



Astronomy Club of Tulsa

Observer

November 2013



*Photo: Members and Guests at our October Public Star Party. by Tamara Green.*

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## November 2013

| Sun | Mon | Tue | Wed | Thu | Fri    | Sat      |
|-----|-----|-----|-----|-----|--------|----------|
|     |     |     |     |     | 1 MN   | 2 MNBU   |
| 3   | 4   | 5   | 6   | 7   | 8      | 9        |
| 10  | 11  | 12  | 13  | 14  | 15 DM  | 16 SW    |
| 17  | 18  | 19  | 20  | 21  | 22 PSP | 23 PSPBU |
| 24  | 25  | 26  | 27  | 28  | 29     | 30       |

## December 2013

| Sun | Mon | Tue | Wed | Thu | Fri   | Sat     |
|-----|-----|-----|-----|-----|-------|---------|
| 1   | 2   | 3   | 4   | 5   | 6 PSP | 7 PSPBU |
| 8   | 9   | 10  | 11  | 12  | 13    | 14      |
| 15  | 16  | 17  | 18  | 19  | 20 GM | 21 SW   |
| 22  | 23  | 24  | 25  | 26  | 27    | 28      |
| 29  | 30  | 31  |     |     |       |         |

### UPCOMING EVENTS:

|   |                             |                  |         |
|---|-----------------------------|------------------|---------|
| Members' Night  | Fri, Nov 1                  | ACT Observatory  | 7:00 PM |
| Annual Dinner Meeting   | Fri, Nov 15                 | TASM Planetarium | 6:30 PM |
| <i>(Please Note: This event is for Club members and their families only.)</i> |                             |                  |         |
| Sidewalk Astronomy  | Sat, Nov 16                 | Bass Pro         | 6:00 PM |
| Public Star Party   | Fri, Nov 22                 | ACT Observatory  | 7:00 PM |
| Hanukkah  | Wed, Nov 27 thru Thu, Dec 5 |                  |         |
| Thanksgiving  | Thu, Nov 28                 |                  |         |
| Public Star Party   | Fri, Dec 6                  | ACT Observatory  | 7:00 PM |
| General Meeting   | Fri, Dec 20                 | TCC NE Campus    | 7:00 PM |
| Sidewalk Astronomy  | Sat, Dec 21                 | Bass Pro         | 6:00 PM |
| Christmas Eve   | Tue, Dec 24                 |                  |         |
| Christmas   | Wed, Dec 25                 |                  |         |
| New Year's Eve  | Tue, Dec 31                 |                  |         |
| New Year's Members' Night   | Tue, Dec 31                 | TBA              | TBA     |



The Astronomy Club of Tulsa cordially invites all members and their families to  
our Annual Dinner Meeting!

Friday, November 15, 2013 at 6:30 PM

Tulsa Air and Space Museum Planetarium Lobby



Festivities to include:

Prize Drawing

Planetarium Show

Group Photo



Great Food, catered by Billy Simms BBQ!

Come and enjoy the fun with us!



# **ASTRONOMY CLUB OF TULSA**

## **ELECTION OF OFFICERS AND BOARD MEMBERS-AT-LARGE**

**This will take place at the November Dinner Meeting on Friday,  
November 15, 2013 at the TASM Planetarium Lobby.**

### **The nominees so far:**

Mandy Nothnagel for President

Richard Brady for Vice President

Tamara Green for Secretary

Tim Davis for Treasurer

Lee Bickle for Board

Michael Blaylock for Board

Stan Davis for Board

John Land for Board and Membership Chairman

Christopher Proctor for Board

James Taggart for Board

Skip Whitehurst for Board

If any of you have any other nominations for either an Office or a Board Position, please contact Secretary Tamara Green at [astronomer.misstamara@yahoo.com](mailto:astronomer.misstamara@yahoo.com) and let her know who you are nominating and for what position. Please submit your nominations to Tamara by Friday, Nov. 8, 2013 so that she can have ample time to prepare the ballots for the Dinner Meeting. Thank you!



## President's Message

By Lee Bickle

Hello all,

I hope everyone has enjoyed some of the clear nights we've had recently! Hopefully you've received an email containing a proposal to replace the club classroom roof at the ACT Observatory. If you have not received that email and are a club member, please let John Land, our treasurer, or myself know and we will make sure you get it. We will be holding a general membership vote on replacing the roof as well as voting for officers and board members at the upcoming club dinner on Nov 15. There will be good food and a few different things happening this year which will should be a lot of fun, so make sure to come. If you are not yet a member and have been thinking about it, this is a perfect time to sign up and meet other members as we traditionally have a very good turnout. If you are planning on coming and have not RSVP'd yet, please let John or myself know you're coming.

