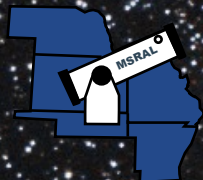


# *The Prairie Astronomer*

December 2017 Volume 58, Issue #12

## *M79: Hubble's Celestial Snow Globe*



**Night Sky Network**



The Newsletter of the Prairie Astronomy Club.

# ***The Prairie Astronomer***

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## **NEXT PAC MEETING: January 2, 6:00pm at Mueller Planetarium**

### **PROGRAM**

Holiday party for PAC members and guests at Mueller Planetarium.

### **FUTURE PROGRAMS**

January: How to Use Your Telescope

### **CONTENTS**

- 4 Observing Awards
- 5 Observatory Update
- 7 January Observing
- 8 Focus on Auriga
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- 12 From the Archives
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### **Cover:**

*The stars in the globular star cluster Messier 79 look a lot like a blizzard in a snow globe in this NASA Hubble Space Telescope image.*

*Credits: NASA and ESA, Acknowledgment: S. Djorgovski (Caltech) and F. Ferraro (University of Bologna)*

The Prairie Astronomy Club:  
Fifty Years of Amateur Astronomy



COMPILED AND EDITED BY MARK DAHMKE

**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).

# EVENTS



PAC meeting  
Tuesday January 2, 2018, 7:30pm  
To be announced

PAC Meeting  
Tuesday January 30, 2018, 7:30pm  
How to Use Your Telescope

PAC Meeting  
Tuesday February 27, 2018, 7:30pm  
To be announced

## 2018 STAR PARTY DATES



Photo by Brian Sivill

### Star Party Date      Star Party Date

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

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



## PAC E-MAIL:

[info@prairieastronomyclub.org](mailto:info@prairieastronomyclub.org)

## PAC-LIST:

Subscribe through [GoogleGroups](#).  
To post messages to the list, send  
to the address:

[pac-list@googlegroups.com](mailto:pac-list@googlegroups.com)

## ADDRESS

The Prairie Astronomer  
c/o The Prairie Astronomy Club, Inc.  
P.O. Box 5585  
Lincoln, NE 68505-0585

## WEBSITES

- [www.prairieastronomyclub.org](http://www.prairieastronomyclub.org)
- <https://nightsky.jpl.nasa.gov>
- [www.hydeobservatory.info](http://www.hydeobservatory.info)
- [www.nebraskastarparty.org](http://www.nebraskastarparty.org)
- [www.OmahaAstro.com](http://www.OmahaAstro.com)
- [Panhandleastronomyclub.com](http://Panhandleastronomyclub.com)
- [www.universetoday.com/](http://www.universetoday.com/)
- [www.planetary.org/home/](http://www.planetary.org/home/)
- <http://www.darksky.org/>



