



Volume 23, Number 11

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## The most volcanically active place is out-of-this-world!

By Dr. Ethan Siegel

Volcanoes are some of the most powerful and destructive natural phenomena, yet they're a vital part of shaping the planetary landscape of worlds small and large. Here on Earth, the largest of the rocky bodies in our Solar System, there's a tremendous source of heat coming from our planet's interior, from a mix of gravitational contraction and heavy, radioactive elements decaying. Our planet consistently outputs a tremendous amount of energy from this process, nearly three times the global power production from all sources of fuel. Because the surface-area-to-mass ratio of our planet (like all large rocky worlds) is small, that energy has a hard time escaping, building-up and releasing sporadically in catastrophic events: volcanoes and earthquakes!

*(continued on Page 3)*

## President's Article

By Gordon Hansen

The holiday season is fast upon us. As usual at this time of year we combined the November and December meetings. Our normal fourth Thursday of the month doesn't work very well with Thanksgiving. The combined meeting is on Thursday, December 5th. A tradition for the December meeting has been a showcase of astronomy goodies we could put on our list for Santa. This year we're going to do it a bit differently. Remember "Show & Tell" back in grade school? We're going to do our version of it this year. All are invited to bring in a recently acquired bit of hardware and show it off. Please drop me a note ([president@fordastronomyclub.com](mailto:president@fordastronomyclub.com)) if you're going to participate so we can be prepared.

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# STAR STUFF

Nov/Dec 2013 - Vol. 23 No 11

STAR STUFF is published eleven times each year by:

**FORD AMATEUR ASTRONOMY CLUB**  
P.O. Box 7527  
Dearborn MI 48121-7527

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VICE PRESIDENT: Jon Blum  
SECRETARY: Doug Bauer  
TREASURER: Chuck Jones  
WEBMASTER: Greg Ozimek  
NEWSLETTER EDITOR: Jennifer Zdanowski

## Club Information:

The Ford Amateur Astronomy Club (FAAC) meets on the fourth Thursday each month, except for the combined November/December meeting on the first Thursday of December - at Henry Ford Community College Administration Services and Conference Center in Dearborn. Refer to our website for a map and directions ([www.fordastronomyclub.com](http://www.fordastronomyclub.com)).

The FAAC observes at Spring Mill Pond within the Island Lake State Recreation Area near Brighton, Michigan. The club maintains an after-hours permit, and observes on Friday and Saturday nights, and nights before holidays, weather permitting. The FAAC also has use a private observing site near Gregory Michigan and Lake Erie Metro Park. See the FAAC Yahoo Group\* for more information.

Observing schedules and additional info are available on our website, or via the FAAC Yahoo Group.\* Or call the FAAC Hotline, for info and leave a message, or ask questions: 313-757-2582. or send email inquiries to [info@fordastronomyclub.com](mailto:info@fordastronomyclub.com).

Membership in the FAAC is open to anyone with an interest in amateur astronomy. The FAAC is an affiliate of the Ford Employees Recreation Association (F.E.R.A.). Membership fees:

Annual - New Members: \$30 (\$15 after July 1)  
Annual - Renewal: \$25 (\$30 after January 31)

Membership includes the STAR STUFF newsletter, discounts on magazines, discounts at selected area equipment retailers, and after-hours access to the Island Lake observing site.

## Astronomy or Sky & Telescope Magazine Discounts

Obtain the required form from the FAAC club treasurer for a \$10 discount. Send the completed form directly to the respective publisher with your subscriptions request and payment. Do not send any money directly to the FAAC for this.

## Star Stuff Newsletter Submissions

Your submissions to STAR STUFF are welcome! Send your story and/or images to the editor: [StarStuff@fordastronomyclub.com](mailto:StarStuff@fordastronomyclub.com). Email text or MS Word is fine. STAR STUFF will usually go to press the weekend prior to each general meeting. Submissions received prior to the 15th can be included in that issue.

