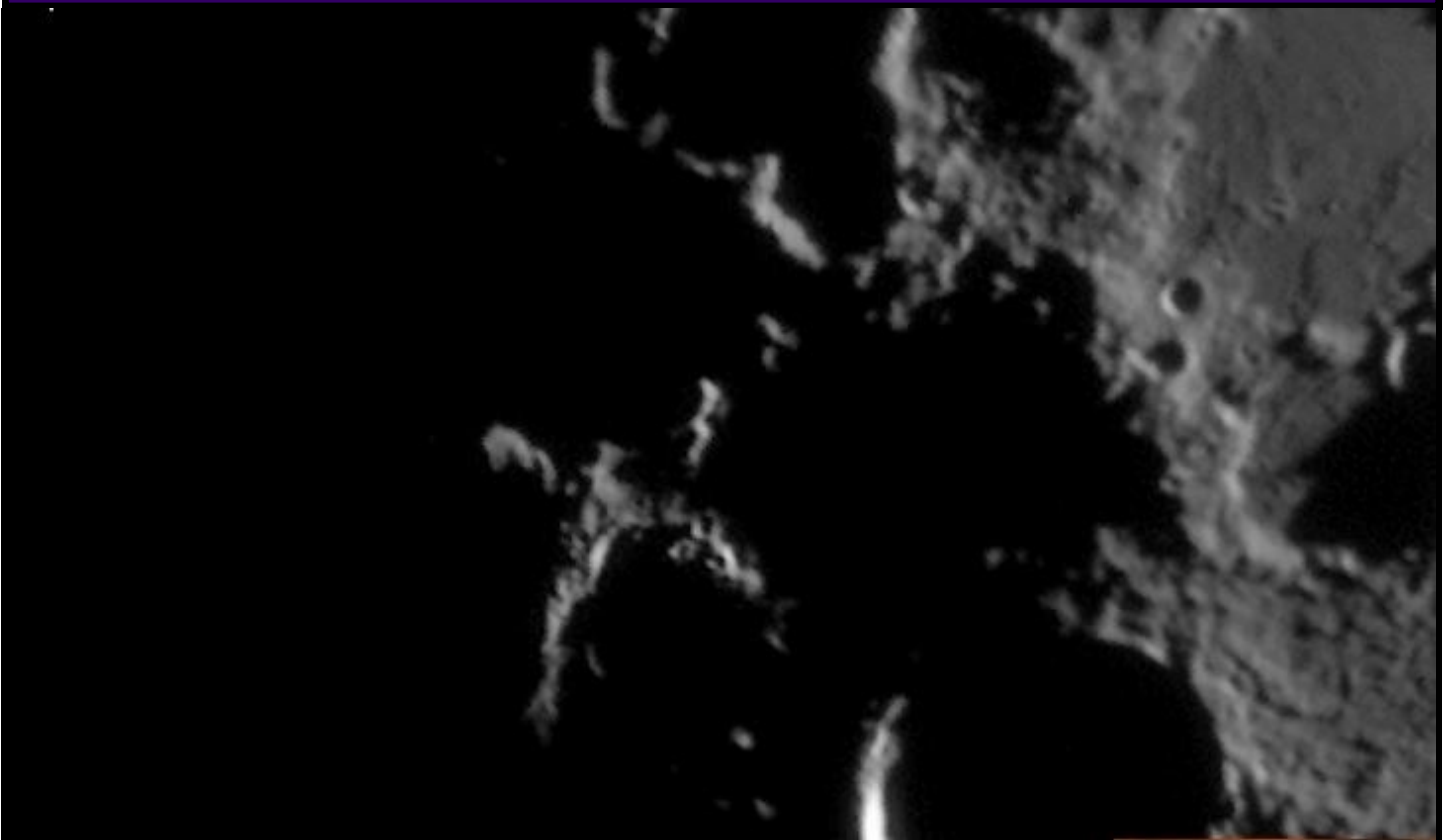




Astronomy Club of Tulsa

Observer

April 2013



*Photo: Lunar X, with the crater Werner, May 20, 2010, by Jerry Mullenix. Thank you Jerry!*





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# April 2013

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2 	3	4	5 Public Star Party	6 PSP Backup/Groups
7	8	9	10 	11	12 Members' Night	13 Messier Marathon
14	15	16	17	18 	19	20
21	22	23	24	25 	26 General Meeting	27 Sidewalk Astronomy
28	29	30				

## UPCOMING EVENTS:

General Meeting	Fri, Apr 26	TCC NE Campus	7:00 PM
Sidewalk Astronomy	Sat, Apr 27	Bass Pro	8:00 PM
Public Star Party	Fri, May 3	ACT Observatory	8:00 PM
Members' Night	Fri May 10	ACT Observatory	8:00 PM
General Meeting	Fri, May 17	TCC NE Campus	7:00 PM
Sidewalk Astronomy	Sat, May 18	Bass Pro	8:00 PM
<b><i>MEMORIAL DAY IS MONDAY, MAY 27</i></b>			
Public Star Party	Fri, May 31	ACT Observatory	8:00 PM



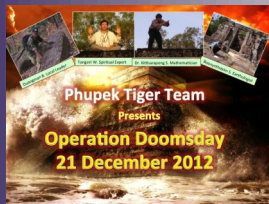
THE ASTRONOMY CLUB OF TULSA  
 INVITES YOU TO  
 A VERY SPECIAL PRESENTATION  
 FRIDAY, APRIL 26, 2013



TULSA COMMUNITY COLLEGE, NORTHEAST CAMPUS  
 STUDENT UNION BUILDING 2, ROOM 1603

7:00 PM

Sansonthi Boonyotayan will give a presentation on two exciting topics:



“Operation Doomsday 2012: Scientific Challenge to the Mayan Prophecy” and



“Operation Eratosthenes: Measure Earth With One Stick”

*Per Mr. Boonyotayan: These two astronomical operations were conducted at Phupek Temple in Thailand, an ancient Khmer Temple located on a mountaintop +520 meters above sea level.*

Please join us for this exciting event.