**Night Sky Network**

## Observing Awards

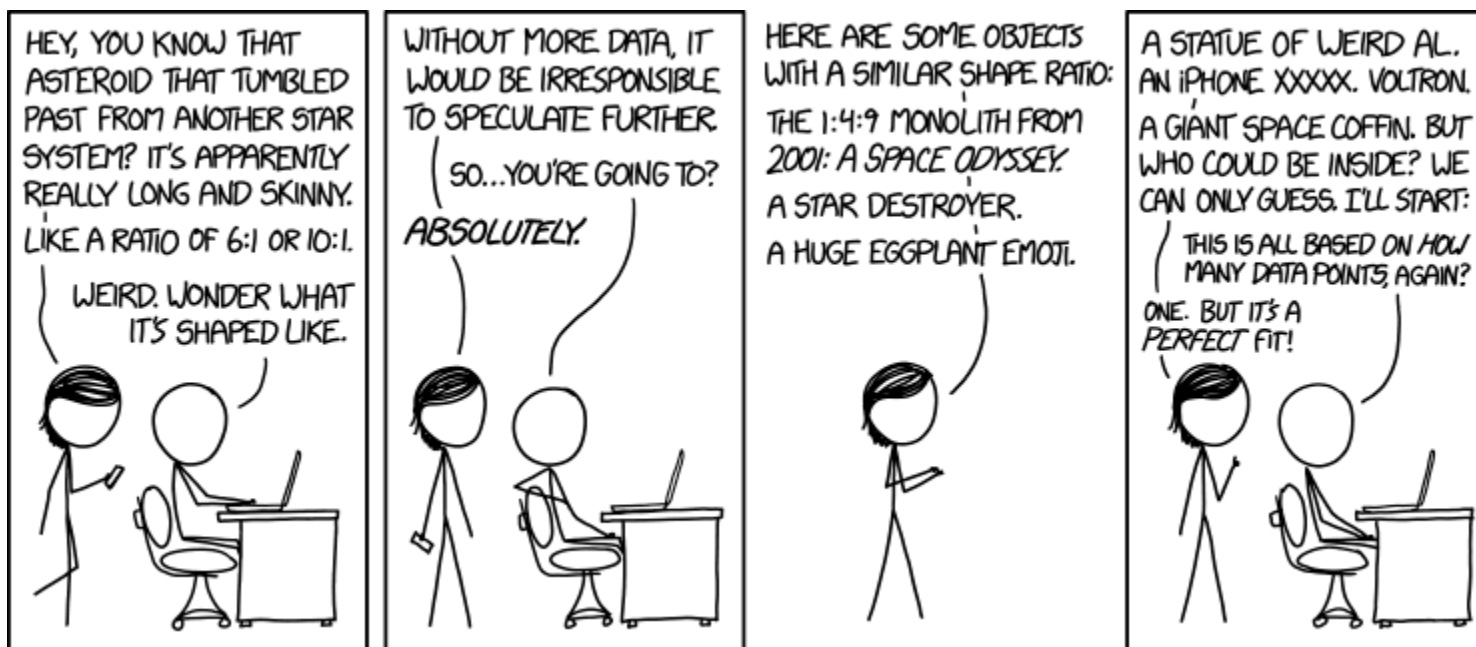
Congratulations to Brett Boller for completing the Solar Eclipse 2017 Special Observing Award. This is Brett's 4th observing award.

Congratulations to Bob Kacvinsky for completing the Bright Nebula Program and the Asterism Observing Program. This is Bob's 9<sup>th</sup> and 10<sup>th</sup> observing awards.

Congratulations again to Brett and Bob on their observing awards.



*Jim Kvasnicka presented the PAC program on how to buy a telescope at 7:30pm and 9:30pm on Saturday December 9<sup>th</sup> at Hyde Observatory.*



xkcd.com

## Observatory Update: PGC 009247 A Study in Contrasts, Color and Brightness

Rick Johnson

PGC 9247 is a SAB(rs)bc spiral galaxy about 210 million light-years distant in the southeast corner of Andromeda. While its core region is relatively bright and lacks blue stars it is surrounded by a very faint set of very blue arms. This too was taken through thick smoke that has plagued me in late September from fires over 1600 km from me. The smoke had thinned some by the time this was taken and didn't totally kill blue and green light as it had for a couple earlier objects. Still, it cost me a lot of photons making

the field a couple magnitudes fainter than it should be and nearly cost me any chance to catch the faint outer arms. Still, I think the color balance is closer to reality for this one than others taken through the thick smoke. Seeing was better as well but far from great.

This area of the sky is poorly studied for galaxies and only one other had any redshift data. It's near the upper edge of my frame to the east, left. NED identifies it as KIG 0102:[VOV2007] 011 while my

The Sky gives it the extended PGC designation of PGC 2153581. NED puts it at magnitude 15.1 while

The Sky says 17.3. My image, even with the smoke agrees with The Sky saying 17.2 but my smoke compensation may not be perfect. NED follows a magnitude estimate with the filter used. In this case, they



show "E" in that field. I know of no such filter. If anyone knows let me know. I can only think it is for "Estimate" in which case it is way off the mark.

The only other object in the field with redshift data at NED is a quasar near the left edge also in the northeast quadrant. Nothing else in the field has redshift data

so I didn't identify what few others NED even listed.



# January Observing: What to View

Jim Kvasnicka

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

## Planets

**Uranus and Neptune:** The only planets visible in the evening. Look to the SSW just after evening twilight to see both dim planets.

**Jupiter and Mars:** The two start the month just 2° apart, rising around 3:00 am. On January 6<sup>th</sup> the two planets are just separated by 1/3°.

**Mercury and Saturn:** On January 13<sup>th</sup> the two are just 0.6° apart on the eastern horizon.

**Venus:** Not visible.

**Moon:** A total lunar eclipse will take place on January 31<sup>st</sup>. The total eclipse will begin at 6:51 am our time and the moon will set while it is still in totality.

