.

Mercury: To the upper left of Jupiter, lost to view at the end of November.

Saturn: Sets about three hours after the Sun to the upper right of Sagittarius.

Mars: Dims from a magnitude -0.6 to -0.1.

Uranus: In the Aries Pisces border.

Neptune: Highest about 2 hours after astronomical twilight.

Venus: Rises 30 minutes before the Sun to start the month and by 3 hours at the end.

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 128: Galaxy in Pisces.

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 654: Open cluster in Cassiopeia.

Double Star Program List

Iota Trianguli: Yellow primary with a pale blue secondary.

Gamma Arietis: Two equal white stars.

Lambda Arietis: Yellow primary with a pale blue secondary.

65 Piscium: Yellow stars.

Psi 1 Piscium: Equal pair of bluish white stars.

Zeta Piscium: White primary with a yellow secondary.

Alpha Piscium: Close pair of white stars.

Gamma Andromedae: Almach, yellow and blue stars.

Challenge Object

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





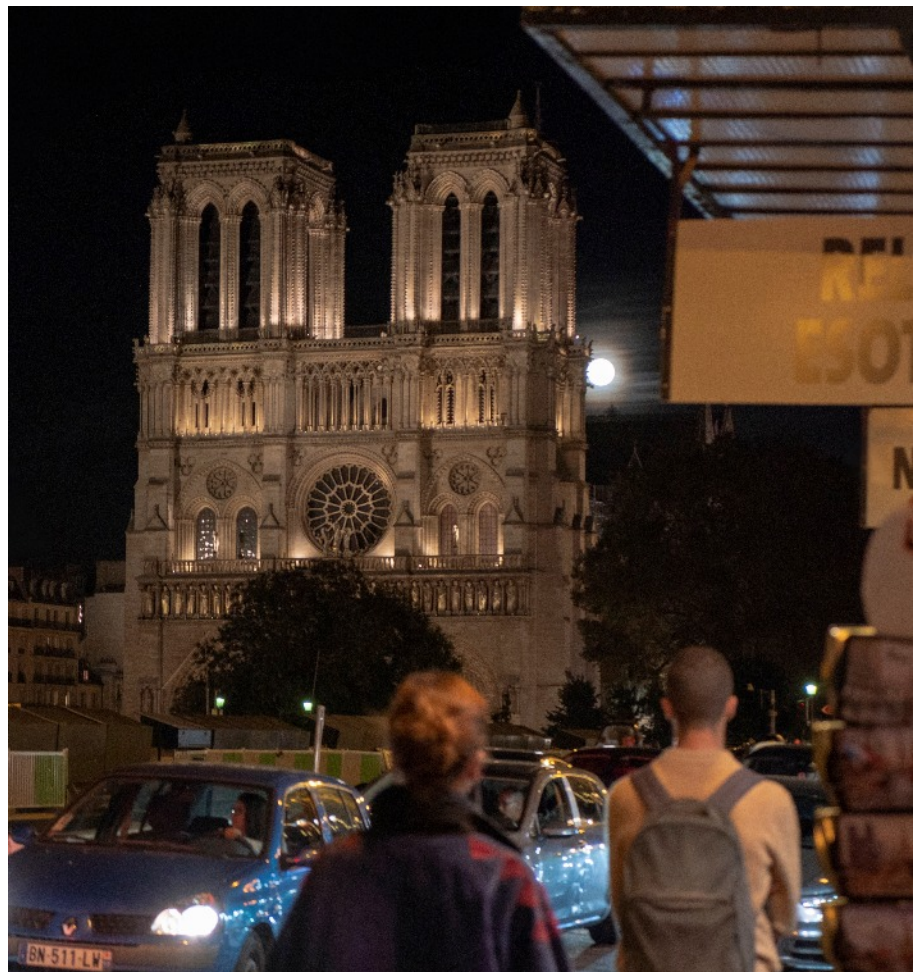
I'm not sure if these qualify as astrophotography but I'm going to include them anyway.

Left: Two image HDR of Moonrise over Notre Dame in Paris, September 25. Source images: 1/20 and 1/40 second at ISO 800, 35mm f/2.8, handheld.