Open to the Public



# Midstates Region of the Astronomical League Convention

Friday & Saturday, May 17 & 18, 2013

Eugene T. Mahoney State Park - Peter Kiewitt Lodge

<http://msral2013.org>

[http://outdoornebraska.ne.gov/parks/park\\_pages/mahoney\\_SP](http://outdoornebraska.ne.gov/parks/park_pages/mahoney_SP)

Friday, May 17	8:45 am to 4:45 pm	Starbeque 6:00 pm (\$18)	
Saturday, May 18	10:00 am to 4:45 pm	Banquet 6:00 pm (\$25)	Speaker: Richard Harshaw

Registration \$40 per person until April 15, 2013  
\$50 per person after April 15  
Nebraska state park pass included. (Sign in at park entrance or Kiewitt Lodge.)

Register online at <http://www.msral2013.org> or  
mail to Omaha Astronomical Society, PO Box 6257, Omaha, NE 68106-0257

20 rooms at the Peter Kiewitt Lodge are being held until April 15, 2013. Room rate, taxes included, is \$96.14 for one night and \$88.40 for additional nights. To make reservations, call 402-944-2523, ask for Group Functions, and request one of the rooms being held for the Omaha Astronomical Society. (This the only way to reserve these rooms.) Any unsold rooms will be released after April 15.

After April 15, or if all 20 rooms have been reserved, call the same number or reserve online at <http://nebraskastateparks.reserveamerica.com>. Neither availability nor rate is guaranteed.

Mahoney Park also has cabins and RV and tent camping. See park web site for more information.

Mahoney Park is a popular vacation destination and accommodations fill up quickly. If you want to stay at the park, it will be wise to make reservations as soon as possible.

## Nearby Attractions:

Strategic Air and Space Museum (<http://www.sasmuseum.com>)

Lee G. Simmons Conservation Park & Wildlife Safari (<http://www.wildlifesafaripark.com>)

Henry Doorly Zoo (<http://www.omahazoo.com>)

Durham Museum (<http://www.durhammuseum.org>)

Joslyn Art Museum (<http://www.joslyn.org>)





## President's Message

By Lee Bickle

### A Special Announcement to our Members

There will be an election at this month's meeting, which is Friday April 26th at 7pm. The two positions open for nominations are:

**1. Director-at-large.** James Taggart has been nominated by the board for this position. James has already taken the facilities manager position after Chris Proctor stepped down from it, and we feel it is important he also be on the board as Chris was.

**2. Vice President.** I recently took the role of acting president after Owen stepped down, and it would be helpful to refill the position of Vice President.

Only members in good standing who have been members for a year may be elected. Feel free to send your nominations to Tamara or myself; floor nominations will also be welcome (as long as the nominee's acceptance can be confirmed!) I will double check, but I believe these would both be short terms, ending with the annual business meeting later this year.

Our featured speaker this month is Sansonthi Boonyothayan, former government official in Thailand's Ministry of Agriculture. You may remember him speaking last year about the ancient solar calendar using old temple alignments. He will be giving a lecture on his recent work titled "Operation Doomsday 2012: Scientific Challenge to the Mayan Prophecy" and also on a project he recently performed titled "Operation Eratosthenes: Measure Earth With One Stick"

I look forward to seeing you there!

Also, members, don't forget about members night this Friday at the ACT Observatory and the Messier Marathon at TUVa on Saturday - weather permitting as usual!



# Treasurer's and Membership Report

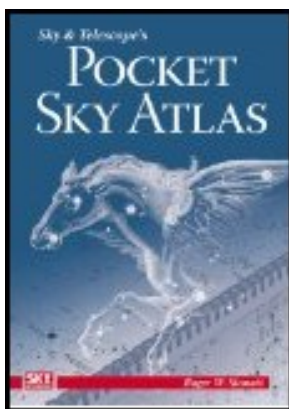
## By John Land

**Astronomy Club of Tulsa 113 members including 14 new members**

**No new members this month.**

**Club Accounts Mar 15, 2013**

**Checking: \$ \$3,058.14 Savings: \$ 7,012.27, Investment account: \$ \$18,164.87 (Value Fluctuates with Market)**



Pocket Sky Atlas by Sky & Telescope

**On Amazon.com for \$ 15.85 regular \$ 20**

**Also Now on KINDLE at \$ 9.99**

**NEWS NOTE:** Both Sky & Telescope and Astronomy have **free Digital subscriptions** available with print subscriptions or Digital subscriptions may be purchased separately. Contact their websites for details.

Membership rates for 2013 as follows:

**Adults - \$ 45 per year** includes Astronomical League Membership

**Sr. Adult \$ 35 per year** for those 65 or older includes Astronomical League Membership

**Students \$ 30** with League membership **Students \$ 25** without League membership.

**Additional Family membership \$ 20** with voting rights and League membership.

**\$ 15** with voting rights but without League Membership

The regular membership allows all members in the family to participate in club events, but only **ONE Voting Membership** and one Astronomical League membership.

**Join Online** – Add or renew magazine subscriptions: <http://www.astrotulsa.com/page.aspx?pageid=16>

**Magazine Subscriptions:** If your magazines are coming up for renewal, try to **save the mailing label** or renewal form you get in the mail. Forms are available on the club website.

**Astronomy** is \$ 34 for 1 year or \$ 60 for 2 years. [www.astronomy.com](http://www.astronomy.com)

To get the club discount you must go through the club group rate

**Sky & Telescope** is \$ 33 per year [www.skyandtelescope.com](http://www.skyandtelescope.com)

Sky and Telescope also offers a 10% discount on their products.