We had a great group of kids and members at our last public night at the observatory - I did not get an exact count, but by my guessing we had around 70 people participate! The snacks and drinks that Mandy stocks in the classroom were a big success. Our members night went very well too, with new member signups and several members' guests.

If you frequent our page on facebook, you may notice we now have a donate via PayPal / credit-card option. This is mainly for the public who would see what we are doing through facebook and would like to monetarily participate in our club's mission. But club members are also welcome to donate this way if they wish. Payments for anything specific though, such as memberships, calendars, club dinner, etc, still need to be remitted in the usual ways as they have been.

This is my final newsletter message as president of the club as I do not plan to run for reelection. I want to again extend my thanks to our volunteers, and especially to both those who I have leaned on from time to time for advice and those who have graciously put up with me! I have considered it a privilege and learning opportunity to serve the club in this way and I want to encourage everyone (especially those who have not volunteered before) to consider lending the club your time and talents in some capacity. Becoming more involved in club activities will enrich your own personal experience in the club in addition to benefiting the club itself through your involvement. Volunteering for a particular role or official position is a fine way to get involved. That being said, I hope to see you at the dinner on Nov. 15th!

Wishing everyone clear skies until then,

Lee Bickle



Above are a couple of nice images taken on Friday, November 1 at our Observatory, by our outgoing President, Lee Bickle. Thank you Lee for your service to the Club!



# Treasurer's and Membership Report

By John Land

This will be my final treasurer report to the club. I will not be running for treasurer this new term. I have served in that position since 2001 when I took over from my friend and mentor Nick Pottorf. Much has changed in the last decade. When I started, all the club records were on paper pads and accounting sheets. Balancing the books meant sitting down with a calculator and checking off each of the monthly transactions. Now the club runs almost entirely from computer based spreadsheets and electronic bank records. I still plan to be active in the club and serve wherever I'm needed. I am very pleased to support the nomination of Tim Davis as our new treasurer.

Thank you all for your support and encouragement. *John Land*

Astronomy Club of Tulsa now has 108 members, including 35 new members. New members this month: Ronald Phillips  
Club Accounts Nov 1, 2013:

**Checking: \$3,418.51; Savings : \$7,017.54; Investment account: \$19,539.06 (Value Fluctuates with Market); PayPal: \$0.00**



**The club now has PayPal available for you** to start or renew memberships and subscriptions using your credit or debit cards. Fill out the registration form at <http://astrotulsa.com/page.aspx?pageid=16> **Click Submit** and you will be given the choice of either **mailing in your dues** with a check or **using PayPal** which accepts most major credit cards. A modest processing fee is added to PayPal transactions.

Membership rates for 2013 as follows:

**Adults \$45.00 per year, includes Astronomical League Membership.**

**Sr. Adult \$35.00 per year** for those 65 or older, includes Astronomical League Membership.

**Students \$30.00** with League membership; **Students \$25.00** without League membership.

**Additional Family membership \$20.00** with voting rights and League membership.

**\$15.00** 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 **\$34.00** for 1 year or **\$60.00** 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 **\$33.00 / yr** [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** by calling the number on the renewal form – be sure to ask for the club rate.

**NEW SUBSCRIPTIONS** must still be sent to the club.

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

Nov 1, 2013

**NOTICE of VOTE PROPOSAL to MEMBERSHIP – To Replace Observatory Roof**

On Nov 15 at the annual club dinner the board will present a proposed contract to replace the metal roof on the classroom section of the observatory.

The club procedures state that any expenditure over \$1,000.00 must be approved by a vote of the membership. Therefore the board is informing you of the upcoming vote.

**The PROBLEM**

The observatory is now over 20 years old. For the past several years we have had repeated issues with small water leaks running down the walls inside the classroom. Various measures have been tried to repair them from tightening the screws to having sealant compounds put on the seams of the metal. None of these measures has resolved the problems for very long.

The existing roof has a flat flange of 8 to 10 inches resting on the exterior block walls. This has allowed water or snow to pool there and eventually rust out the metal. Also as the water runs off the roof it runs directly down the exterior blocks. This has resulted in a few blocks on the west side to be damaged by freezing water in cracks of the blocks.

**The Solution**

The ultimate solution is to remove the existing roof and extend the roof line to form an over hanging eave so that water falls directly to the ground and not run down the wall.

**James Taggart**, our Facilities Manager, has contacted several roofing contractors.

Due to our rural location most are not willing to consider the job.