## Meteor Showers

**Quadrantids:** Peaks the night of January 3-4. The full Moon makes viewing difficult.

## Messier List

**M33:** The Triangulum Galaxy.

**M34:** Open cluster in Perseus.

**M52:** Open cluster in Cassiopeia.

**M74:** Galaxy in Pisces.

**M76:** The Little Dumbbell, planetary nebula in Perseus.

**M77:** Galaxy in Cetus.

**M103:** Open cluster in Cassiopeia.

**Last Month:** M2, M15, M29, M31, M32, M39, M110

**Next Month:** M1, M35, M36, M37, M38, M42, M43, M45, M78, M79

## NGC and other Deep Sky Objects

**NGC 1973-75-77:** Nebulous complex north of M42.

**NGC 1980:** Emission nebula just south of M42.

**NGC 2169:** The "37" cluster in Orion.

## Double Star Program List

**Beta Orionis:** Rigel, bright white and dim blue stars.

**Delta Orionis:** Mintaka, white and pale blue pair.

**Struve 747:** Pair of white stars in Orion.

**Lambda Orionis:** Two white stars.

**Theta 1 Orionis:** The Trapezium.

**Iota Orionis:** Bright white and blue stars.

**Theta 2 Orionis:** Three white stars.

**Sigma Orionis:** White primary with three pale blue stars.

**Zeta Orionis:** Bright white star with two dim white stars.

## Challenge Object

**Barnard 33 Dark Nebula:** The Horsehead Nebula in Orion. Dark skies and a Hydrogen Beta filter will help to see it.



# Focus on Constellations: Auriga

Jim Kvasnicka

Auriga the Charioteer is easy to locate with the bright star Capella, the 5<sup>th</sup> brightest star in the sky and its location above Orion and Gemini. Auriga has many open clusters in it because the Milky Way runs through it. Some well-known open clusters are the three Messier objects in Auriga, M36, M37, and M38. Another open cluster NGC 1893 is next to IC405, the Flaming Star Nebula.

## Showpiece Objects

**Open Clusters:** M36, M37, M38

## Mythology

Auriga is one of the oldest constellations and has always been associated with a charioteer in many cultures. According to one Greek myth, Hera had a son who was born lame. Disgusted, she threw

him out of Heaven to Earth, where he became the famous lame smith, Hephaestus, who fashioned beautiful ornaments and armor for the gods. It is said that because he was lame he invented the chariot so that he might get around better.