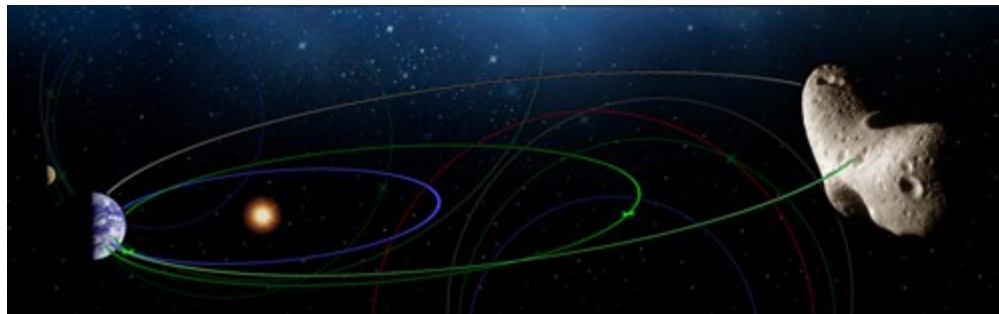
Note: **You may renew your Sky & Telescope subscription Directly Online** without having to mail in the subscriptions to the club. **NEW SUBSCRIPTIONS** must still be sent to the club treasurer.



Get your reservations in ASAP <http://www.msral2013.org/>

Amateur astronomers from Oklahoma, Kansas, Arkansas, Missouri and Nebraska gather each year to share stories, listen to great speakers and check out the astronomy vendors. The MidStates region is one of the most active in the nation.

The Omaha Astronomical Society is excited to host the 2013 convention of the Mid States Region of the Astronomical League. This years convention is being held May 17-18 at the Mahoney State Park, conveniently located between Omaha and Lincoln, Nebraska. Amateur astronomers from Oklahoma, Kansas, Arkansas, Missouri and Nebraska gather each year to share stories, listen to great speakers and check out the astronomy vendors.



Try your skills at launching a spacecraft to a sister planet or near earth asteroid. NASA has released to the public an online tool for calculating and animating such voyages.

<http://www.skyandtelescope.com/news/Mission-Planning-for-the-Public-200290401.html>

Designing missions to near-Earth objects (NEOs) just got a little easier. NASA's tool for preliminary mission planning is now publicly available as the [Trajectory Browser](#). The web-based utility draws from a database of pre-computed trajectories to plot your way from Earth to any planet or known NEO. All you have to do is enter your destination.





## What's New at Tulsa Air and Space Museum?

<http://www.tulsaairandspacemuseum.org>

Mix Boy Scouts, Rubik's cubes and a bit of Genius and what do you get? Come see the creation of Eagle Scout Frank Schad. A giant 9 by 10 foot mural of Albert Einstein constructed from 2,544 Rubik's cubes. Frank and his fellow scout friends and supporters from TASM raised nearly \$ 20,000 to purchase all the cubes needed for this work of art. Each cube had to be solved to a particular pattern to complete the mural. According to Frank each cube has as many as 43 quintillion different settings. The scouts and visitors to the TASM planetarium helped to place each cube in its place.

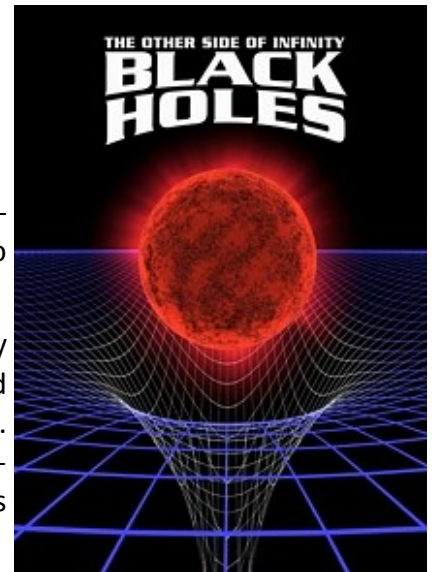
[< Click the image to hear an online interview.](#)

A new planetarium show

### "Black Holes: The Other Side of Infinity"

A full dome show narrated by Academy-Award nominated actor Liam Neeson. This cutting-edge production features high-resolution visualizations to bring the current science of black holes onto the dome.

Be dazzled with striking, immersive animations of the formation of the early universe, star birth and death, the collision of giant galaxies, and a simulated flight into the super-massive black hole lurking at the center of our galaxy. Our fellow club member, Michael Blaylock, helps run the planetarium's all-new Spitz SciDome HD full dome projection technology. Black Hole Shows are: Tues to Sat @ 12:00 PM    Sundays @ 1:30 PM



Our Tulsa Astronomy Club and TASM have a mutually beneficial cooperative relationship. Our members and TASM both share many common interests in aviation, space and astronomy. Dr. Judy Moody, Director of Academic Development, at TASM has been especially helpful in creating and promoting cooperative ventures. Our members have been invited to bring our telescopes and share with others our love of astronomy at several TASM events. Their easily accessible location with plenty of parking makes for a friendly location to hold public viewing events. In recent years we have held events featuring Lunar eclipses, Solar Observing, Public Observing Nights, Beginner Telescope classes and a very successful Venus Transit watch. I personally would like to thank TASM for inviting our members to participate in their events and look forward to many more opportunities in the future. By *John Land*



# The Secretary's Stuff

## By Tamara Green

### ASTRONOMY CLUB OF TULSA – MINUTES – GEN. MEETING FRI MAR 29, 2013

#### **PRESENT:**

Owen Green, President  
Lee Bickle, Vice President  
Tamara Green, Secretary  
Mandy Nothnagel, Board  
Michael Blaylock, Board

#### **NOT PRESENT:**

John Land, Treasurer  
Tony White, Board  
Stan Davis, Board  
Jody Ray-Fleetwood, Board

The meeting was held at Tulsa Community College, Northeast Campus. There were 28 attendees.

**WELCOME AND INTRODUCTION:** Owen called the meeting to order at 7:08 PM and welcomed all attendees. Owen stated that he is stepping down as President effective this evening due to a broken shoulder and physical therapy with the possibility of surgery. Vice President Lee Bickle has agreed to carry on the duties of President for the remainder of the year.

**PROGRAM:** Experiencing Hubble Videos, Lectures 3 and 4

#### **OFFICERS'/STAFF REPORTS:**

**PRESIDENT** – Owen stated that he is stepping down as President effective this evening due to a broken shoulder and physical therapy with the possibility of surgery. Vice President Lee Bickle has agreed to carry on the duties of President for the remainder of the year.