\* FAAC Members are welcome to join our Ford Astronomy Club Yahoo!Group. Messages photos, files, online discussions, and more! URL: [groups.yahoo.com/group/FordAstronomyClub](http://groups.yahoo.com/group/FordAstronomyClub).

*This months background photos of the moon Page 1 courtesy of John Kirchhoff. See more of John's photos at:*

<http://www.flickr.com/photos/33926475@N06/with/4311533997/>

The club awards its Sirius Award to one of our brightest members every year at the banquet. The nominations for this award need to come from you, our members. If you have someone you think has done a great job for the club, please send me your nomination which should include a concise listing of why that person should be considered. Any club member may be nominated, except the elected officer's.

As the year winds down its also time to renew your membership in the club. Dues remain at \$25 for the year. You can pay your dues at the December 5th meeting (see Chuck), or by sending a check to:

FAAC  
P.O. Box 7527  
Dearborn, Michigan 48121

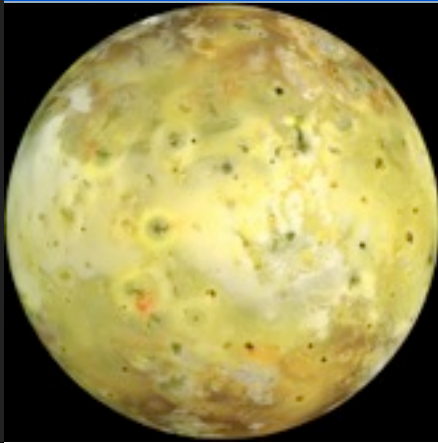
We really appreciate all those who pay a bit early. Every early renewal means one less envelope to lick (will they ever invent a glue that tastes good?!) Remember, if your dues are not received by the end of January your renewal will cost you an extra \$5.

The last piece of year end business is a slate of candidates for next year's officers. All of the current officers are currently term limited (for their current position.) Our nominating committee will announce their slate at the December meeting, but, anyone can nominate someone prior to election at the January 22nd meeting.

A big thanks needs to go out to Tim Dey. Tim has once again renewed our agreement with Lake Erie Metropark allowing us to observe there after hours. Park management changed again and Tim successfully worked with the new team there. Tim has a dozen or so permits. If you would like to use Lake Erie for observing please see him. If we need more Tim can get them. Once again THANK YOU TIM!

I hope everyone has a safe and happy holiday season.

Merry Christmas!



*Io. Image credit: NASA / JPL-Caltech, via the Galileo spacecraft.*

## **The most volcanically active place is out-of-this-world!**

*(continued from Page 1)*

Yet volcanoes occur on worlds that you might never expect, like the tiny moon Io, orbiting Jupiter. With just 1.5% the mass of Earth despite being more than one quarter of the Earth's diameter, Io seems like an unlikely candidate for volcanoes, as 4.5 billion years is more than enough time for it to have cooled and become stable. Yet Io is anything but stable, as an abundance of volcanic eruptions were predicted before we ever got a chance to view it up close. When the Voyager 1 spacecraft visited, it found no impact craters on Io, but instead hundreds of volcanic calderas, including actual eruptions with plumes 300 kilometers high! Subsequently, Voyager 2, Galileo, and a myriad of telescope observations found that these eruptions change rapidly on Io's surface.

Where does the energy for all this come from? From the combined tidal forces exerted by Jupiter and the outer Jovian moons. On Earth, the gravity from the Sun and Moon causes the ocean tides to raise-and-lower by one-to-two meters, on average, far too small to cause any heating. Io has no oceans, yet the tidal forces acting on it cause the world itself to stretch and bend by an astonishing 100 meters at a time! This causes not only cracking and

fissures, but also heats up the interior of the planet, the same way that rapidly bending a piece of metal back-and-forth causes it to heat up internally. When a path to the surface opens up, that internal heat escapes through quiescent lava flows and catastrophic volcanic eruptions! The hottest spots on Io's surface reach 1,200 °C (2,000 °F); compared to the average surface temperature of 110 Kelvin (-163 °C / -261 °F), Io is home to the most extreme temperature differences from location-to-location outside of the Sun.