## Number of Objects Magnitude 12.0 and Brighter

**Galaxies:** 0

**Globular Clusters:** 0

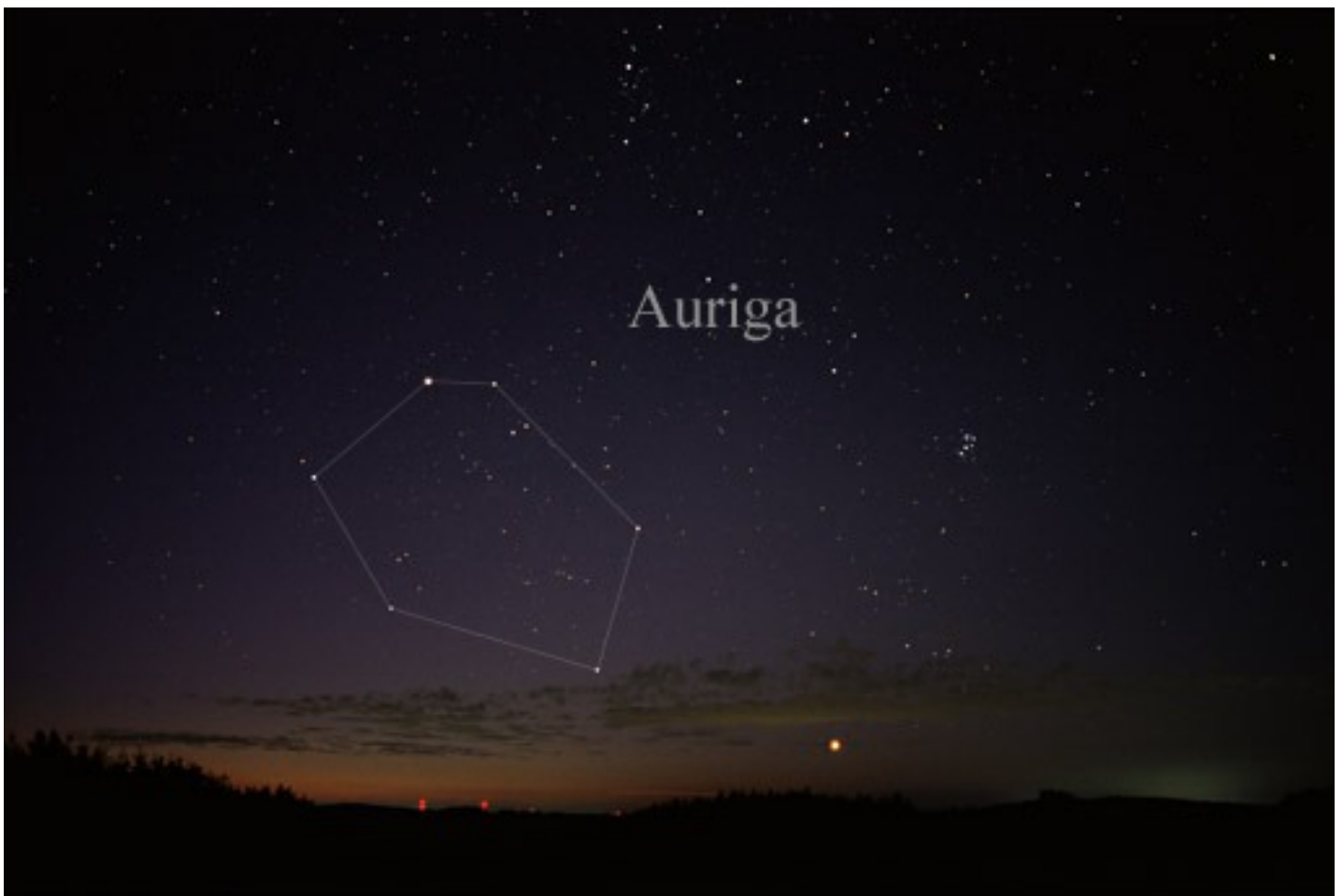
**Open Clusters:** 17

**Planetary Nebulae:** 3

**Dark Nebulae:** 3

**Bright Nebulae:** 2

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





# Cassini Says Goodbye

*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](http://spaceplace.nasa.gov) to explore space and Earth science!*

Linda Hermans-Killiam



There are many places on Earth where it snows, but did you know it snows on other worlds, too? Here are just a few of the places where you might find snow beyond Earth:

## **Mars**

The north pole and south pole of Mars have ice caps that grow and shrink with the seasons. These ice caps are made mainly of water ice—the same kind of ice you’d find on Earth. However, the snow that falls there is made of carbon dioxide—the same ingredient used to make dry ice here on Earth. Carbon dioxide is in the Martian atmosphere and it freezes and falls to the surface of the planet as snow. In 2017,

NASA's Mars Reconnaissance Orbiter took photos of the sand dunes around Mars' north pole. The slopes of these dunes were covered with carbon dioxide snow and ice.

## **A Moon of Jupiter: Io**

There are dozens of moons that orbit Jupiter and one of them, called Io, has snowflakes made out of sulfur. In 2001, NASA's Galileo spacecraft detected these sulfur snowflakes just above Io's south pole. The sulfur shoots into space from a volcano on Io's surface. In space, the sulfur quickly freezes to form snowflakes that fall back down to the surface.

**A Moon of Saturn: Enceladus**  
Saturn's moon, Enceladus, has

geysers that shoot water vapor out into space. There it freezes and falls back to the surface as snow. Some of the ice also escapes Enceladus to become part of Saturn's rings. The water vapor comes from a heated ocean which lies beneath the moon's icy surface. (Jupiter's moon Europa is also an icy world with a liquid ocean below the frozen surface.) All of this ice and snow make Enceladus one of the brightest objects in our solar system.