**VICE PRESIDENT-** John mention that if anyone wants to renew dues or join, the officers who are present can take their money. Lee then went over the treasurer's report

**SECRETARY** – Tamara said that if anyone wants a copy of the minutes from the February meeting, or from any other meeting, to email her. She then discussed the rescheduled Messier Marathon and the plans for the caravan, which she is leading. She then put out a call for articles and discussed newsletter articles and formats with the membership.

**TREASURER** – Not present, Lee gave the report.

**FUNDRAISING** – This position is open.

**OBSERVING** – Tamara told everyone that if they had any projects that have been completed or if there are any questions about observing to call or email or text her.

**GROUPS** – Jennifer Jones not present, no report.

*The Secretary's Stuff, by Tamara Green, Ct'd.*

**FACILITIES** – Mandy discussed the workday at the observatory and what was done. She then told everyone that as long as we are accepting donations for coffee, hot chocolate, etc. we don't have to worry about tax issues, so we can start offering coffee, hot chocolate, snacks, etc. for a donation.

**PR/OUTREACH/SIDEWALK** – Owen did not have any announcements on Sidewalk, as all of our Sidewalk events (January through March) have been rained out.

**NIGHT SKY NETWORK** – Teresa Davis not present, no report.

**OTHER BUSINESS:** Owen discussed upcoming events with everyone. Lee announced that Mr. San will be the guest speaker for next month.

**Owen adjourned the meeting at 8:26.**

**Also from the Secretary:**

**Don't forget our Messier Marathon on Saturday, April 13 at TUVA!**

**There will be a caravan leaving from the parking lot at the Burger King, located at 1600 N. Elm Pl., (N. Elm Pl. and W. Queens Cir. In Broken Arrow) at 3:30 PM sharp! If you are interested in joining me for the caravan, please email me at [astronomer.misstamara@yahoo.com](mailto:astronomer.misstamara@yahoo.com)!**

**There will be a pot-luck dinner before the marathoning begins, so if you want to bring a dish or dessert to share, please feel welcome to!**

**Even though it is now Mid-April, you might want to bring thermals, blankets, parkas, etc. to keep warm with, as it might get cold at night.**

**So come on out and see how many Messiers you can find! Hope to see you there!**



## Mark your calendars and check out the Lunar X

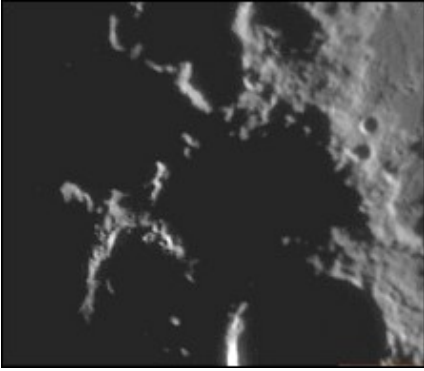
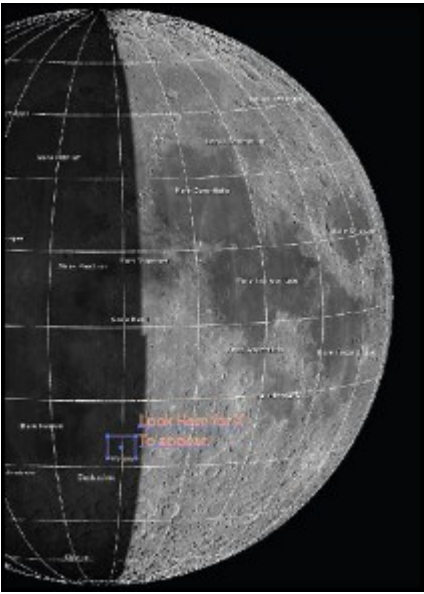


Photo of the Lunar X by Jerry Mullennix

May 20, 2010 Note the crater Werner in the lower right.

There is an interesting lunar phenomena that can be seen just a few hours after the moon reaches First Quarter. It's called the Lunar X – a small but easily discernable X is visible on the dark side of the terminator for a few hours. This was first noted by Dana Thompson way back in the 1978. For those of you new to astronomy – the terminator is the line between the lighted and dark sides of the moon. Often mountains on the dark side of the terminator poke up into the sunlight before the craters and valleys are filled with light. Some narration by John Land



Club member Jerry Mullennix adds further explanation of this phenomena along with predictions for observing it on April 17, 2013 He adds for those who know their way around the moon, this happens as the terminator reaches about half way through the Werner Crater and because the altitude of the Purbach group of craters set higher, the light from the sun will shine on their ridge prior to the terminator reaching them. The ridge is an X shape. The **Lunar X** is also referred to as the **Werner Cross** for its proximity to the Werner crater. The little almost unnoticeable Werner Crater is 69.2 Kilometers ( 43 miles ) across and 12 kilometers ( 7.5 miles ) deep.

Jerry Predicts that on **April 17 at 7:05 PM** the Lunar X should start appearing according to his calculations. It will brighten for an hour or so due to current lunar polar angle to Tulsa. Even though the sun will not have fully set when it starts it will not affect your ability to see the X. You don't need a scope as it can be seen with binoculars. However a low power telescope will improve the view. The last time he did these sort of predictions he says "I was within 1 minute of exact appearance." The phenomena remains visible for about 4 hours start to finish.

[www.Cloudynights.com](http://www.Cloudynights.com) gives a long list of predictions of several Lunar phenomena

They list the Werner Cross AKA Lunar X for the following dates in 2013

17-Apr Werner Cross 18:57 CDT                      15-Jun Werner Cross 16:21 CDT \*

11-Oct Werner Cross 14:50 CDT \*                      10-Dec Werner Cross 20:05 CST

\* these events occur during the day however the moon is visible above the horizon.