Just by orbiting where it does, Io gets distorted, heats up, and erupts, making it the most volcanically active world in the entire Solar System! Other moons around gas giants have spectacular eruptions, too (like Enceladus around Saturn), but no world has its surface shaped by volcanic activity quite like Jupiter's innermost moon, Io!

*This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.*

## Treasurer's Report November 07, 2013

By Chuck Jones

### Ford Amateur Astronomy Club Balance Sheet As of November 7, 2013

	<u>Nov 7, 13</u>
<b>ASSETS</b>	
<b>Current Assets</b>	
<b>Checking/Savings</b>	
CD 200599272	1,058.45
CD 205196033	1,003.32
CD 89265268	1,105.33
Checking	880.49
<b>FAAC Savings</b>	
Equipment	1,701.43
Scholarship	463.83
FAAC Savings - Other	62.50
<b>Total FAAC Savings</b>	2,227.76
<b>Petty Cash Account</b>	200.52
<b>Total Checking/Savings</b>	6,475.87
<b>Other Current Assets</b>	
<b>GLAAC</b>	4,079.94
<b>Total Other Current Assets</b>	4,079.94
<b>Total Current Assets</b>	10,555.81
<b>TOTAL ASSETS</b>	<u><u>10,555.81</u></u>
<b>LIABILITIES &amp; EQUITY</b>	0.00

### Club Wear

You can order online from LL Bean, using the instructions contained in a file that you can view on our club Yahoo Group website Club Wear file folder at

<http://tech.groups.yahoo.com/group/FordAstronomyClub/files/Club%20Ware/>

## Meeting Agenda - December 5th

HFCC – Berry Auditorium -Admin. Services & Conference Center [www.fordastronomyclub.com](http://www.fordastronomyclub.com)  
5:30

### Opening/Introduction/Member Observing

#### Main Presentation:

Collecting Photons                      Jim Renard

#### Tech Talk:

Astronomy Toys Show & Tell      All

### Club Projects/Committees/Member Support

### Club Business/Secretary/Treasurer/Equipment Reports

### FAAC Equipment Report 11/16/13

<u>Item</u>	<u>Currently Held By:</u>	<u>Date Last Verified</u>
<b>Telescopes</b>		
4" Dobsonian	George Korody	8/14/13
4 1/2 " Galileo Alt/Az Reflector	James French	10/26/13
8" Orion 8XTi Dobsonian	James French	10/26/13
4" Donated Reflector in need of repair	George Korody	8/14/13
<b>Presentation Tools</b>		
Projector	Chuck Jones	10/28/13
Projection Screen 8'	Bob MacFarland	5/2/13
Speaker System w/wireless mic	Greg Ozimek	10/8/13
Bullhorn	George Korody	9/19/13
DVD Player	Chuck Jones	10/28/13
Projection Screen 6'	Gordon Hansen	5/2/13
<b>Demonstration Tools</b>		
Weight On Planets Scale	George Korody	8/14/13
Lunar Phase Kit	Bob MacFarland	3/12/13
100 ft Scale Model Solar System Kit	Bob MacFarland	3/12/13

## Astro Imaging SIG

Gordon Hansen

All are invited to join us in the Astro Imaging SIG meetings, to share and discuss images, experiences, and techniques.

We always have a good time, with lively discussion, and sharing of valuable information.

Next meeting is **December 12th**. The meeting room location – HFCC Admin. Services and Conference Center (same building), Berry Amphitheater Auditorium.

Topics invited. Pizza served.

## FAAC Events 2014

**Saturday January 18th - Ice Daze at Lake Erie  
Metro Park**

*Background Photo from Lunt Solar Scope Image taken at the  
Hector J Robinson Observatory, June 28, 2010*

## One FAAC members blog

<http://hjrobservatory.blogspot.com/>

A few updates on the observatory, quick articles and photos. I'll try to improve my writing on this blog. Also, I try to keep daily updates on this blog. - Greg Knekleian, HJRO volunteer.