Below: Two image HDR, 1/10 and 1/40 second, ISO 800, 35mm f/2.8, handheld.

These were taken at 8:30pm (1:30pm CT the day of our September PAC meeting).

HDR processing was done in Lightroom.



Webcam Astronomy

Mark Dahmke

On Tuesday morning (the 16th) I decided to check the [webcam at my condo](#) and was surprised to see that the sky was clear and I could see stars. At first I thought they were camera noise, but several refreshes later it was clear that they really

were stars. So I stacked a couple of images and got this. Next, I opened TheSky to match up constellations. Initially nothing matched, but then I realized that TheSky was still set for DST and Hawaii does not observe DST. It took a few

minutes to match the field of view, but I was able to determine that the center of the field is at 330 degrees and the two bright stars are in Cepheus. Not too bad for a security camera!



Sea Village, Kona Hawaii, Tue Oct 16 2018 03:48:05

Camera coordinates: 19° 37 18 N 155° 59 11 W

Inset: daytime view. looking north-northwest



NASA's First Image of Mars from a CubeSat

NASA's MarCO mission was designed to find out if briefcase-sized spacecraft called CubeSats could survive the journey to deep space. Now, MarCO - which stands for Mars Cube One - has Mars in sight.

One of the twin MarCO CubeSats snapped this image of Mars on Oct. 3 - the first image of the Red Planet ever produced by this class of tiny, low-cost spacecraft. The two CubeSats are officially called MarCO-A and MarCO-B but nicknamed "EVE" and "Wall-E" by their engineering team.

A wide-angle camera on top of MarCO-B produced the image as a test of exposure settings. The MarCO mission, led by NASA's Jet Propulsion Laboratory in Pasadena, California, hopes to produce more images as the CubeSats approach Mars ahead of Nov. 26. That's when they'll

demonstrate their communications capabilities while NASA's InSight spacecraft attempts to land on the Red Planet. (The InSight mission won't rely on them, however; NASA's Mars orbiters will be relaying the spacecraft's data back to Earth.)

This image was taken from a distance of roughly 8 million miles (12.8 million kilometers) from Mars. The MarCOs are "chasing" Mars, which is a moving target as it orbits the Sun. In order to be in place for InSight's landing, the CubeSats have to travel roughly 53 million miles (85 million kilometers). They have already traveled 248 million miles (399 million kilometers).

MarCO-B's wide-angle camera looks straight out from the deck of the CubeSat. Parts related to the spacecraft's high-gain antenna are visible on either