DCM Construction of 3215 N. 131 Rd., Beggs, OK came out to inspect the observatory and has given us bid to do the repair work. This company came recommended to us by one of our members, KC, Lobrecht, living in that area who had her roof replaced by them and said their workmanship was excellent. Also, the company is located just a few miles from the observatory property.

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**THE CONTRACT Bid** dated Oct. 24, 2013

Submitted to : Astronomy club of Tulsa, Attn: James Re: Metal Roof

Tear off the existing tin, new rafters to be added with a 12" overhang; Soffit and Fascia will be vinyl soffit and metal fascia; gable end on North will be framed in over concrete blocks as well; there will be a 12' overhang around the complete square part of the building; new metal roof will be 26ga metal and trim, color beige; all trash will be hauled off on job completion.

All material is guaranteed to be as specified, and the above work to be performed in accordance with the drawings and specifications submitted for above work and completed in a substantial workmanlike manner for the estimated cost of **\$9,051.88**

Payments to be made 1/2 due prior to start of job and 1/2 balance due on completion.

Any alteration or deviation from above specifications involving extra costs, will be executed only upon written orders, and will become an extra charge.

Owner to carry fire, tornado and other necessary insurance upon above work.

Workmen's compensation for above work taken out by DCM Construction.

This Proposal may be withdrawn by us if not accepted within 30 days.

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**Motion proposed to membership**

At the Oct 26 meeting of the board the following motion was approved:

We will ask contractor if he will include a 1-year warranty. **Stan made a motion** to accept bid based on getting a warranty, taking **\$7,500.00 out of checking and savings**, and authorizing the **sale of up to \$2,000.00 of our investments**, informing the membership of bid process, problem that exists, bid that we got, proposing fundraising ideas and notifying members that if they wish to donate money towards the roof replacement, then their donations will be welcome. Lee seconded. All officers and board present were in favor, motion carried.

Subsequent to the motion above James contacted DCM construction.  
They stated they would give a 5 year warranty on materials and workmanship including leaks.  
Barring of course damage caused by severe storms and such.  
James told us that the work would take about a week once the job is started.

**Current Club Assets:**

**In Bank: Checking \$3,418.51; Savings \$7,017.54; Total \$10,436.05**

**Using \$7,500.00 would still leave us operating funds of about \$2,900.00**

Club investments account as of Oct 31 **\$19,539.06** "value changes with market"  
However the market is very high at present and a good time to sell off some assets.  
The \$2,000.00 figure is to allow for unforeseen added costs if needed.

**Donations will be accepted from membership for completion of the project and to replenish the funds for future projects.**

Once the roof is done we will want to consider projects for some repairs inside and do some painting next spring as well as other projects to bring the observatory into the 21<sup>st</sup> century.

You may direct any questions to:

**President:** Lee Bickle 918-872-8744

**Vice-President:** - - - Stan Davis 918 - 527-3196

**Treasurer** John Land 918-695-3195

**Observatory Facilities Manager** James Taggart (918) 629-9087



# The Secretary's Stuff

## By Tamara Green

### ASTRONOMY CLUB OF TULSA – MINUTES – GEN. MEETING FRI OCT 18, 2013

#### **PRESENT:**

**Lee Bickle, President**

**Stan Davis, Vice President**

**Tamara Green, Secretary**

**John Land, Treasurer**

**Mandy Nothnagel, Board, Group Director**

**Michael Blaylock, Board**

**James Taggart, Board, Facilities Manager**

#### **NOT PRESENT:**

**Jody Ray-Fleetwood, Board**

The meeting was held at Tulsa Community College, Northeast Campus. There were 24 attendees, including guests.

**WELCOME AND INTRODUCTION:** Lee called the meeting to order at 7:00 PM and welcomed all members and guests.

**PROGRAM:** Lee and his son Daniel showed us some pictures that he took at Okie-Tex. Then, Stan talked about Okie-Tex for those who have never been. Following that, Mandy showed a video on how to welcome guests, which is part of a series of videos from NSN on growing your club. She then told us that she would like some input on planning the dinner meeting next month. Those who have ideas or if you have someone in mind who you think has helped you or who has done a great deal for you or the club, to write it down and give it to her, as she is planning on a recognition ceremony. She then stressed the need for more of our members to get involved with volunteering at events. After that, Lee talked about the Russian meteor that came through earlier this year. They were able to retrieve a huge chunk of the meteorite from a lake. Lee showed a video of that, after Mandy showed us the NSN kit on meteorites and the moon. Then he mentioned the elections next month and put out a call for nominations and announced the upcoming events. Owen then showed off his Coronado PST that he won at Okie-Tex.