More Links and images

APOD <http://apod.nasa.gov/apod/ap090311.html>

Extensive article by David M.F. Chapman - <http://wasociety.us/Lunar-X.pdf>

read page 4 at <http://westchesterastronomers.org/newsletter/April%202007.pdf>

Earn your Lunar Certificate from the American Astronomical League

Details at <http://www.astroleague.org/al/obsclubs/lunar/lunar1.html>

Lunar II Certificate - <http://www.astroleague.org/al/obsclubs/lunarII/lunarII1.html>

**Free Virtual Moon Atlas** program [http://www.astrosurf.com/avl/UK\\_index.html](http://www.astrosurf.com/avl/UK_index.html)

Although parts of this site have expired it remains a great Internet site with all sorts of moon information – maps – calendars even music themes about moon. <http://inconstantmoon.com/>



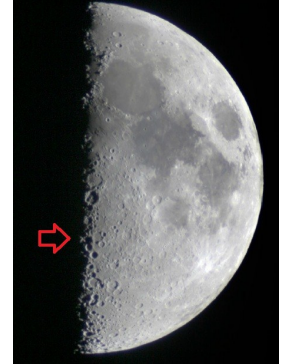
**It's Marathon time for us Nor'easterners!**

And for those way Northeast, note that the comet will be near M31 on our Twitchell evening. Probably shouldn't have said that.....

For those on Facebook, please check the new NITELOG group! <http://www.facebook.com/groups/236166159862560/>

**NITELOG - Norway InTErurban Local Observing Group**, by Tom Hoffelder

**OBSERVING:** For the Mainers, the Twitchell Observatory will be open on Monday the 1st at 8:00, weather permitting. I plan to be there by 7:30 to start searching for M31/PanSTARRS. After the comet I will be doing a partial Messier Marathon as a demonstration for anyone interested in seeing what's involved. Let me know if you need the list of objects in order of search, which was included last month.



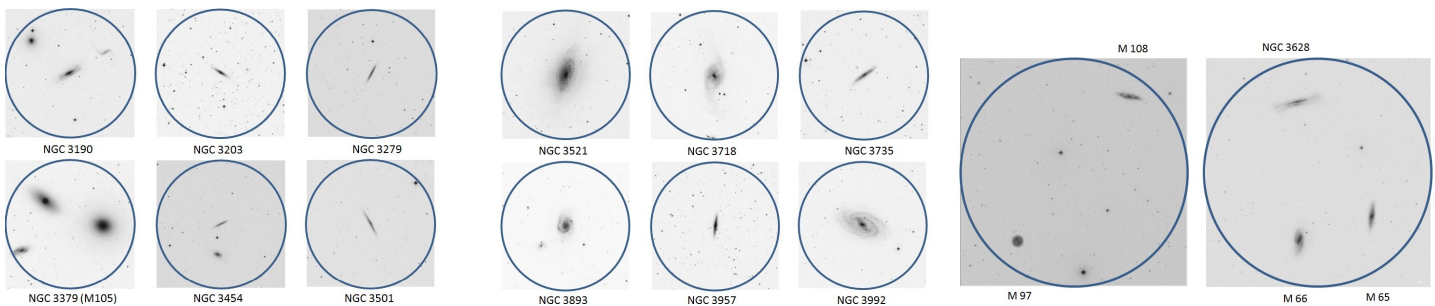
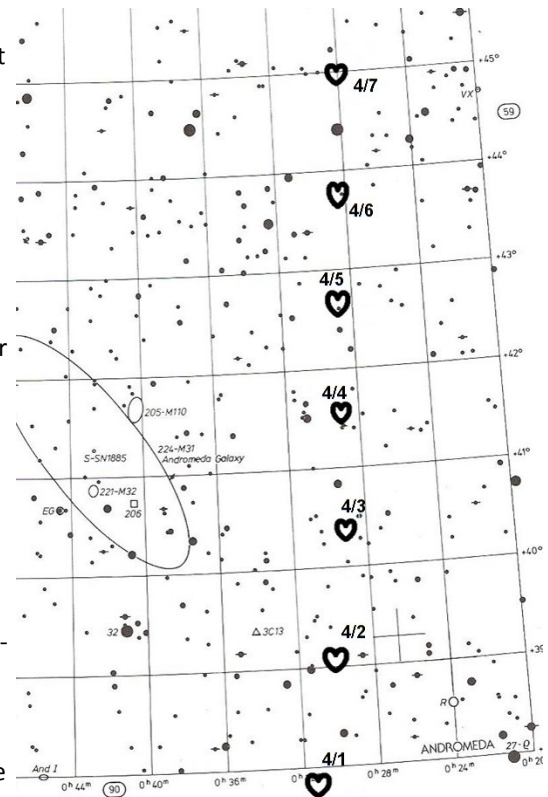
**MOON:** Another chance at the Lunar X! April 17th, a half hour either side of 19:57 EDT when the moon is at 57 degrees altitude; sunset is 19:29.

**COMETS:** PanSTARRS (the speck, not the spectacular) should be 4th to 5th mag early in April, when it passes within a few degrees of M31. (I've seen naked eye comets with tails, eight to be exact and all better than this one, but I've never seen a comet in the same binocular field as Andromeda!) Attached chart shows both will be in 7x50's from the 1st thru the 7th (locations are for 8 PM EDT). If you've ever done a Marathon, you know M31 is not very high this time of year, which means the comet continues its annoying horizon hugging hijinks, but at least it is available both evening and morning.

**PLANETS:** Jupiter can be viewed until about 11 PM on the 1st and 9:30 on the 30th. On the other side of the sky, Saturn is high enough for viewing by 10:30 on the 1st and 8:30 on the 30th, which should tell you something, namely that it is then near opposition, so get out there and look at it around midnight! I took a quick peek on 3/10 while looking for supernovae, and the rings are really opening nicely. Too bad it is so far south, I mean for us in the north. S&T has a good link for determining the location of the five bright moons, [http://www.skyandtelescope.com/observing/objects/javascript/saturn\\_moons](http://www.skyandtelescope.com/observing/objects/javascript/saturn_moons). It's also available as an app for those of you with high tech phones.