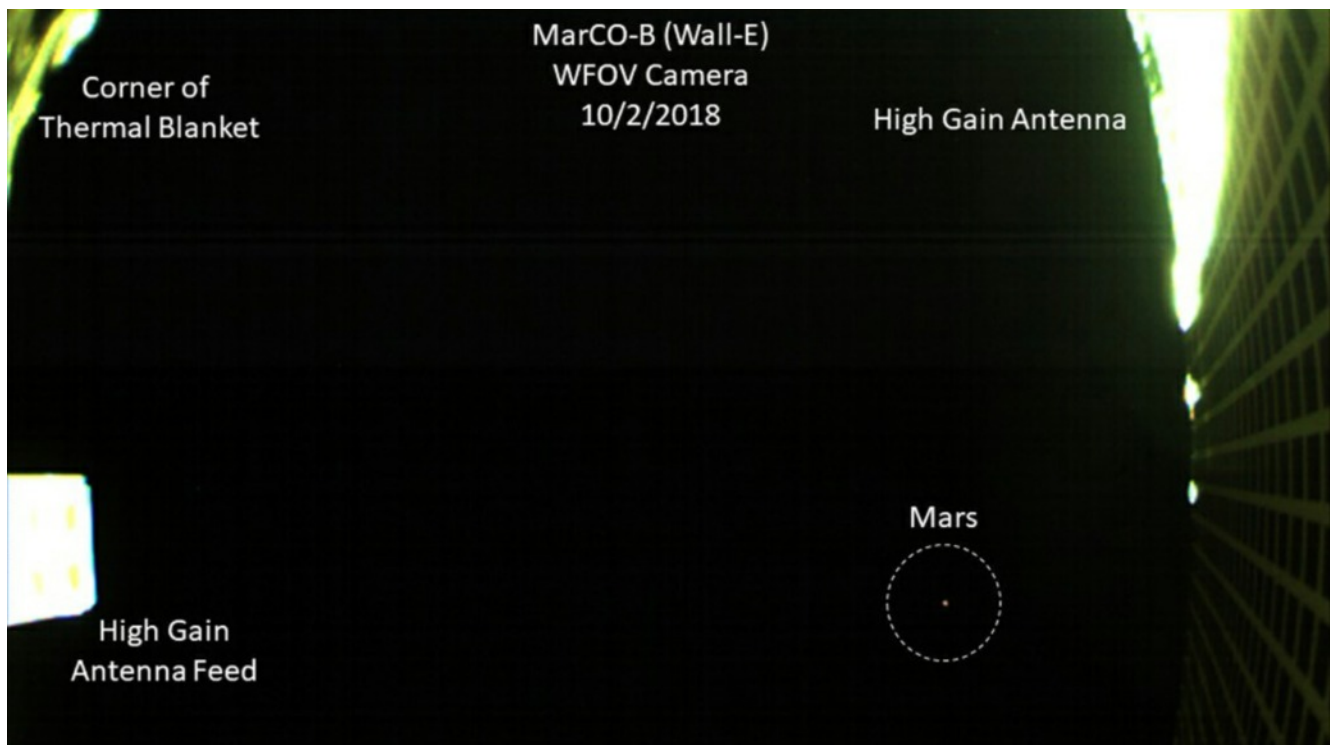
side of the image. Mars appears as a small red dot at the right of the image.

To take the image, the MarCO team had to program the CubeSat to rotate in space so that the deck of its boxy "body" was pointing at Mars. After several test images, they were excited to see that clear, red pinprick.

"We've been waiting six months to get to Mars," said Cody Colley, MarCO's mission manager at JPL. "The cruise phase of the mission is always difficult, so you take all the small wins when they come. Finally seeing the planet is definitely a big win for the team."

For more information about MarCO, visit:

<https://www.jpl.nasa.gov/cubesat/missions/marco.php>



Focus on Constellations: Pisces

Jim Kvasnicka

Pisces, the Fishes, is one of the twelve constellations of the Zodiac. Pisces contains the vernal equinox, the point where the Sun moves across the celestial equator into the northern hemisphere each year on the first day of spring. Pisces is well off the Milky Way and even though it is fairly large at 889 square degrees it is not rich in objects. It does contain some nice double stars with color contrast, and one Messier object in the spiral galaxy M74. Most of its other galaxies are rather small and faint.

Best Objects

Double Stars: 35 Piscium, 38 Piscium, 42 Piscium, 51 Piscium, 55 Piscium

Galaxies: M74, NGC 128, NGC 488, NGC 524, NGC 7541

Mythology

The Greeks saw Pisces as two Fish below the Great Square of Pegasus. The two Fish were bound by cords around their tails. The Greeks inherited Pisces from the ancient Babylonians, to whose god of water and wisdom, Ea, fish were sacred.

*Till Credner - Own
work: AlltheSky.com
3.0*

Number of Objects Magnitude 12.0 and Brighter

Galaxies: 23

Globular Clusters: 0

Open Clusters: 0

Planetary Nebulae: 0

Dark Nebulae: 0

Bright Nebulae: 0

SNREM: 0



Fight and Flight: One Woman's Fearless Journey to the Stars

Courtesy NASA JPL

The year was 1975. "Jaws" was the biggest movie in theaters, "Love Will Keep Us Together" was the top song on the radio and 10-year-old Nagin Cox's home life was unraveling. It was a time when Cox thought only about making it to age 18 so she could be free.

"I remember looking up at the stars and thinking, 'I'm going to live and get through this,'" Cox recalls. "I need to set a goal. I need something so meaningful it will help me get through the next eight years."