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

**PRESIDENT** – Lee mentioned the elections are next month, get w/Tamara or Lee w/nominations.

**VICE PRESIDENT**- Stan here, but had no report.

**SECRETARY** – Tamara said that if anyone wants a copy of the minutes from the September meeting, or from any other meeting, to email her. Also, she made a call for articles for the November newsletter, to be out on or around November 1.

**TREASURER** – John Land made announcements about the Astronomy Deep Space Calendar for 2014 for \$10 apiece, then he mentioned the dinner meeting next month at TASM, and needs RSVP's, so those who are going need to RSVP with him. He talked about SkyTools and if we get enough people we will get a 40% discount. Also, those who want Baader film to get with him.

**FUNDRAISING** – No report. This position is still 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, email or text her.

**GROUPS/NSN** –Next Saturday, we have a group coming out, which is also the public back-up night. It is a Boy Scout group and we have 3 or 4 more on the schedule for the next couple of months. She sent out emails calling for volunteers to help with these groups. She asked if anyone would help her go through the Night Sky Network kits as well.

**FACILITIES** – James announced that we have a contractor coming out on Monday to discuss a new roof for the observatory.

**PR/OUTREACH/SIDEWALK** – Sidewalk Astronomy will be at Bass Pro on Saturday, Oct. 19, if the weather is nice, and if it is sunny enough Owen will be out there early to do some solar observing.

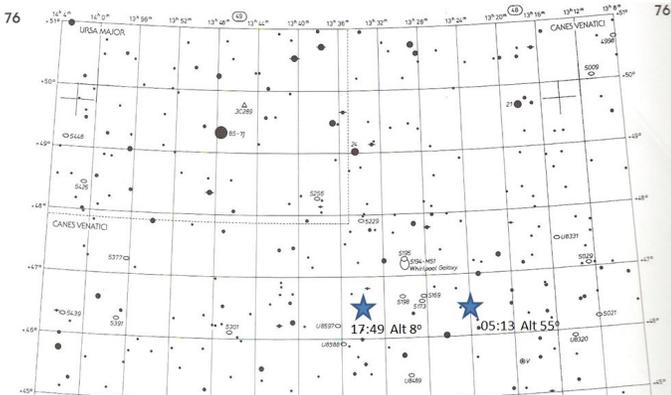
**OTHER BUSINESS** – None.

Lee adjourned the meeting at 9:00 PM.

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

The goal of all the M's in 12 months and the H 400's in 24 have us running even further ahead of the sky, but the first objects listed can be observed at the end of twilight and the last ones are high enough by 11. And if you are going to try for **ALL** those comets, you'll be up all night anyway!

**OBSERVING:** For the Norway/South Paris area, the Twitchell Observatory, **Monday Nov 4th**. It is completely dark by 6 PM, but that might be too early for some, so don't worry about arriving later. Note: every Nov I like to do a rocks n stars thing at the scope, specifically, observing a galaxy ~ 200 million light years away while holding a rock which has a dinosaur footprint made about the same time the light left the galaxy. There wasn't room to put a galaxy at that distance in the spreadsheet, but hopefully we'll get to try it at the Twitchell with NGC 536.

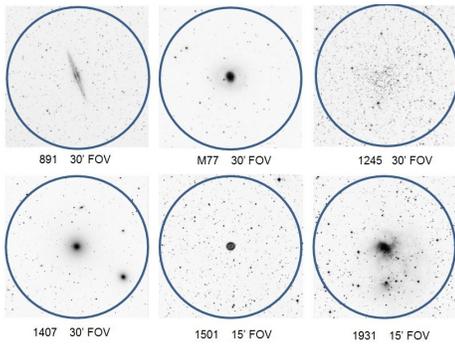


11/29, Astro Twilite Start and End, Norway, ME

**COMETS:** Wow, it's been a long time (1/9/99), and only that one time for me, but this month does present the possibility (based on some predictions) of a 5 comet night! See the comet section of the spreadsheet for details. Also, note that one of the five, Lovejoy, will be close enough to M51 for an interesting view in big binocs or wide field scopes on the 29th. Per the attached chart, the view will be much better before dawn than at the end of twilight.

**PLANETS:** Venus is at eastern elongation (half illuminated) on the 1st, so will be growing in size and working toward a crescent, but due to the season it stays close to the SW horizon, especially up here at 44 deg N. By the end of the month Jupiter is high enough for observing around 8:30. To check for shadows on any night you plan to be out, use this S&T link: <http://www.skyandtelescope.com/observing/objects/javascript/jupiter>. I imagine you high tech people know they have an app for that too.