**STARS:** Two carbon stars, B-Vs of 2.7 and 4.5 (there's only a few stars redder than the latter, but it can depend on how bright they are, being variables), and six double stars.

**THE GOOD STUFF:** Two very good planetary nebulae and a bunch of glorious galaxies, five of them being Messier objects. Note that one planetary and one galaxy, both M objects, can be viewed together in a one degree field. If you do that, consider the difference in age of the photons that are striking your optic nerve. (The answer is in the distance column.) These two Messier objects are the only example of one in the Milky Way being visible with another that is an external galaxy.





4/1						4/13					
SS	CTE	NTE	ATE	MR	SS	CTE	NTE	ATE	MS		
19:10	19:39	20:14	20:51	01:29	19:24	19:55	20:31	21:10	22:46		

Comet	ra <sup>1</sup>	dec <sup>1</sup>	star	n/s	e/w	n/s/day	e/w/day	mag <sup>1</sup>	mag <sup>2</sup>	uran #	date*
PanSTARRS	00 25.7	+50 19	ζ Cas	3.6 S	2.5 W			6.0	6.0	35	4/12
PanSTARRS	00 25.1	+51 21	ζ Cas	2.6 S	2.6 W	1.0 N	0.1 W			35	4/13

<sup>1</sup>from <http://www.aerith.net/comet/future-n.html>

\*at 8 PM EDT

<sup>2</sup>from <http://www.minorplanetcenter.net/iau/Ephemerides/Comets/>

Object (Type)	ra	dec	star	n/s	e/w	Mag*(# of Stars)	Size (')/ Sep (")	Spect/ M# or H#	Dist (ly)	Urano I Page	Comment (optimum x)
U Hya	10 37.6	-13 23	ν Hya	2.9 N	3.0 W	4.7-6.2		CII	500	280	B-V=2.7
V Hya	10 51.6	-21 15	ν Hya	5.1 S	0.5 E	6.5-12..		C	20K	325	B-V=4.5
γ Leo	10 20.0	+19 50	---	---	---	2.5, 3.5	4.4	K0, G7	125	144	(110)
Σ1434	10 27.0	+18 05	prv	1.8 S	1.7 E	8.5, 8.5	6.4			144 ni	(75)
Σ1520	11 16.1	+52 47	β UMa	3.6 S	2.2 E	6.5, 8	13			46 ni	(35)
Σ1510	11 08.0	+52 53	prv	0.1 N	1.2 W	7, 8.5	5			46 ni	(100)
ξ UMa	11 18.2	+31 32	---	---	---	4.5, 5	2.3		34	106	(200)
88 Leo	11 31.7	+14 22	β Leo	0.2 S	5.2 W	6.5, 8.5	15	dF7, dK6	75	192	(30)
NGC 3190* (Sa)	10 18.1	+21 50	ζ Leo	1.6 S	0.3 E	[13.0]	4.4x1.5	H44-2	90M	144	+ 3187 and 3193

NGC 3242 (PN)	10 24.8	-18 39	$\mu$ Hya	1.8 S	0.3 W	7.7	1.0	H27-4	1900	324	Jupiter's Ghost
NGC 3203* (S0a)	10 19.6	-26 42	$\rho$ Leo	8.0 S	1.1 W	[12.6]	2.8x0.6	---	---	324	
NGC 3279* (Scd)	10 34.7	+11 12	$\rho$ Leo	1.9 N	0.4 E	[13.3]	2.9x0.4	---	---	190	
NGC 3379* (E1)	10 47.8	+12 35	$\rho$ Leo	3.3 N	3.7 E	[13.1]	5.3x4.8	M105	35M	190	+ 3384 and 3389
NGC 3454* (SBc)	10 54.5	+17 21	60 Leo	2.7 S	1.9 W	[13.0]	2.1x0.4	---	68M	146	3455 is 0.1 S
NGC 3501* (Sc)	11 02.8	+17 59	60 Leo	2.2 S	0.1 E	[13.6]	3.9x0.5	---	71M	146	3507 is 0.3 NE
NGC 3521* (SBbc)	11 05.8	-00 02	$\phi$ Leo	3.7 N	2.7 W	[13.5]	11x5.4	H13-1	35M	236	
NGC 3556* (Sc)	11 11.5	+55 40	$\beta$ UMa	0.7 S	1.4 E	[13.0]	8.6x2.4	M108	45M	46	
NGC 3587* (PN)	11 14.8	+55 01	$\rho$ Leo	0.7 S	0.4 E	9.9	2.8	M97	2600	46	The Owl
NGC 3623* (Sa)	11 18.9	+13 05	$\theta$ Leo	2.3 S	1.2 E	[12.7]	9.8x2.9	M66	34M	191	M66 is 0.1 S/0.3 E
NGC 3628* (Sb)	11 20.3	+13 35	$\rho$ Leo	0.5 N	0.3 E	[13.5]	13x3.1	H8-5	35M	191	
NGC 3718* (SBa/P)	11 32.6	+53 04	$\gamma$ UMa	0.7 S	3.2 W	[14.2]	8.1x4.0	H221-1	54M	47	3729 is 0.2 E
NGC 3735* (Sc)	11 36.0	+70 32	$\lambda$ Dra	1.3 N	0.3 E	[13.0]	4.0x0.8	H287-1	130M	25	
NGC 3877 (Sc)	11 46.1	+47 30	$\chi$ Uma	0.3 S	---	[13.1]	5.3x1.2	H201-1	55M	74	
NGC 3893* (SBc)	11 48.6	+48 43	$\chi$ Uma	1.0 N	0.4 E	[12.8]	4.5x2.8	H738-2	62M	74	3896 is 0.1 SE
NGC 3957* (S0a)	11 54.0	-19 34	$\eta$ Crt	2.4 S	0.5 W	[12.8]	2.9x0.7	H294-2	90M	327	
NGC 3992* (SBbc)	11 57.6	+53 22	$\gamma$ UMa	0.3 S	0.6 E	[13.4]	7.5x4.4	M109	55M	47	

\*[Surf Brtnss for GX's] -

\*DSS image

ni=shown but

mag per square arcmin

not identified

**QUESTIONS:** As always, questions and comments are welcome!

tom hoffelder

[rocksnstars@gmail.com](mailto:rocksnstars@gmail.com)

*Come with me now, Pilgrim of the stars,*

*For our time is upon us and our eyes*

*Shall see the far country*

*And the shining cities of infinity ~ Robert Burnham, Jr.*





# the Space Place

March – April 2013 / Vol. 6, Issue 2

## NEWS AND NOTES FOR FORMAL AND INFORMAL EDUCATORS

The Space Place is a NASA website for elementary school-aged kids, their teachers, and their parents.