That goal revealed itself when she was 14, a curly-haired Indian girl fascinated by "Star Trek" and Carl Sagan's "Cosmos." She wanted to explore the universe. And no, she didn't want to be an astronaut.

"If you really want to go where someone has never been, you want to be with the robots. They truly explore first," she says. "There was one place that did that consistently and that was NASA's Jet Propulsion Laboratory."

She just needed to figure out how.

Cox, now 53, is celebrating 25 years since first walking through the gates of JPL. Since her first day in 1993, she has written the



acronym IWWTWTF in the top right-hand corner of every notebook. It stands for I was willing to wash the floors—a reminder of just how badly she wanted to work at NASA.

For two-plus decades, she has taken part in such iconic NASA missions as Galileo, the Mars rovers Spirit, Opportunity and Curiosity, the exoplanet explorer Kepler, and InSight, a lander that will measure "quakes" to study the Martian interior.

Cox has boundless energy beneath a cherubic face with wide, inquisitive eyes and a melodic voice. With her warmth and good-natured sense of humor, it's hard to imagine she's the product of a tough childhood. But, in many ways, her upbringing helped deliver her to her calling.

"I use three words to describe myself," she says. "I'm an

explorer, an engineer and a fighter."

THE FIGHTER

The fighter came first.

Cox was born in India and raised primarily in Kansas City, Kansas, the second-oldest of four siblings. Her father was a political science professor at the University of Missouri at Kansas City. Her mother stayed at home to look after the family, but studied sociology in India and was one of the first women in her province to earn a master's degree. Cox's relationship with her mom was especially close. "She was a fountain of love and support and encouragement," she says.

But from a young age, Cox had a different kind of relationship with her father.

"Growing up, I just wanted my dad to love me," she recalls. "I thought, 'What is the problem?' Then I realized: It has something to do with being a girl."

As she got older, she began to notice different expectations in the household for boys and girls. Her two brothers were sent to a middle school known for math and science, and she was sent to a different school specializing in art and humanities. At dinnertime, the women in the family were expected to cook and serve food.

For years, she remembers her father saying girls were

understood her. "'You were raised in a battleground, and therefore you are always my fighting daughter,' she would say. 'I don't have to worry about you because you will never be stepped on. If anyone tries, you will raise hell.'"

The turning point was in 1981. A high school junior, Cox spotted an Air Force trailer behind her school. Even though she didn't want to be an astronaut, she knew many had a military background and it might be her ticket to NASA.

A deal was on: Get into college and the Air Force would pay her

dawned on her: Her father was throwing away her letters. She eventually got the good news: She had been accepted into Cornell.

She took the Cornell letter and her Air Force scholarship award and walked up to her father. She had two words for him: "I win."

THE ENGINEER

Cox started Cornell in the fall of 1982, double majoring in psychology and operations research and industrial engineering.

"She was so serious about her studies," recalls her college friend Shae Renali. "Engineering at Cornell is a really rigorous program. To think that you would take on Cornell engineering and add another major on top of it-that was mind-boggling to me."

In college, Cox also met her future husband, Earl, a tall, handsome engineer with a megawatt smile. They met through the Reserve Officers' Training Corps-she in the Air Force program and he in the Navy program-and dated for six weeks before she dumped him because she thought he was "an arrogant know-it-all." Alas, he was a lovable, arrogant know-it-all-the two later eloped in 1992.

After four years at Cornell, Cox swapped her graduation gown for an Air Force uniform in 1986. With NASA as her



"worthless." During this time, Cox grew especially close to her mother.

"My mom was a gentle, caring, nurturing soul. Because of the battle that developed between my father and I-I am not a gentle, caring, nurturing soul. I just don't go quietly," Cox says, adding that her mother always

way. And she knew exactly which college. "At the end of 'Cosmos,' it would say, 'Carl Sagan: Cornell University.' I saw that and thought, 'I'm going to Cornell.'"