## **A Moon of Neptune: Triton**

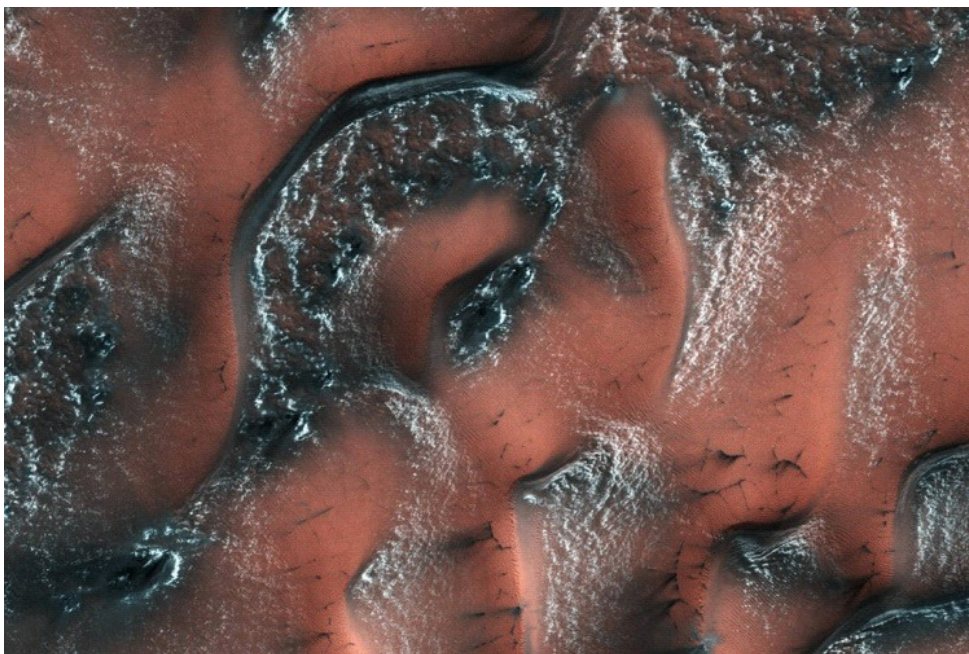
Neptune's largest moon is Triton. It has the coldest surface known in our solar system. Triton's atmosphere is made up mainly of nitrogen. This nitrogen freezes onto its surface covering Triton with ice made of frozen nitrogen. Triton also has geysers like Enceladus, though they are smaller and made of nitrogen rather than water.

## **Pluto**

Farther out in our solar system lies the dwarf planet Pluto. In 2016, scientists on the New Horizons mission discovered a mountain chain on Pluto where the mountains were capped with methane snow and ice.

## **Beyond Our Solar System**

There might even be snow far



*NASA's Mars Reconnaissance Orbiter captured this image of carbon dioxide snow covering dunes on Mars. Credit: NASA/JPL/University of Arizona*

