



# Star Stuff

## Ford Amateur Astronomy Club Newsletter

Volume 26, Number 4

May 2016

### NOAA's Joint Polar Satellite System (JPSS) to revolutionize Earth-watching

By Ethan Siegel

If you want to collect data with a variety of instruments over an entire planet as quickly as possible, there are two trade-offs you have to consider: how far away you are from the world in question, and what orientation and direction you choose to orbit it. For a single satellite, the best of all worlds comes from a low-Earth polar orbit, which does all of the following:

- orbits the Earth very quickly: once every 101 minutes,
- is close enough at 824 km high to take incredibly high-resolution imagery,
- has five separate instruments each probing various weather and climate phenomena,
- and is capable of obtaining full-planet coverage every 12 hours.

The type of data this new satellite – the Joint Polar Satellite System-1 (JPSS-1) -- will take will be essential to extreme weather prediction and in early warning systems, which could have severely mitigated the impact of natural disasters like Hurricane Katrina. Each of the five instruments on board are fundamentally different and complementary to one another. They are:

1. The Cross-track Infrared Sounder (CrIS), which will measure the 3D structure of the atmosphere, water vapor and temperature in over 1,000 infrared spectral channels. This instrument is vital for weather forecasting up to seven days in advance of major weather events.

Continued on Page 2

### Presidents Article

By Timothy Campbell

#### Transit of Mercury



On May 9th, several club members spent the day at Lincoln Park Middle School observing the Transit of Mercury. Transits of Mercury are not nearly so rare as transits of Venus. There are perhaps a dozen or so Mercury transits per century. But the transits can only occur during the early part of May or November, when the plane of Earth's orbit intersects with the plane of Mercury's orbit — which is inclined by about  $7^\circ$ . The transit can only occur if, while Earth is at the intersecting node, Mercury is also located at the same intersecting node. This year's transit occurred when both planets were at Mercury's descending node. If you missed this transit, then you will have one more chance when the next transit occurs on the morning of November 11, 2019 starting at 7:35am EST (at Mercury's ascending node). There will be other transits in 2032 and 2039, but we will not see them. Those transits both occur when it is night time for observers in the western hemisphere. After those transits, the next transit visible from the western hemisphere will not occur until May 7, 2049. Of all the Mercury transits, a person may only have an opportunity to see just a few in their entire lifetime — and then there is the weather — both May and November have far more cloudy days than clear days for observers in Michigan.

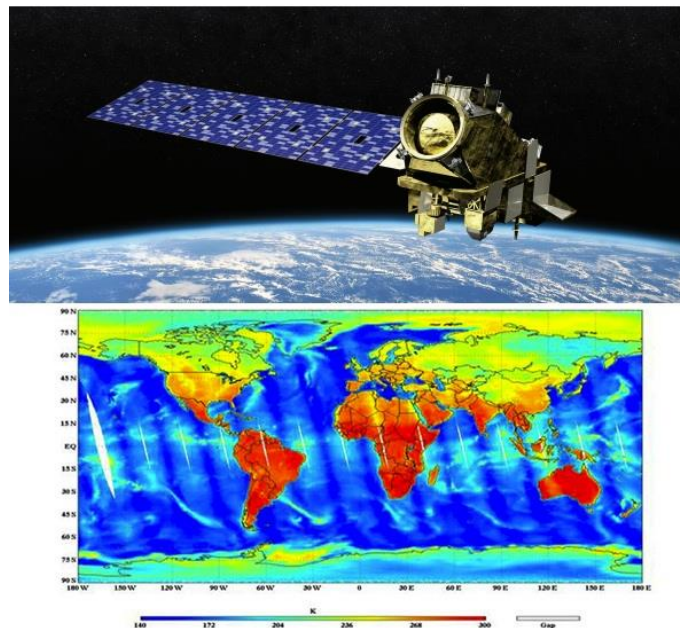
Continued on page 4

Continued from page 1

2. The Advanced Technology Microwave Sounder (ATMS), which assists CrIS by adding 22 microwave channels to improve temperature and moisture readings down to 1 Kelvin accuracy for tropospheric layers.
3. The Visible Infrared Imaging Radiometer Suite (VIIRS) instrument, which takes visible and infrared pictures at a resolution of just 400 meters (1312 feet), enables us to track not just weather patterns but fires, sea temperatures, nighttime light pollution as well as ocean-color observations.
4. The Ozone Mapping and Profiler Suite (OMPS), which measures how the ozone concentration varies with altitude and in time over every location on Earth's surface. This instrument is a vital tool for understanding how effectively ultraviolet light penetrates the atmosphere.
5. Finally, the Clouds and the Earth's Radiant System (CERES) will help understand the effect of clouds on Earth's energy balance, presently one of the largest sources of uncertainty in climate modeling.