That spring, Cox's advisers started asking which colleges she would choose from, but she hadn't heard anything. Then it

endgame, she set her sights on systems engineering at Wright-Patterson Air Force Base in Dayton, Ohio, helping build F-16 aircrew training systems. She later earned her master's degree in space operations engineering at the Air Force Institute of Technology and worked as an orbital analyst for U.S. Space Command Operations at Cheyenne Mountain Air Force Base.

After six years of active duty, Cox mailed in her application for an engineering position at JPL. She waited-and was met with resounding silence. But a high school reunion helped her eventually connect with a former classmate working at JPL. She called him soon after and learned he was about to leave for graduate school.

"If I had not called then, or just a few months later, I would have missed him," she recalls. "Instead, I got hired into his group just as he left."

THE EXPLORER

"Every day, I am bone-deep fulfilled being here," Cox says from her office on the fourth floor of JPL's Flight Projects building, which sits in the middle of 177 acres of the sprawling JPL campus. "It's about legacy-being part of something greater than yourself."

And something greater requires sacrifice, including Thanksgivings spent in Mission

Control and missing friends' weddings.

The work doesn't let up these days, either. On a recent Wednesday, she had a "three-rover day": She was on shift for Curiosity all day, went to dinner with the Mars Exploration Rovers team in the evening and then came home to work on Mars 2020 at night.

Cox is "solar-powered," she says, and works best from 6 a.m. to 10 a.m., a window she calls her "prime time." A typical day will start at 5:45 a.m., when she rolls out of bed, opens up her laptop on the treadmill and works out while checking off her to-do list. On especially busy weeks, she'll work through the

Even though there is a back entrance to a parking lot much closer to her office, Cox prefers to drive onto lab through the main entrance, where she can see the NASA logo and the Jet Propulsion Laboratory sign.

"I don't drink coffee and I don't drink tea, but I do like to see that sign in the morning to start the day off right," she says.

On the Mars 2020 mission, the next rover that will fly to Mars, she's both the deputy team lead for the engineering operations team and the operations test and training manager, helping develop operations processes and



weekend at home. Her husband, Earl, who knows not to bother her during those precious hours, will slip her a plate of toast while whispering with a smile, "Prime time."

tools for operating the rover.

Rob Manning, JPL's chief engineer, has known Cox since her early days on Galileo and supervised her on the Mars Exploration Rovers

after she knocked on his door and asked to work on Spirit and Opportunity as a systems engineer.

"She's got all three: She's got passion, she's got discipline, she has perseverance in the face of obstacles," he says. "She's one of the most tenacious individuals I've ever met."

Ask Cox how she has the strength to do all she does with such energy, enthusiasm and focus, and she has a simple answer. "Work doesn't feel like work," she replies. "It's where I want to be."

In Cox's free time-which must exist on some separate, invisible plane of time-she is often traveling the world, speaking to audiences about exploring the universe. To date, she's given almost 700 lectures in 20 years of outreach, has nearly 2 million views on her "Mars Time" TED talk, and has visited dozens of countries on STEM diplomacy trips, many as a U.S. State Department speaker since 2004-all on personal vacation time.

In Jordan, children traveled for four hours by bus from rural areas to hear her speak. In Pakistan, she was escorted by 12 men carrying machine guns to a small town where, in addition to her career lectures, she taught self-defense classes for young girls. And in Morocco, one of the students asked her one day, "Do you know how lucky you are to live and work in the United States?"

"Yes, I do," she replied. "I think about that every day, and that's why I'm here."

JOURNEYING ON

Having come so far in her journey of space exploration, Cox has discovered a sense of peace and forgiveness that she never expected. The challenges of her childhood have given way to an adulthood full of satisfaction, wonder and happiness. Her parents eventually divorced and her mother learned to drive at 40 and got a job at a bank; her father, in later years, "tried to learn to love more." While both passed away several years ago, she has come to an accepting, even good-humored, perspective of her upbringing now.

"Your parents are a product of their own childhood issues and their cultures. It seems like we all ought to be forgiving of each other, especially our parents."

Cox leads an active social life that has included hobbies like dragon boating, sprint triathlons and improvisational comedy. On the philanthropic end, she has volunteered for suicide prevention programs, is the first engineer to sit on Human Rights Watch's advisory committee for women's rights, and served on the Griffith Observatory board for more than 10 years.