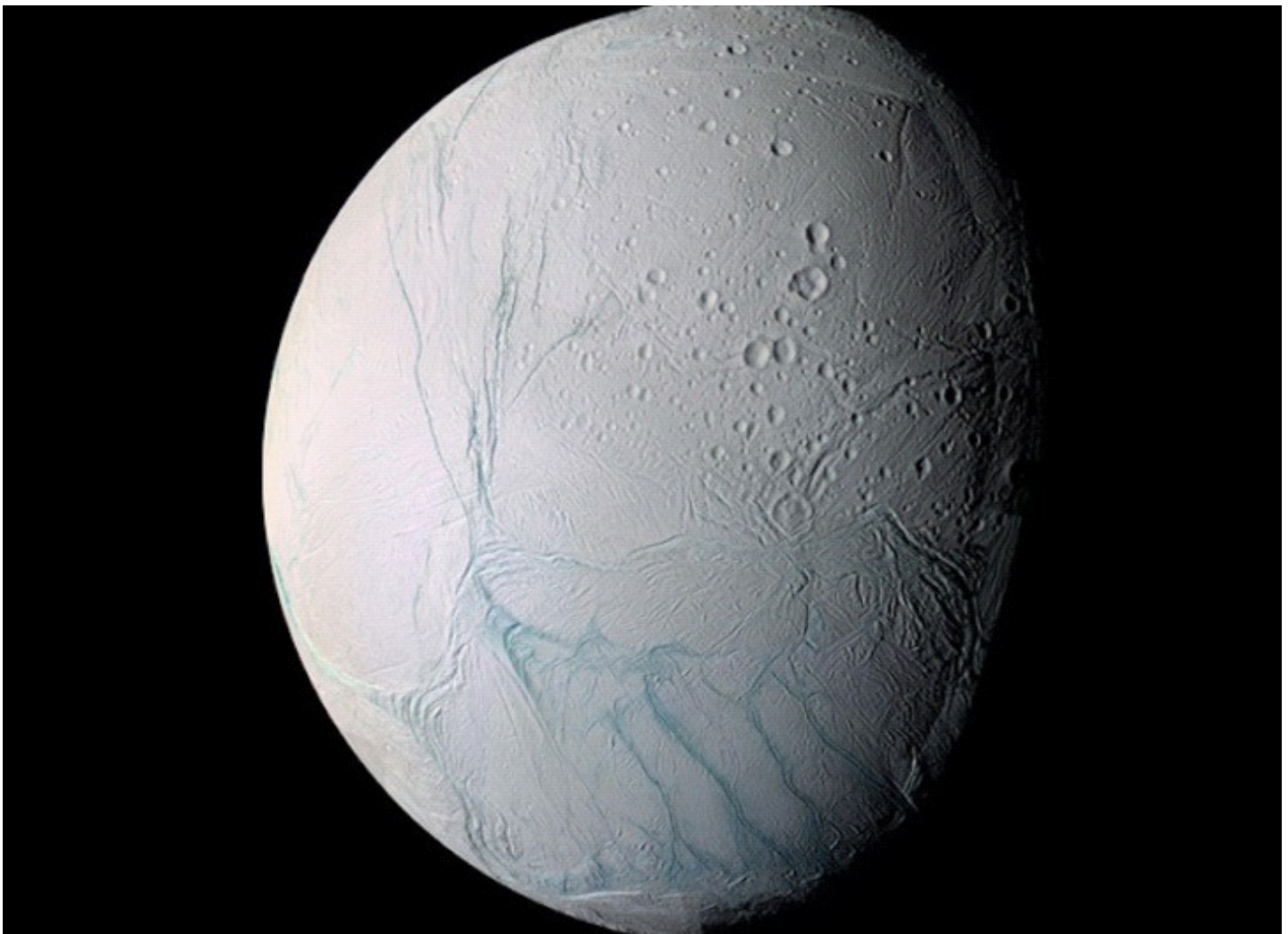
outside our solar system! Kepler-13Ab is a hot, giant planet 1,730 light years from Earth. It's nine times more massive than Jupiter and it orbits very close to its star. The Hubble Space Telescope detected evidence of titanium oxide—the mineral used in sunscreen—in this planet's upper atmosphere. On the cooler side of Kepler-13Ab that faces away from its host star, the planet's strong gravity might cause the titanium oxide to fall down as "snow."

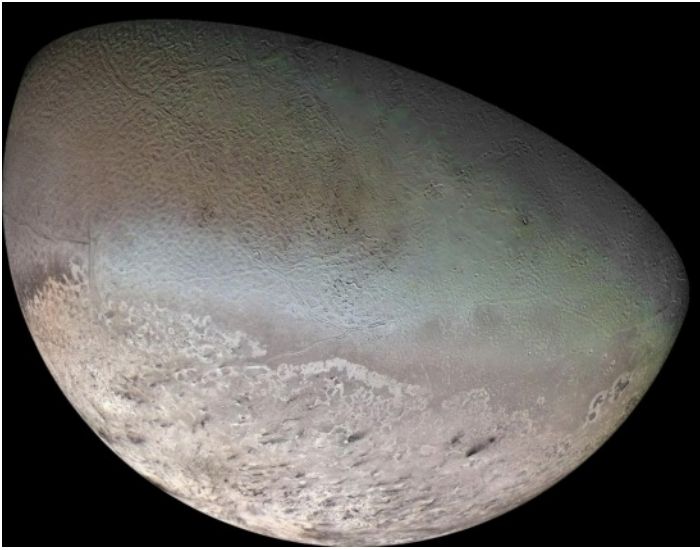


*A volcano shooting molten sulfur out from the surface of Io.  
Credit: NASA/JPL-Caltech*