The JPSS-1 satellite is a sophisticated weather monitoring tool, and paves the way for its' sister satellites JPSS-2, 3 and 4. It promises to not only provide early and detailed warnings for disasters like hurricanes, volcanoes and storms, but for longer-term effects like droughts and climate changes. Emergency responders, airline pilots, cargo ships,

farmers and coastal residents all rely on NOAA and the National Weather Service for informative short-and-long-term data. The JPSS constellation of satellites will extend and enhance our monitoring capabilities far into the future



*Images credit: an artist's concept of the JPSS-2 Satellite for NOAA and NASA by Orbital ATK (top); complete temperature map of the world from NOAA's National Weather Service (bottom).*

### FAAC Speaker Schedule

May 26	Presentation	Dr. Les Johnson	Interstellar Travel: Is It Possible?
	Tech Talk	Gordon Hansen	FAAC canon 60Da
June 23	Presentation	Dr. Misconi	An Immigrant's Journey into the Cosmos
	Tech Talk	Tim Dey	Meade Light Switch

## Treasurers Report

May 2016

By Gordon Hansen

2:28 PM  
05/12/16  
Accrual Basis

**Ford Amateur Astronomy Club**  
**Balance Sheet**  
As of May 12, 2016  
May 12, 16

## ASSETS

Current Assets	
Checking/Savings	
10000 · Checking	\$ 863.19
11000 · FAAC Savings	
11100 · FAAC Club Savings	\$ 2,623.70
11200 · Equipment	\$ 2,132.48
11300 · Scholarship	\$ 109.26
Total 11000 · FAAC Savings	\$ 4,865.44
12000 · Petty Cash Account	\$ 214.69
13000 · CD's	
13100 · CD 200599272	\$ 1,063.73
13200 · CD 205196033	\$ 1,008.33
13300 · CD 89265268	\$ 1,112.49
Total 13000 · CD's	\$ 3,184.55
Total Checking/Savings	\$ 9,127.87
Total Current Assets	\$ 9,127.87
TOTAL ASSETS	\$ 9,127.87
LIABILITIES & EQUITY	
Equity	
30000 · Opening Balance Equity	\$ 8,890.38
32000 · Retained Earnings	\$ 5,573.02
Net Income	\$ (5,335.53)
Total Equity	\$ 9,127.87
TOTAL LIABILITIES & EQUITY	\$ 9,127.87

## FERA Tax Form 2015-2016

May 2016

## 2015-2016 INCOME SUMMARY STATEMENT

Name of Club:	Ford Amateur Astronomy Club	Name of Treasurer:	Gordon Hansen
		e-mail address:	ghhansen@comcast.net
		phone number:	734-624-1102