**STARS:** With all those comets, I'm listing only one multiple system, which happens to include my all time favorite double. 40b Eri is the unique combination of a red dwarf and a white dwarf, the white dwarf being the only one that can be "easily" seen in small scopes.



**THE GOOD STUFF:** All the objects are either Messier (4 OC's, 1 GC, 1 SNR, 2 DN's and 1 GX) or Herschel 400's (8 OC's, 1 PN, 2 DN's and 2 GX's). If you get to NGC 1502, check out the lovely Kemble's Cascade with binocs or a wide field scope with at least a three degree field of view.

**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.*



|       |       |       |       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 11/4  |       |       |       | 11/29 |       |       |       |       |       |
| SS    | CTE   | NTE   | ATE   | MS    | SS    | CTE   | NTE   | ATE   | MR    |
| 16:27 | 16:58 | 17:32 | 18:06 | 17:21 | 16:05 | 16:38 | 17:14 | 17:49 | 04:05 |

| Comet           | RA <sup>1</sup> | Dec <sup>1</sup> | Star         | N/S   | E/W   | N/S/day | E/W/day | Mag <sup>2</sup> | Mag <sup>1</sup> | Urano I | Date* |
|-----------------|-----------------|------------------|--------------|-------|-------|---------|---------|------------------|------------------|---------|-------|
| Brewington 154P | 22 03.3         | +00 36           | $\alpha$ Aqr | 1.0 N | 0.6 W | 0.3 N   | 0.2 E   | 11.1             | 9.2              | 256     | 10/30 |
| Brewington 154P | 22 07.2         | +02 00           | $\alpha$ Aqr | 2.4 N | 0.3 E | 0.3 N   | 0.2 E   | 11.0             | 9.1              | 256     | 11/4  |
| Lovejoy 2013R1  | 08 26.7         | +15 26           | $\delta$ Cnc | 2.8 S | 4.3 W | 1.3 N   | 1.6 E   | 8.0              | 9.5              | 186     | 11/4  |
| ISON 2012S1     | 11 34.4         | +03 28           | $\beta$ Vir  | 1.7 N | 4.1 W | 0.9 S   | 1.5 E   | 8.0              | 7.4              | 237     | 11/4  |
| Encke 2P        | 13 00.1         | +03 30           | $\delta$ Vir | 0.1 N | 1.1 E | 1.4 S   | 1.5 E   | 8.0              | 6.7              | 239     | 11/4  |
| LINEAR 2012X1   | 13 43.0         | + 22             | $\eta$ Boo   | 3.8 N | 2.8 W | 0.2 S   | 0.6 E   | 7.0              | 13.5             | 151     | 11/4  |
| Lovejoy 2013R1  | 09 06.3         | +22 43           | $\delta$ Cnc | 4.5 N | 5.0 E | 1.7 N   | 2.3 E   | 7.0              | 9.0              | 142     | 11/9  |
| ISON 2012S1     | 12 08.5         | -01 05           | $\eta$ Vir   | 0.4 S | 3.0 W | 1.0 S   | 2.0 E   | 7.0              | 6.6              | 238     | 11/9  |
| Encke 2P        | 13 28.3         | -02 59           | $\zeta$ Vir  | 2.4 S | 1.7 W | 1.2 S   | 1.4 E   | 7.5              | 5.8              | 240     | 11/9  |
| LINEAR 2012X1   | 13 56.5         | +21 20           | $\eta$ Boo   | 2.9 N | 0.3 E | 0.2 S   | 0.6 E   | 7.0              | 13.4             | 151     | 11/9  |
| ISON 2012S1     | 12 52.6         | -06 51           | $\gamma$ Vir | 5.3 S | 2.7 E | 1.3 S   | 2.5 E   | 6.2              | 5.6              | 284     | 11/14 |

<sup>1</sup>from <http://www.minorplanetcenter.net/iau/Ephemerides/Comets/> <sup>2</sup>from <http://www.aerith.net/comet/future-n.html> \*at 8 PM EDT

| Object (Type)            | RA      | Dec    | Star        | N/S   | E/W    | Mag*/(# of Stars) | Size (")/ Sep (") | Spect/ M# or H# | Dist (ly) | Urano I Page | Comment [B-V] (optimum x) |
|--------------------------|---------|--------|-------------|-------|--------|-------------------|-------------------|-----------------|-----------|--------------|---------------------------|
| 40 Eri (o <sup>2</sup> ) | 04 15.3 | -07 39 | $\beta$ Ori | 0.5 N | 14.5 W | 4.5, 9.5          | 83                | K1              | 16        | 268          | (6)                       |
| 40b Eri                  | ---     | ---    | ---         | ---   | ---    | 9.5, 11           | 7.6               | dA,dM4          | 16        | 268          | (65)                      |
| NGC 869 (OC)             | 02 19.0 | +57 08 | $\eta$ Per  | 1.2 N | 4.2 W  | (350)             | 18                | *H33-6          | 7300      | 37           | Double Cluster            |
| NGC 884 (OC)             | 02 22.3 | +57 08 | prv         | -     | 0.4 E  | (300)             | 18                | *H34-6          | 7300      | 37           | Double Cluster            |