## Member Photos



*Above: Photo taken by Greg Knekleian through Ken Anderson's large Dob. No processing. 20mm Ethos eyepiece in lens discovery.*

## FAAC Equipment Report 11/16/13

*(continued from Page 4)*

<u>Display Items</u>		
Astronomy Event Sign (3' X 6')	Gordon Hansen	4/10/13
PVC Display Board - Folding	Dennis Salliotte	11/16/13
Banner – Large (32" X 16')	Dennis Salliotte	11/16/13
Banner – Medium (24" X 48")	Tim Campbell	10/26/13
Banner – Small (24" X 32")	Bob MacFarland	6/11/13
Tri-Fold Presentation Boards	Don Klaser	3/13/13
Tri-Fold Poster Board (Early Club Photos)	George Korody	8/14/13
<u>Other</u>		
Sky Quality Meter	Syed Saifullah	9/27/13
Canopy (10' X 10')	Greg Ozimek	10/8/13
Equipment Etching Tool	Dennis Salliotte	11/16/13
Pop Cooler	Michael Dolsen	9/26/13



## FAAC General Meeting Minutes October 24th, 2013

By Jim Frisbee

### Opening:

The meeting was called to order in the Berry Auditorium at 5:30 pm by Vice President, Jon B. All attendees introduced themselves. Jon B. welcomed new members and guests. Members contributed their observing experiences. The Aurora in Cadillac, AATB, ISS, and Livonia Churchill Astro Club were discussed.

### Main Program:

Dale P. from the Warren Club discussed his attendance at the American Astronomical Society Meeting.

### Tech Talk:

Ken A. gave a talk on binoculars and binocular observing.

### Business Meeting:

- Secretary's Report in Star Stuff - Approved
- Treasurers Report in Star Stuff - Approved
- Astronomy Calendars are available for \$7.50
- Next General Meeting is December 5th
- Sirius Award Nominations are open.
- Astronomical League Dues are due today.
- FAAC Dues for 2014 can be paid now for \$25 or after Jan 31 for \$30.

### Projects and Events:

- Oct 27- Kensington Metropark (Nature Center) – Titled Rosco and Raptors will feature Solar Observing.
- Jan 18 – Ice Daze at Lake Erie Metropark

Business meeting was closed at 7:30 pm by Vice President Jon B.

## Big Surprise From Mr. String Theory

By Greg Ozimek

Dr. Michio Kaku has a weekly, call-in radio program and we can listen to it on A.M. 800, CKLW Windsor/Detroit every Sunday from noon to 2 PM.

Dr. Michio Kaku is a theoretical physicist, best-selling author, and general frontman for science. He's the co-founder of string field theory (a branch of string theory), and continues Einstein's search to unite the four fundamental forces of nature into one unified theory.

The radio show is an hour long radio program on science, technology, politics, and the environment and features commentary and interviews with top scientists and environmentalists.

Topics include black holes, time travel, higher dimensions, string theory, wormholes, search for extra-terrestrial life, dark matter and dark energy, the future of space travel, genetic engineering, the aging process, the future of medicine, the human body shop, artificial intelligence, the future of computers and robots, as well as topics from science fiction.

"Explorations in Science with Dr. Michio Kaku" is broadcast ("Live" for the call ins!!) each week on WBAI New York City (99.5 FM), and re-aired on stations across the country. The last 100 "Explorations" can also be heard around the world via the web at <http://www.kpfa.org/archive/show/51>

Dr. Kaku's personal webpage is interesting to click around and has more information on his show: [http://mkaku.org/home/?page\\_id=130](http://mkaku.org/home/?page_id=130)

## Astronomy For Everyone

By Don Klaser

Attention club members! In case you hadn't noticed already, there's a new addition to the links on the general information page of our club website. Its AFE@fordastronomyclub.com, and its for anyone wanting information about the public access cable TV show that our club produces each month at the Wyandotte Municipal Services studio. We've been doing this show since May of 2009, and it began as a project for the International Year of Astronomy being celebrated that year. Well, we got on a roll with it, and four and a half years later we're still going strong. The show is distributed to a number of local cable systems in southeast Michigan. And, at some point in the not too distant future through the efforts of our Webmaster extraordinaire, Greg Ozimek, you will be able to see each and every 30 minute episode on YouTube. The crew members of "Astronomy For Everyone" include Lori Poremsky, Kevin Medon, Ken Anderson, Stephen Uitti, John Schroer, David Baranski and myself.