Number of Members: 112

	6/1/2015 Beginning Balance	\$ 15,394.32
Income		
40100 · Club Merchandise - Sales		
40125 · Calendars	\$ 245.00	
40100 · Club Merchandise - Sales - Other	\$ 260.00	
Total 40100 · Club Merchandise - Sales	\$ 505.00	
41000 · Div Income	\$ 12.11	
41100 · Income - Equipment Fund	\$ 422.75	
41200 · Income - Scholarship Fund	\$ 290.00	
42000 · Membership Dues		
42100 · Dues Renewal	\$ 1,785.00	
42200 · New Member	\$ 430.00	
Total 42000 · Membership Dues	\$ 2,215.00	
42500 · Astronomical League - Dues Paym	\$ 75.00	
43000 · Club Events - Income		
43100 · Annual Banquet	\$ 795.00	
43200 · Swap Meet		
43220 · Swap Meet Entrance Fee	\$ 355.00	
43240 · Swap Table		
43245 · Vendor Table	\$ 150.00	
43240 · Swap Table - Other	\$ 245.00	
Total 43240 · Swap Table	\$ 395.00	
43250 · Food Sales	\$ 163.00	
43260 · 50-50 Receipts	\$ 60.00	
Total 43200 · Swap Meet	\$ 973.00	
Total 43000 · Club Events - Income	\$ 1,768.00	
49000 · GLAAC Donations		
49100 · Vendor Table	\$ 200.00	
49200 · Rick Kovari Memorial Fund	\$ 310.00	
49000 · GLAAC Donations - Other	\$ 2,621.21	
Total 49000 · GLAAC Donations	\$ 3,131.21	
	Total Income	\$ 8,419.07
Expense		
50100 · Club Merchandise		
50125 · Calendars	\$ 220.33	
50100 · Club Merchandise - Other	\$ 79.89	
Total 50100 · Club Merchandise	\$ 300.22	
51100 · Equipment Expense	\$ 279.92	
51200 · Scholarship Expense	\$ 300.00	
52500 · Astronomical League - Dues	\$ 85.00	
53000 · Club Event - Expense		
53100 · Annual Banquet	\$ 1,702.78	
53200 · Expo & Swap Meet	\$ 500.23	
53300 · Astronomy at the Beach	\$ -	
53400 · Club Picnic	\$ 191.29	
53500 · Clear Sky Clock	\$ 100.00	
53600 · General Meeting		
53610 · Pizza & Pop	\$ 793.60	
Total 53600 · General Meeting	\$ 793.60	
53700 · Awards	\$ 66.53	
Total 53000 · Club Event - Expense	\$ 3,354.43	
54000 · Office Expense		
54100 · PO Box Rental	\$ 56.00	
54200 · StarStuff - Expense	\$ 22.49	
54300 · Web Site	\$ 91.00	
54400 · Software	\$ 196.47	
54500 · Office Supplies	\$ 119.25	
Total 54000 · Office Expense	\$ 485.21	
55000 · Insurance	\$ 415.00	
56000 · Club Sponsored SIGs		
56200 · Astronomy for Everyone	\$ 181.80	
Total 56000 · Club Sponsored SIGs	\$ 181.80	
59000 · GLAAC - Expense	\$ 9,297.39	
	Total Expense	\$ 14,698.97 See Note 1
	As of April 30, 2016 Ending Balance	\$ 9,114.43

<sup>1</sup>Note: The drop in the club's balance is attributable to the transfer of funds held in trust for the annual "Astronomy at the Beach" event being transferred to the Warren Astronomical Society.

## Presidents Article

By Timothy Campbell

Continued from page 1

Michelle McKinney brought each of her 8th grade science students out to observe the transit event. Each class has roughly some 35 students. I'm told that about 180 students had the chance to observe the transit.



The FAAC volunteers at the event included Rick Azardon, Joe Bostick, Tim Campbell, Preston Crofts, Greg Knekleian, Brian Kutscher, Sandra Macika, Art Parent, and Dennis Salliotte.

Michelle McKinney wrote to convey her appreciation and that of her students' for the event and asked that I please convey that appreciation to the club.

## Secretary Report

By Jessica Edwards

Main Talk - Archeo Astronomy in the British Isles  
by Bob Berta

Astronomy in ancient cultures generally started as a way to keep track of the calendar as people settled down and started planting crops. Many myths, leading to the creation of Astrology, were created as people had time to observe the sky closely on a regular basis. Navigation via astronomy happened as cultures advanced and could keep accurate records of the heavens. Although Stonehenge is the most famous of ancient astronomical sites in the British Isles, more than 500 other sites exist and many of them even pre date Stonehenge by thousands of years. Bob closed his talk by performing music from the British Isles on his accordion.

Tech Talk – Remote Setup for Imaging by Chuck Jones

The desire to stay comfortable imaging can lead to some clever solutions to problems. Chuck has been able to set up his telescope so it can be managed remotely and he can stay dry and warm as he takes his images.

## For the Young Astronomers

### Where does interstellar space begin?

At first glance, the answer seems simple. 'Inter' means between. 'Stellar' refers to stars. "Easy!" you think, "Interstellar space is the part of space that exists between stars."

Not so fast! Wouldn't that pretty much mean that all of space is interstellar space?