|                       |         |        |              |       |       |        |         |         |      |     |                      |
|-----------------------|---------|--------|--------------|-------|-------|--------|---------|---------|------|-----|----------------------|
| NGC 891* (Sb)         | 02 22.5 | +42 21 | $\gamma$ And | -     | 3.4 E | [13.1] | 11x1.5  | *H19-5  | 32M  | 62  |                      |
| NGC 1039 (OC)         | 02 42.1 | +42 46 | $\gamma$ And | 0.4 N | 6.9 E | (80)   | 25      | M34     | 1440 | 62  |                      |
| NGC 1068* (Sb/P)      | 02 42.7 | -00 01 | $\delta$ Cet | 0.3 S | 0.8 E | [12.8] | 7.1x6.0 | M77     | 40M  | 220 |                      |
| NGC 1245* (OC)        | 03 14.7 | +47 14 | $\alpha$ Per | 2.7 S | 1.6 W | (40)   | 10      | *H25-6  | 16K  | 63  |                      |
| NGC 1342 (OC)         | 03 31.6 | +37 23 | $\beta$ Per  | 3.6 S | 4.7 E | (40)   | 17      | *H88-8  | 2700 | 94  |                      |
| NGC 1407* (E)         | 03 40.2 | -18 35 | $\tau^5$ Eri | 3.1 N | 1.5 E | [13.0] | 4.6x4.3 | *H107-1 | 75M  | 312 | 1400 0.2 SW          |
| Pleiades (OC)         | 03 47.0 | +24 07 | -            | -     | -     | (130)  | 110     | M45     | 380  | 132 |                      |
| NGC 1444 (OC)         | 03 49.4 | +52 39 | $\alpha$ Per | 2.8 N | 3.8 E | (15)   | 4.0     | *H80-8  | 6500 | 39  |                      |
| NGC 1501* (PN)        | 04 07.0 | +60 55 | $\beta$ Cam  | 0.4 N | 6.9 W | 11.5   | 0.9     | *H53-4  | 14K  | 18  |                      |
| NGC 1502 (OC)         | 04 07.8 | +62 20 | prv          | 1.5 N | -     | (15)   | 20      | *H47-7  | 3750 | 18  | SE end Kemble's Casc |
| NGC 1904 (GC)         | 05 24.2 | -24 31 | $\beta$ Lep  | 3.8 S | 0.9 W | 7.7    | 9.6     | M79     | 43K  | 315 |                      |
| NGC 1912 (OC)         | 05 28.7 | +35 51 | $\theta$ Aur | 1.4 S | 6.3 W | (100)  | 15      | M38     | 3600 | 97  |                      |
| NGC 1907 (OC)         | 05 28.1 | +35 20 | prv          | 0.1 W | 0.5 S | (40)   | 5.0     | *H39-7  | 6800 | 97  |                      |
| NGC 1931* (OC/<br>DN) | 05 31.4 | +34 15 | prv          | 1.1 S | 0.8 E |        | 6.0     | *H261-1 |      | 97  |                      |
| NGC 1960 (OC)         | 05 36.3 | +34 08 | prv          | 0.1 S | 1.0 E | (60)   | 10      | M36     | 3800 | 97  |                      |
| NGC 1952 (SNR)        | 05 34.5 | +22 01 | $\zeta$ Tau  | 0.9 N | 0.7 W | 8.4    | 6.0X4.0 | M1      | 6300 | 135 | Crab                 |
| NGC 1976 (DN)         | 05 35.3 | -05 23 | $\theta$ Ori | -     | -     | 4.0    | 60      | M42     | 1700 | 270 | Orion Neb            |
| NGC 1982 (DN)         | 05 35.5 | -05 16 | prv          | 0.1 N | -     | 9.0    | 20X15   | M43     | 1700 | 270 |                      |
| NGC 1980 (DN)         | 05 35.4 | -05 55 | $\iota$ Ori  | -     | -     |        | 14      | *H31-5  | 1700 | 270 |                      |
| NGC 1999 (DN)         | 05 36.4 | -06 43 | prv          | 0.9 S | 0.3 E |        | 2x2     | *H33-4  | 1700 | 270 |                      |