## FAAC Sirius Award

By Gordon Hansen

Five years ago, FAAC initiated the annual Sirius Award. Every year FAAC presents one member with the Sirius Award plaque. It is presented to the Brightest Star in the Ford Amateur Astronomy Club at the annual FAAC Banquet. Past winners include: Bob FitzGerald, Dr. Timothy Dey, George Korody, Don Klaser and Bob MacFarland.

Gordon Hansen is accepting nominations for the award for the 2014 Banquet.

If you have a FAAC member who you think has distinguished themselves in their efforts in FAAC over the time of their membership (it doesn't have to just be in 2013), please send me a note with the member's name and the reasons that you believe they should be honored.

At the end of 2013 the FAAC Board will review the nominations and select one person to be honored at the Banquet.

Nominations will be known only to the Board Members and the submitter. Only the winner will be announced to the membership. Current Board Members are not eligible to be nominated.

Please submit your nominees to Gordon Hansen-  
[GHHansen@Comcast.Net](mailto:GHHansen@Comcast.Net)  
Thanks!

## REMINDER: FAAC membership renewals are due by January 31, 2014.

We are trying to get renewals done by the end of the year to reduce the number of renewal notices that we send out in January. It costs the club to send renewal notices by mail, so early renewals will save us money.

Annual – New Member: \$30

Annual – Renewal: \$25 (\$30 after January 31)

Send your check for \$25 to:

FAAC  
P.O. Box 7527  
Dearborn, MI 48121-7527

Or bring your money to the FAAC General Meeting at 5:30 PM in the Berry Amphitheater Auditorium in the Administrative Services and Conference Center on the campus of Henry Ford Community College.

If you have a new Address, Phone Number or e-Mail address please include that information with your renewal.

Membership includes the STAR STUFF newsletter, discounts on magazines, discounts at selected area equipment retailers, and after-hours access to the Island Lake and Lake Erie Metropark observing sites, use of the FAAC Yahoo Group, and mentoring program.

## Lincoln Park Mi, HJRO Update

by Greg Knekleian

We opened up the observatory a few times. I opened up HJRO a couple of times early in the morning as well to try to get a glimpse of Comet ISON. Comet LoveJoy is making an unexpected bright appearance at this time. It rivaled Ison in brightness and actually exceeded it in the middle part of November. Lovejoy may have been brighter, but being further away from the sun, it's tail is much shorter in photos.

I tested PHD guiding and the auto guider on comet Ison using my Canon EOS t1i at prime focus t-mounted at F11, F7 and on the Meade 80mm refractor at times.

My photos (as of 11-16-2013) were nowhere near the quality that some other members were taking, but I'm using a DSLR compared to dedicated CCD imaging camera setups.

**November 13th:** Haze affects viewing and comet seemed very faint at HJRO. My photos through the C14 were pretty poor.

**November 14th:** Some of the ISON images may have been taken through a bit of haze and clouds, this might have reduced dust detail. I didn't take wide field low light images of the weather to verify the extent of light cloud cover. By 6am sky glow became significant and interfered with photos. For HJRO to use the C14 on ISON, I had to wait until the later part of the session to image. The wall prevents us from viewing images very close to the horizon.

My basic quick processing of the photos used techniques that over saturate the comet and focus on the green elements of the image to try to tease out detail in the tail of the comet.

**November 16th:** I read a few FAAC Astronomers were going to look at the comet from the Novi (ITC) Sports Park. Clear Sky charts for HJRO conflicted with other areas, and showed clouds so I decided to join John McGill, Ken Anderson and Liam Finn.