Jordan Evans, the deputy director of engineering and science at JPL, knows what

makes her stand out. "She's not self-centered or arrogant in any way," he says. "She's genuinely happy, genuinely positive and genuinely wants to make the world a better place."

Cox became what that young girl in Kansas hoped to be so many years ago: an explorer of the universe. "I have never expected that anyone would remember my name," she says. "But I'm hopeful they will remember my missions."

This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more!



November's Dance of the Planets

Jane Houston Jones and David Prosper

November's crisp autumn skies bring great views of our planetary neighbors. The Moon pairs up with Saturn and Mars in the evenings, and mornings feature eye-catching arrangements with dazzling Venus. Stargazers wanting a challenge can observe a notable opposition by asteroid 3 Juno on the 17th and watch for a few bright Leonid meteors.

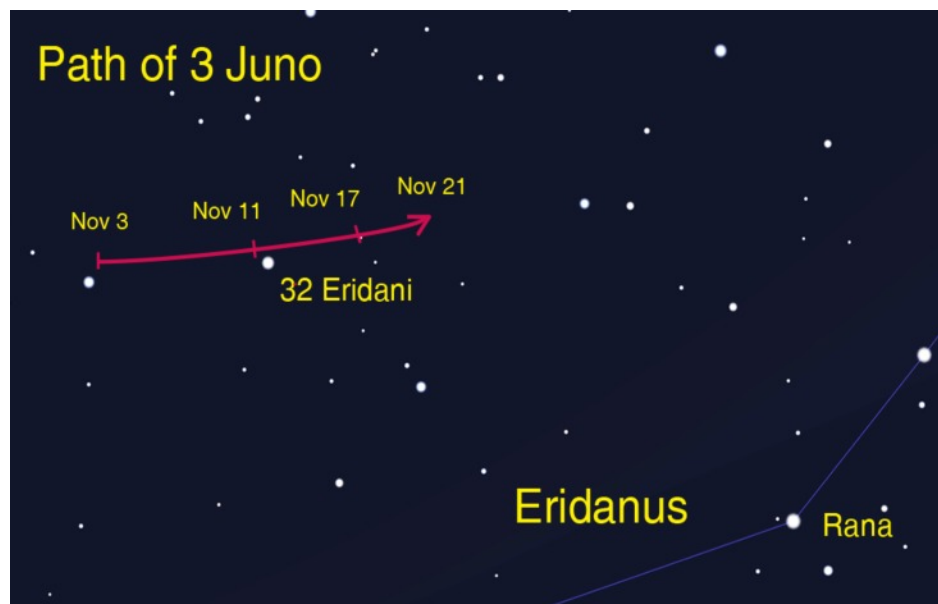
Red **Mars** gleams high in the southern sky after sunset. **Saturn** sits westward in the constellation Sagittarius. A young crescent Moon passes near Saturn on the 10th and 11th. On the 15th a first quarter Moon skims by Mars, coming within 1 degree of the planet. The red planet receives a new visitor on November 26th, when NASA's InSight mission lands and begins its investigation of the planet's interior. News briefings and commentary will be streamed live at: bit.ly/landsafe

Two bright planets hang low over the western horizon after sunset as November begins: **Jupiter** and **Mercury**. They may be hard to see, but binoculars and an unobstructed western horizon will help determined observers spot them right after sunset. Both disappear into the Sun's glare by mid-month.

Early risers are treated to brilliant **Venus** sparkling in the eastern sky before dawn, easily outshining everything except the Sun and Moon. On November 6th, find a location with clear view of the eastern horizon to spot Venus next to a thin crescent Moon, making a triangle with the bright star Spica. The following mornings watch Venus move up towards Spica, coming within two degrees of the star by the second full week of November. Venus will be up three hours before sunrise by month's end – a huge change in just weeks! Telescopic observers are treated to a large, 61" wide, yet razor-

thin crescent at November's beginning, shrinking to 41" across by the end of the month as its crescent waxes.