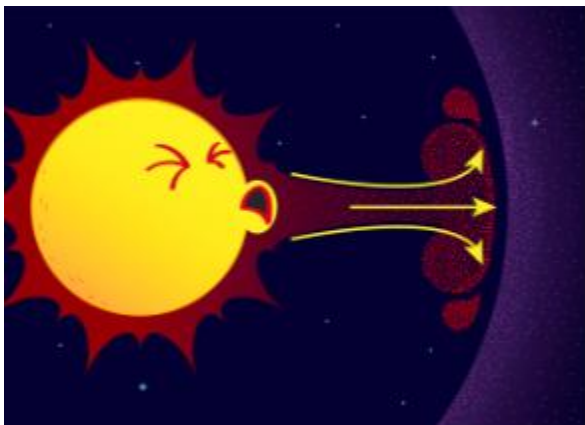
For interstellar space to be something different, then there must be some defined boundary between the

Continued on page 5

Continued from page 4

space near a star and the space in between stars. But what is that boundary?

**Look to the solar wind!**



Scientists define the beginning of interstellar space as the place where the sun's constant flow of material and magnetic field stop affecting its surroundings. This place is called the heliopause. It marks the end of a region created by our sun that is called the heliosphere.

The sun creates this heliosphere by sending a constant flow of particles and a magnetic field out into space at over 670,000 miles per hour. This stream is called the 'solar wind.'

Like Earth wind, this wind pushes against the stuff around it. What it pushes against are particles from other stars. —pretty much anything that doesn't come from our own solar system

**How would we know when we've arrived in interstellar space?**

When it comes to the sun it's all about detecting the concentration and temperature of the particles around you.

Inside the heliosphere, the solar particles are hot but less concentrated. Outside of the bubble, they are very much colder but more concentrated.

Once you arrive in interstellar space, there would be an increase of "cold" particles around you. There would also be a magnetic field that does not

originate from our sun. Welcome to interstellar space!

## A lot of moons or no moons at all?

We on Earth have just one moon, but some planets have dozens of them. Others don't have any. Which planets have moons, and which don't?

Let's go in order from the sun.

### Mercury and Venus

Up first are Mercury and Venus. Neither of them has a moon. Because Mercury is so close to the sun and its gravity, it wouldn't be able to hold on to its own moon. Any moon would most likely crash into Mercury or maybe go into orbit around the sun and eventually get pulled into it. Why Venus doesn't have a moon is a mystery for scientists to solve.

### Earth (That's us!)

Up next is Earth, and of course we have one moon.

### Mars

Mars has two moons. They're names are Phobos and Deimos. Don't you wish our moon had a cool name like that?

### Jupiter

Next are the giant outer planets. They have lots of moons. Jupiter, for instance, has 67 moons! The most well-known are Io (pronounced *eye-oh*), Europa, and Callisto. Jupiter also has the biggest moon in our solar system, Ganymede. These moons are so big you can see them with just a pair of binoculars.

### Saturn

Saturn gets first place in the "most moons" category with 53 moons, and that's not counting Saturn's beautiful rings. Saturn's moons have great names like Mimas, Enceladus, and Tethys. One of these moons, named Titan, even has its own atmosphere, which is very unusual for a moon.

### Uranus and Neptune

Uranus has 27 moons that we know of. Some of them are half made of ice. Lastly, Neptune has 13 moons. One of them, Triton, is as big as dwarf planet Pluto.

FAAC Schedule of Events 2016				
Month	Event	Date	Start Time	Location
June	Beginner night	Saturday 11th	6pm	Island Lake
July	Beginner Night	Saturday 9th	8pm	Island Lake
August	Club Picnic	Saturday 13th	8pm	Island Lake
September	Astronomy At The Beach	Friday 9th, Saturday 10th	5pm	Kensington Metro park
October	Beginner Night	Saturday 8th	8pm	Lake Eire Metro park

### Astro Imaging SIG Events

By 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 **June 9th**. The meeting room location – HFCC Admin. Services and Conference Center (same building), Berry Amphitheater Auditorium.