We had a great time looking at both Comet Lovejoy and Comet ISON as well as M42, M45,

Mercury and a few more objects. Ken Anderson had three of his binoculars with him, I brought out my Vixen BT80 binoculars, John had a 8 inch Meade SCT, and Liam had his 13.1 inch dobsonian.

The clear sky chart was dead on in it's forecast and clouds move in just as the sun started to cause the sky glow to interfere with the viewing of ISON. I took some wide angle photos of the area, trying to find the comet in the photos with a laptop, but could not get an image of the comet with the stock EOS lens. For ISON we used Sky Safari software and a laser pointer to locate and tag it for other scopes. A chart from the internet helped us locate comet Lovejoy. As ISON became lower, I took a few excursions in search of the comet by low horizons. The morning of **November 18th** I tried to locate the comet from Grosse Ile on Church Street and East River Road. Cloud cover blotted out most of the sky. November 19th, the clear sky chart and local weather conflicted with cloud patterns from satellite cloud cover images. I tried to find the edge of the cloud cover traveling down toward Monroe, without luck. **November 20th.** Tried the Grosse Ile again. A green comet with tail was clearly visible in BT80 binoculars.



*November 14th: Comet LoveJoy 10 second image from Orion Starshoot Auto guider on 80mm Meade - filtered with Neat Image Pro*



How has Comet ISON panned out? Compared to Comet Panstarrs earlier in the year, the photos from a standard Canon EOS and lens show Comet ISON a lot dimmer and much more difficult to find. ISON is getting brighter as it approaches the sun. Interesting "streamers" and tail detail have been visible in some photos by some astrophotographers. Visually it's been less exciting than Panstarrs was in March. ISON is traveling closer to the sun than Comet Panstarrs did. ISON may be very bright when it's very close to the sun. ISON will be only 4 degrees from the Sun and daylight will likely obscure the comet during it's closest approach. The path of Comet ISON will bring it back up again for us to view in the morning sky again. We will perhaps see some spectacular views by December 1st. Comet Lovejoy is getting closer to the Sun each day and should grow brighter as well.

**LP Middle school:** Tim Campbell gave an Astronomy presentation to many science classes this month. Clouds prevented student tours to the classes during the scheduled events.

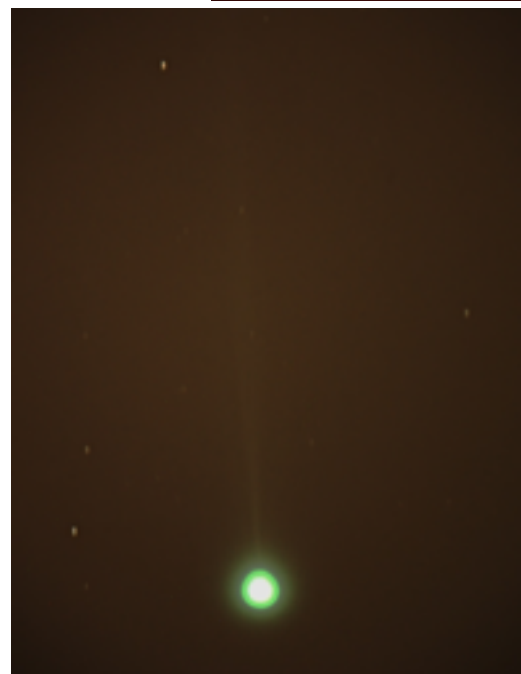
*Images captured 11-14-2013 at HJRO: using Canon T1i*

**Top Right:** Comet Lovejoy, cropped image C14 F10, HJRO. (Over processed red channel to try to show detail.)

**Middle:** Comet ISON F7 C14 photo cropped.

**Below:** Comet ISON Meade 80mm refractor HJRO.

(George Korody mentioned: Elliptical Galaxy NGC4697 Mag 9.2 is to the left side of the image.)



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