Observers looking for a challenge can hunt asteroid **3 Juno**, so named because it was the third asteroid discovered. Juno travels through the constellation Eridanus and rises in the east after sunset. On November 17th, Juno is at opposition and shines at magnitude 7.4, its brightest showing since 1983! Look for Juno near the 4.7 magnitude double star 32 Eridani in the nights leading up to opposition. It is bright



Caption: This finder chart shows the path of the asteroid 3 Juno as it glides past 32 Eridani in November 2018. The asteroid's position is highlighted for selected dates, including its opposition

enough to spot through binoculars, but still appears as a star-like point of light. If you aren't sure if you have identified Juno, try sketching or photographing its star field, then return to the same area over the next several days to spot its movement.

The **Leonids** are expected to peak on the night of the 17th through the morning of the 18th. This meteor shower has brought

“meteor storms” as recently as 2002, but a storm is not expected this year. All but the brightest meteors will be drowned out by a waxing gibbous Moon.


Stay warm and enjoy this month's dance of the planets!

You can catch up on all of NASA's current and future missions at nasa.gov

With articles, activities and games **NASA Space Place** encourages everyone to get excited about science and technology. Visit spaceplace.nasa.gov to explore space and Earth science!

The Cat's Paw Nebula, imaged here by NASA's Spitzer Space Telescope using the MIPS and IRAC instruments, is a star-forming region that lies inside the Milky Way Galaxy. New stars may heat up the surrounding gas, which can expand to form "bubbles." Image Credit: NASA/JPL-Caltech





THE *Prairie* *Astronomer*

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SEPTEMBER 1985

In looking over past PAC newsletters, an interesting perspective can be gained. Activity is a major basis for any club and the PAC can be proud that it has not lacked for this quality over the past years. There is, however, one consistent pattern which emerges from the club notes that perhaps characterizes the PAC. We are a very strong public service group. From Astronomy Day at Gateway to staffing and operating Hyde Observatory, we provide Lincoln with an invaluable service that no one else in the area can provide. Our service record is a true 'feather' in PAC's hat.

However, perhaps along the way to where we now stand we have neglected to some degree a basic principle that is fundamental to the health of any club, i.e. providing services to it's members. Lately, as a club we have been somewhat stale-mated. We have poor attendance at monthly star parties (I raise my hand as one of those who never shows up!), and very few members even considering working on an observing program toward the Messier Award or the Herschel Award. It seems to be the right time for the PAC to try something different, to attempt re-kindling the fire in its membership.

If you read newsletters from other clubs around the country you'll notice that a large number of them are constructing club-owned observatories. You see everything from simple cement slabs to full blown roll-top domes. But the common denominator is that these clubs have done something for thier membership. They have created a place for members to use thier telescopes outside of the city, and a place for members to freely come and use club telescopes. The end product is renewed life and interest in the club.

I think the time has come for the PAC to begin steps toward creating its own observatory, a major project which will not just happen over night, and will take a big effort on the part of ALL the members of the club. A simple outline of what's involved might look something like this:

PAC OBSERVATORY PROJECT

1. Guiding Committee organization
 - a. sub-committee's
 - b. project time-line development
 - c. allocation of member resources
 2. Fact Finding Trips
 - a. trips to area club observatories
 - b. letters in inquiry to other clubs
 3. Basic Planning
 - a. location
 - distance from city
 - rent or own land
 - easy access for members
 4. Construction
 - a. members talents
 - b. work times
 - c. quality control
- b. type
 - simple cement slabs
 - housing for PAC scope
 - roll top observ.
- c. materials
 - what can members provide
 - costs
 - fund raising

Even a simple outline such as this shows the magnitude of our task. But with the proper guidelines and member involvement, I think it's something we can and should do. And if we pull it off, that would be a REAL feather in our hat!!!

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:



CLUB OFFICERS

President	Jim Kvasnicka (402) 423-7390 jim.kvasnicka@yahoo.com
Vice President	Brett Boller
2nd VP (Program Chair)	Open
Secretary	Lee Thomas lthomas@allophone.com
Treasurer	John Reinert jr6@aol.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.