It's colorful!  
It's dynamic!  
It's fun!

It's rich with science, technology, engineering, and math content!

It's informal.  
It's meaty.

It's easy to read and understand.

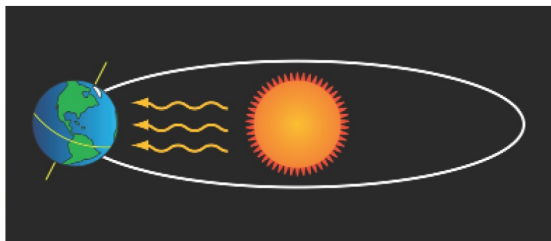
It's also in Spanish.  
And it's free!

It has over 150 separate modules for kids, including hands-on projects, interactive games, animated cartoons, and amazing facts about space and Earth science and technology.

*Earth Day is coming up April 22. What is the most abundant component of Earth's surface? Water, of course. Water is such a big part of life on Earth that we may take it for granted. But where did it come from? What makes it liquid, solid, or gas? And why should we care? Lots of NASA's Earth studies are about water in all its forms.*

### What's new?

Many students are surprised to know that during July, Earth is at its farthest point from the Sun, and during January it is at its closest. But that fact has nothing to do with why there are seasons. This new article explains and illustrates the reason for the seasons



and why some in the U.S. are putting on swimsuits to play in a recently icy lake, just as some in southern Chile and New Zealand are digging out their skates as their lakes freeze over. Check it out to help you enlighten your class at [spaceplace.nasa.gov/seasons](http://spaceplace.nasa.gov/seasons).

### La tierra en español

*¿Es la Tierra en parte un cometa?* Now you can read in Spanish, as well as English, about where our oceans may have originated. With new space telescopes that can analyze the composition of passing comets, we can actually begin to tease apart these 4-billion-plus-year-old mysteries. Find out how they are finding out at [spaceplace.nasa.gov/comet-ocean/sp](http://spaceplace.nasa.gov/comet-ocean/sp).



**Comet Hartley.** Did comets like this contribute to earth's ocean?

### Spotlight on Mission Chronicles

Some NASA missions don't get nearly as far off the ground as you might think. Operation IceBridge is one that uses instruments on an airplane rather than a satellite to study the elevation and thickness of ice at the North and South Poles. So, although it may be a while before any NASA scientists make it to the Moon, they can have a pretty alien-world experience right here on Earth. Christy Hansen, Manager of the Operation IceBridge Mission, and her team took a trip to the South Pole and lived to tell the tale at [spaceplace.nasa.gov/mission-chronicles/#hansen](http://spaceplace.nasa.gov/mission-chronicles/#hansen).



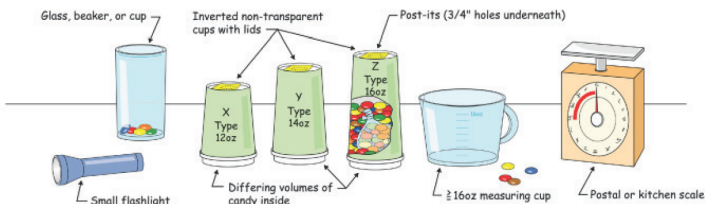
South Pole marker

Where kids and grown-ups have fun with space science and technology



### For the classroom

Clouds, of course, are another form of water. But it's not easy to tell from the ground how much water is actually in the clouds above us. They may look very threatening, but produce very little precipitation. In the classroom activity called "Sizing up the clouds," the teacher sets up three simulated "clouds" representing three different cloud types. Students use different



methods to estimate "precipitation" contents of each cloud type. Each method is roughly analogous to methods actually used in weather forecasting. Finally, the "precipitation" from each cloud is released, and the students will compare their estimates to what is actually experienced on the "ground." "Precipitation" in this activity is represented by colored chocolate candies (like M&Ms), which may help to keep the students' attention! find the activity in .pdf form at [spaceplace.nasa.gov/classroom-activities/#cloudcontent](http://spaceplace.nasa.gov/classroom-activities/#cloudcontent).

### For out-of-school time

The "Go with the Flow" game presents puzzles in which the player must figure out how to place salt (which makes water denser) and heat (which makes water less dense) in an underwater grid scenario in order to create a current that will move a tiny, unpowered submarine to a floating key, which will then open a treasure chest at the bottom of the sea. We have watched kids playing this game, with or without their parents, at our "take your child to work days." We can hardly tear them away! Go to [spaceplace.nasa.gov/ocean-currents](http://spaceplace.nasa.gov/ocean-currents).



### Make these days special

#### March 5, 1979: Voyager 1 flew past Jupiter.

Another spacecraft is on its way to Jupiter and will spend a lot more time there. [spaceplace.nasa.gov/junoquest](http://spaceplace.nasa.gov/junoquest).

#### March 10, 1876: First telephone call.

Alexander Graham Bell called Thomas Watson. How do spacecraft exploring the solar system call home? [spaceplace.nasa.gov/x-ponder](http://spaceplace.nasa.gov/x-ponder).



#### March 14: Pi Day! Or π Day.

All circles are 3.14 . . . (ad infinitum, as far as we know) times as big around as across, a value called pi. What would pi be in binary numbers? [spaceplace.nasa.gov/binary-code2](http://spaceplace.nasa.gov/binary-code2).