\*DSS image

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# the Space Place

November – December 2013 / Vol. 6, Issue 5

## 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!

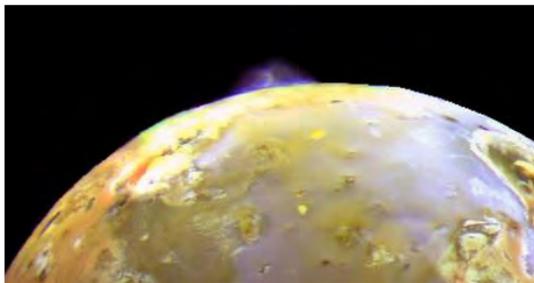
It's informal.  
It's meaty.  
It's easy to read and understand.  
It's also in Spanish.  
And it's free!

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.

*The Space Place isn't just a great place to find material for formal school lessons, it also has exciting hands-on activities and fun interactive web games for afterschool, too. Check out the "Do" and "Play" menus and start planning your afterschool activities today!*

### What's New? Space Volcanoes!

Did you know that there are volcanoes all around our solar system? From the dormant volcanoes of Mars to the mysteriously active cryovolcanoes of Saturn's Moon Enceladus, there's a whole lot of cool volcanism in our Solar System. Space Place has a new "Space Volcano Explorer" that lets students and teachers alike navigate through the solar system to find images and descriptions of some of the coolest volcanic features around. Check it out at <http://spaceplace.nasa.gov/volcanoes>. Want to learn more about volcanoes? Check out its new companion article "What is a volcano?" <http://spaceplace.nasa.gov/volcanoes2>.



### Spotlight on Solar Fun

The sun is vitally important for literally every aspect of life, yet many students and educators know very little about how it actually works. Space Place's newest web game, "Solar Tricktionary," aims to fix that in characteristically silly fashion. In this game,



the student is given a term to define and four possible answers. Three of the answers are hilariously incorrect. Obviously solar wind is not "what happens when the sun eats too many beans," but at least students will be entertained as well as educated as they follow a chain of incorrect answers to the correct one. <http://spaceplace.nasa.gov/solar-tricktionary>.

### Spotlight on Comets

With Comet ISON fast approaching its brightest stage in our night sky in late November,



now's a great opportunity to teach a little something about why scientists care about comets in the first place. One big reason is that the water in our oceans may have come from the ice that makes up comets. Space Place's article "Thirsty? Have a comet!" explains why scientists think this could be the case and how incredibly precise telescopes can actually identify subtle chemical clues to figure out where these ocean-forming comets could have come from. <http://spaceplace.nasa.gov/comet-ocean/>.

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

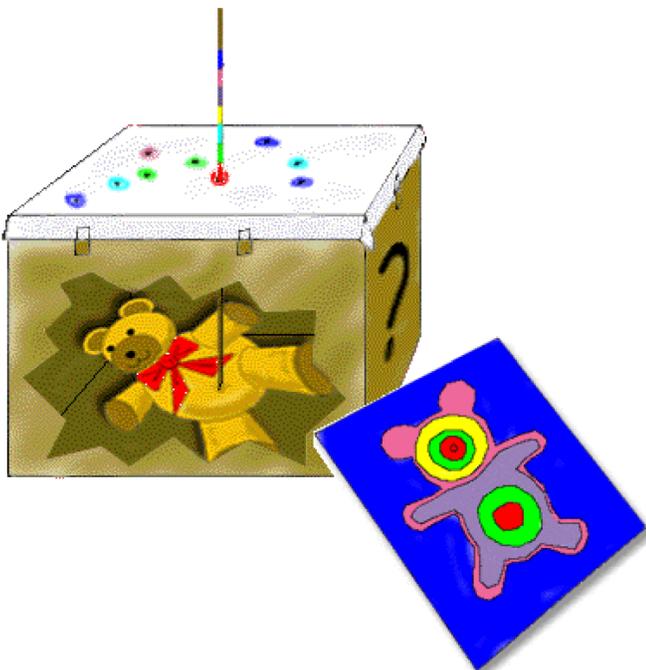
## For the Classroom

Not only a sun and a collection of planets, our solar system is full of small bodies like moons, dwarf planets, comets, asteroids, and meteors. Space Place has created a new four-page brochure, geared toward a middle-school-and-up audience, that explains what these smaller objects are, and why they are important for understanding our solar system's history. The brochure is formatted to be easily printed and can make a great addition to any teacher's bulletin board. Download it here: <http://spaceplace.nasa.gov/posters#small-bodies>.