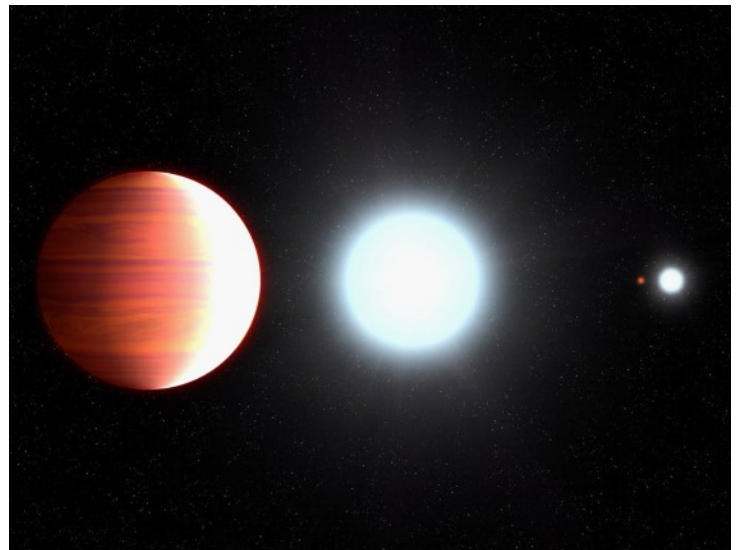
Want to learn more about weather on other planets? Check out NASA Space Place: <https://spaceplace.nasa.gov/planet-weather>