#### April 10: Encourage a Young Writer Day.

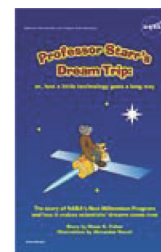
Invite students to write about our future in space. [spaceplace.nasa.gov/art](http://spaceplace.nasa.gov/art).

#### April 22: Earth Day!

It's important, and fascinating, to study Earth's history. Like where did Earth's water come from? [spaceplace.nasa.gov/comet-ocean](http://spaceplace.nasa.gov/comet-ocean).

#### April 28: Tell a Story Day.

Check out some of the stories on The Space Place. They could be called "creative non-fiction," always a fun genre! [spaceplace.nasa.gov/storybook](http://spaceplace.nasa.gov/storybook).



### A great Earth resource

Check out other activities and articles under the "Earth" menu on The Space Place. Remember, NASA has many more missions to planet Earth than to all of the other planets in the solar system combined. Earth is a very interesting planet!







And For The Young Stargazers:  
Check out these fun websites from  
NASA!

<http://climate.nasa.gov/kids>

<http://scijinks.gov>

<http://spaceplace.nasa.gov>



## Where We Meet:

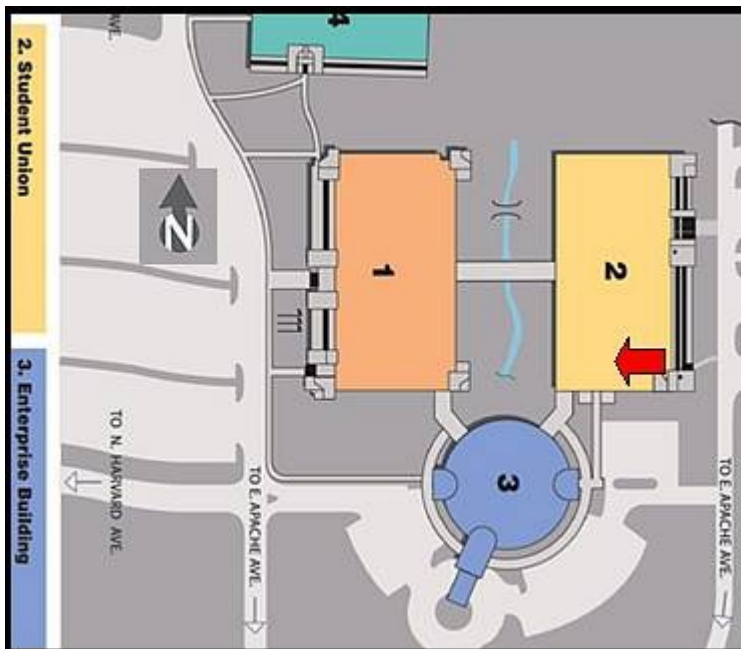
**TCC Northeast Campus, 3727 E. Apache St., Student Union Bldg. 2, Room 1603**

There is PLENTY of parking, lighting and security on this campus.

To get to TCC NE Campus, take the Harvard Exit off of Hwy. 11 (Gilcrease Expressway). Go south for about 1/2 mile to the campus located at the corner of N. Harvard and Apache. Turn east on Apache and take the entrance in front of Bldg. 3 (the large round building). Then turn right and park in front of Student Union Building #2. Room 1603 is just off of the lobby.

**Google-type driving direction map at <http://www.tulsacc.edu/13273/>**

**We hope to see you there!**



Our next General Meeting will be on Friday, April 26 at 7:00 PM.

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## MEMBERSHIP INFORMATION

### MEMBERSHIP RATES FOR 2012 WILL BE AS FOLLOWS:

Adults - \$45 per year. Includes Astronomical League membership.

Senior Adults - \$35 per year. *For those aged 65 and older.* Includes Astronomical League membership.

Students - \$30 per year. Includes Astronomical League Membership.

Students - \$25 per year. *Does not include Astronomical League membership.*

The regular membership allows all members of the family to participate in Club events, but only ONE voting membership and ONE Astronomical League membership per family.

Additional Family Membership - \$15 with Astronomy Club of Tulsa voting rights, \$20 with Club voting rights *and* Astronomical League membership.

*THOSE WISHING TO EARN ASTRONOMICAL LEAGUE OBSERVING CERTIFICATES NEED TO HAVE A LEAGUE MEMBERSHIP.*

### MAGAZINES:

Astronomy is \$34 for one year or \$60 for 2 years.

[www.astronomy.com](http://www.astronomy.com)

Sky & Telescope is \$33 per year.

[www.skyandtelescope.com](http://www.skyandtelescope.com)

Sky & Telescope offers a 10% discount on their products.

*If you are an existing S&T subscriber, you can renew directly with S&T at the same Club rate. Both S&T and Astronomy now have digital issues for computers, iPads and smart phones.*

## ONLINE REGISTRATION

We now have an automated online registration form on the website for new memberships, membership renewals and magazine subscriptions. Just simply type in your information and hit "send" to submit the information. You can then print a copy of the form and mail it in with your check. At this time we do not have an option for credit card payment, but we may explore that at a later time.

Link: <http://www.astrotulsa.com/Club/join.asp>





THE ASTRONOMY CLUB OF TULSA INVITES YOU TO  
MAKE PLANS THIS SPRING TO JOIN US AT AN ASTRONOMY CLUB OF TULSA STAR PARTY!  
OPEN TO THE PUBLIC

For more information please visit [www.astrotulsa.com](http://www.astrotulsa.com).

The Observer is a publication by the Astronomy Club of Tulsa. The Astronomy Club of Tulsa is a 501C 3 non-profit organization open to the public. The Club started in 1937 with the single mission to bring the joy and knowledge of astronomy to the community of Tulsa, OK and the surrounding area. Today our mission remains exactly the same. We travel to local schools, churches and many other venues with scopes and people to teach. Our observatory is located in Mounds and many public programs are offered there. To join the Astronomy Club of Tulsa please visit [www.astrotulsa.com](http://www.astrotulsa.com) where you will find all the information necessary to become a member.