## For Out of School Time

Figure out what's inside a closed box by creating a hand-made topographic map of its contents. This clever activity is a fun way to keep students entertained and educated outside of the classroom. Have your students challenge each other to figure out what each of them put inside their boxes. As they get more and more invested, they will become intimately familiar with how topographic maps work in the first place. An important lesson that feels like a fun game. Take a look: <http://spaceplace.nasa.gov/topo-bear/>.



## Special Days

**November 3rd: Daylight Saving Time ends.** How did timekeeping ever get started? <http://spaceplace.nasa.gov/classroom-activities/#time>.

**November 7th: Marie Curie born in 1867.** A physicist, she won a Nobel Prize for discovering two new elements. NASA has many women scientists. <http://spaceplace.nasa.gov/mission-chronicles>.



**November 9th: National Young Readers Day.** Read and listen to Dr. Marc's answers to great questions about space. <http://spaceplace.nasa.gov/dr-marc-space>.

**November 17th: Leonid meteor shower at maximum early this morning.** What causes a meteor shower? <http://spaceplace.nasa.gov/meteor-shower>.

**November 28th: Thanksgiving Day.** Did the pilgrims on the Mayflower navigate by the stars? With our starfinders, they could have. <http://spaceplace.nasa.gov/starfinder>.

**November 28th: Comet ISON makes closet approach to the sun.** What's inside a comet anyway? <http://spaceplace.nasa.gov/comet-nucleus/>.

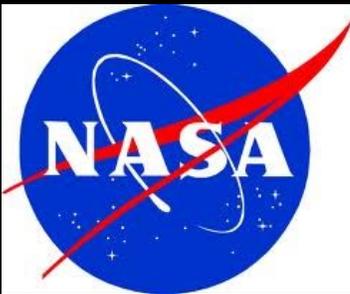
**December 4th: Pioneer 10 flew past Jupiter in 1973.** Play "JunoQuest," about a new mission to Jupiter. <http://spaceplace.nasa.gov/junoquest>.

**December 14th: Geminids meteor shower at maximum early this morning.** <http://spaceplace.nasa.gov/meteor-shower>.

**December 25th: Christmas Day.** If you get an iPad or iPhone for Christmas, we have some more gifts for you. <http://spaceplace.nasa.gov/ios>.

## Send Feedback

Please let us know your ideas about ways to use The Space Place in your teaching. Send to [info@spaceplace.nasa.gov](mailto:info@spaceplace.nasa.gov).



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:

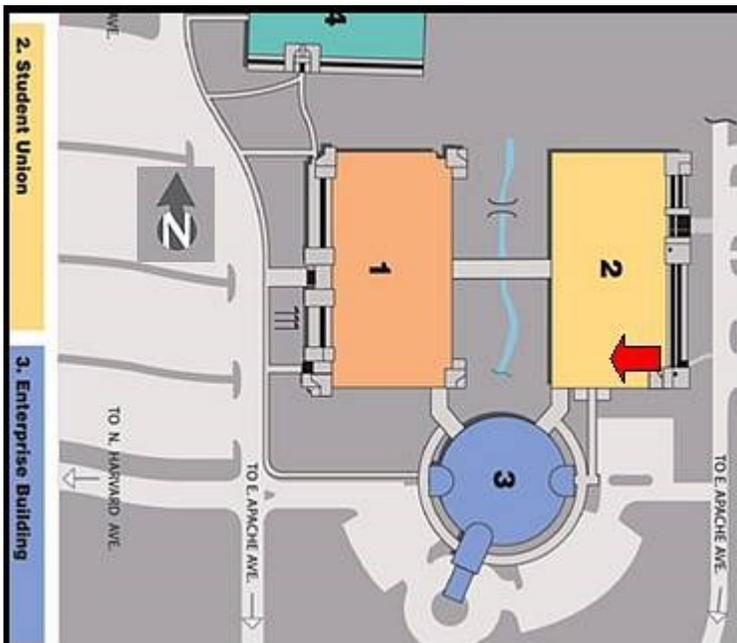
**TCC Northeast Campus, 3727 E. Apache St., Student Union Bldg. 2, Room 1603**

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 meeting will be on Friday, December 20 at 7:00 PM.

## CLUB OFFICERS

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| FUNDRAISING CHAIR              | OPEN  |

## 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, or pay by debit or credit card with PayPal!



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



*Astronomy Club of Tulsa*



THE ASTRONOMY CLUB OF TULSA INVITES YOU TO  
MAKE PLANS THIS WINTER 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.