*Below: Enceladus as viewed from NASA's Cassini spacecraft.  
Credit: NASA*

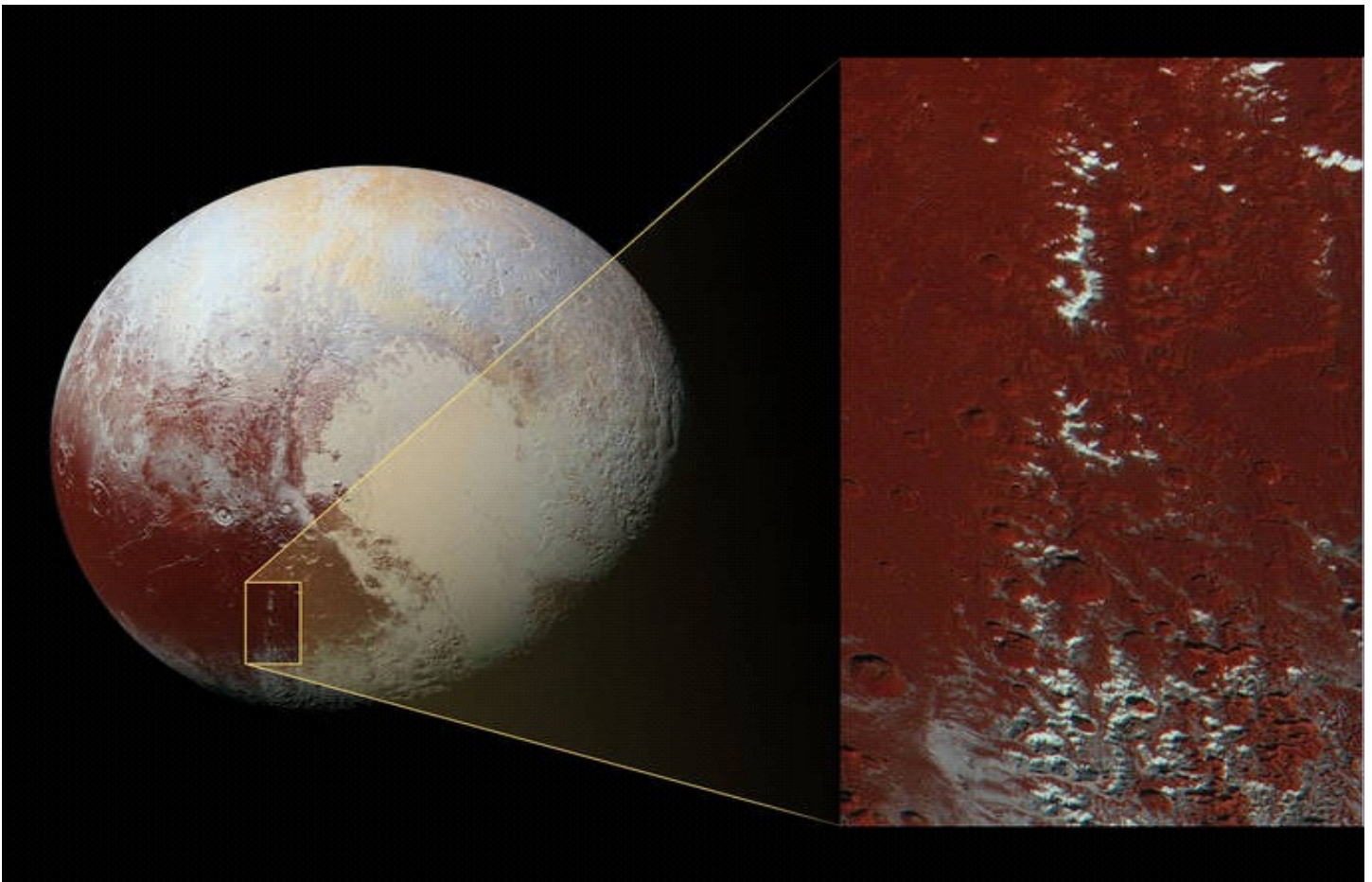




*The Voyager 2 mission captured this image of Triton. The black streaks are created by nitrogen geysers. Credit: NASA/JPL/USGS*



*This is an artist's illustration of what Kepler-13Ab might look like. Credit: NASA/ESA/G. Bacon (STScI)*



*The snowy Cthulhu (pronounced kuh-THU-lu) mountain range on Pluto. Credits: NASA/JHUAPL/SwRI*

# From the Archives: December, 1970

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Editor's note: how things have changed! The commercial Internet is 23 years old and access to online services such as CompuServe, AOL and even BBS systems goes back to the early 1980s. We're so used to

instant access to information that it's easy to forget what it was like to have to wait for a monthly publication that was two months out of date by the time it arrived in the mail. When I was a kid my primary source of

astronomy news was a short "what to view" article published each week in the Omaha World-Herald. —Mark Dahmke

## Delayed Information

I see in the December Sky and Tel that there is a new comet, Suzuki-Sato-Seki. I also see that if we wait for Sky and Tel to tell us about these events, we will be notified much too late to observe them properly. This comet's maximum brightness was 6, which would have at least been worth looking at. But now, when we are told of its existence, it has faded to mag 12, which is not worth looking for. I am not blaming Sky and Tel, for they must have their information as much as two months ahead of printing. However, this leaves us up a tree as far as finding these objects are concerned. I would therefore like to propose that we, as a club, obtain a subscription to the very useful cards that the Smithsonian puts out. These cards are put out when something happens that is considered worth publishing for professional astronomers. This means that all objects which would be within the reach of an amateur's telescope would be listed on these cards. These cards are bought by the 100, and this quantity will last from two to three years. The investment is small, and I feel that we would find it worthwhile for the club to use this service. I will bring this up at the next business meeting.

Brian Dodson

\* \* \* \* \*

## Late Night Notification

At the last meeting the question was brought up concerning rare phenomena which occur in our skies. As a general rule, one observer looks up late at night and sees an aurora, or an unexpected meteor shower. He looks at it for a while, maybe takes a picture, and then tells us about it at the next meeting. The response from the people there is usually that they would have liked to see it, too. This problem has now been taken care of. If you see an event of this nature, that is, rare, call Lawrence Pilgram, at the newsletter phone number. Describe it to him, and tell him the position. He will then go out, and take a look at it. If, after awakening in the middle of the night, he feels that it is good enough to wake other people for, it will have to be a worthwhile occurrence. He will then call people on a list that he will compile, notify them of the occurrence, and then probably go back to sleep. If you wish to get your name on this list, contact Lawrence. If you are interested in this type of phenomenon, this will be a useful service.

\* \* \* \* \*

## 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](http://cafepress.com):



Shop through Amazon Smile to automatically donate to PAC:



## CLUB OFFICERS

President Jim Kvasnicka  
(402) 423-7390  
[jim.kvasnicka@yahoo.com](mailto:jim.kvasnicka@yahoo.com)

Vice President Brett Boller

2nd VP Open  
(Program Chair)

Secretary Lee Thomas  
[lthomas@allophone.com](mailto:lthomas@allophone.com)

Treasurer John Reinert  
[jr6@aol.com](mailto:jr6@aol.com)

Club Observing Chair Jim Kvasnicka  
[jim.kvasnicka@yahoo.com](mailto:jim.kvasnicka@yahoo.com)

Outreach Coordinator Mike Kearns  
[mkearns@neb.rr.com](mailto:mkearns@neb.rr.com)

Website and Newsletter Editor Mark Dahmke  
[mark@dahmke.com](mailto:mark@dahmke.com)

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