Topics invited. Pizza served

### FAAC Equipment Holders Report

By Dennis Salliotte

<u>Item</u>	<u>Currently Held By:</u>	<u>Date Last Verified</u>
<b><u>Telescopes</u></b>		
4" Dobsonian (Harold's donation)	George Korody	1/7/16
<b><u>Presentation Tools</u></b>		
Projector (older)	Jim Frisbie	3/22/16
Projection Screen 8'	Bob MacFarland	5/18/16
Speaker System w/wireless mic	Bob MacFarland	5/18/16
Bullhorn	George Korody	1/7/16
DVD Player	Jim Frisbie	3/22/16
Projection Screen 6'	Mike Dolsen	3/19/16
Projector, ViewSonic	Gordon Hansen	3/3/16
<b><u>Demonstration Tools</u></b>		
Weight On Planets Scale	George Korody	1/7/16
Lunar Phase Kit	Bob MacFarland	5/18/16
100 ft Scale Model Solar System Kit	Bob MacFarland	5/18/16

<b><u>Display Items</u></b>		
Astronomy Event Sign (3' X 6')	Gordon Hansen	2/16/16
PVC Display Board - Folding	Sandra Macika	1/8/16
Banner – Small (24" X 32")	George Korody	1/7/16
Banner – Medium (24" X 72")	Sandra Macika	1/8/16
Banner – Large (32" X 16')	George Korody	1/8/16
Tri-Fold Presentation Boards	Don Klaser	1/8/16
Tri-Fold Poster Board (Early Club Photos)	George Korody	1/7/16
<b><u>Other</u></b>		
Canopy (10' X 10')	Tim Campbell	2/15/16
Equipment Etching Tool	Greg Ozimek	1/10/16
Pop Cooler	Michael Dolsen	3/19/16
<b><u>EQUIPMENT KITS</u></b>		
<b><u>CARETAKER</u></b>		
<b><u>Telescopes</u></b>		
TK3 Celstrn 130 Newt Goto mount	Liam Finn	2/16/16
TK4 Clstrn 90 Refrctr w/man mount	Liam Finn	2/16/16
TK5 4 ½ " Reflector, on Fitz GEM mount	Bob MacFarland	5/18/16
TK6 8" Orion 8XTi Dobsonian	Jennifer Monske CARETAKERSHIP IS AVAILABLE	4/17/16
TK1 Coronado PST solar scope w/double stack, Meade Autostar Goto mount & tripod and accessories	John McGill	1/9/16
<b><u>Binoculars</u></b>		
BK3 15x70 binocs, monopod mount	Bob MacFarland	5/18/16
BK4 20x80 binocs, altaz goto mount	Sandra Macika	1/8/16
BK5 25x70 binocs w/tripod adaptor	Tim Dey	3/21/16
<b><u>Eyeiece Kit</u></b>		
EPK1 Eyepieces, filters & accesories	Liam Finn	2/16/16
<b><u>Other</u></b>		
TA Sky Quality Meter	Syed Saifullah	4/26/16
TA Sky Atlas 2000.0	Tim Dey	3/21/16
TA Orion telescope binoviewer	Liam Finn	2/16/16

<b><u>Lincoln Park Observatory</u></b>		
LPO Celestron binoviewer #93691	Tim Dey	1/16/16
LPO Celestron 2X 1.25" Barlow	Tim Dey	3/21/16
<b><u>Imaging SIG</u></b>		
C1 Celestron NexImage Solar System Imager model #93712	Gordon Hansen	2/16/16
C2 Meade Deep Sky Imager PRO III w/AutoStar Suite	Gordon Hansen	2/16/16
C3 Orion StarShoot Deep Space Video Camera NTSC #52185 w/video capture device #52178	Gordon Hansen	2/16/16
C4 Meade Electronic Eyepiece w/cable to a video monitor, VCR or TV. Pairw#43 AND Meade 3.5" LCD Color Monitor Kit #07700 Complete (unused). Pair w#34	Gordon Hansen	2/16/16
C5 Orion StarShoot Deep Space Video Camera II #52195 AND Orion StarShoot iPhone Control for Deep Space Video Camera II #52195	Gordon Hansen	2/16/16
CA1 Rigel Systems Spectroscope	Gordon Hansen	2/16/16
CA2 Celestron 1.25" to T-Adapter(male thread) Model #93625	Gordon Hansen	2/16/16
CA3 Canon EOS deluxe astrophoto kit FOR Canon bayonet T-thread adapter ans variable 1.25" extender	Gordon Hansen	2/16/16
CA4 Orion StarShoot LCD-DVR #58125 2.5" LCD screen	Gordon Hansen	2/16/16
CA5 Celestron Canon EOS T-ring adapter #93419	Gordon Hansen	2/16/16
<b><u>Special Event Use Only- Not Available For Loan Out</u></b>		
TK2 Meade 8" ETX-LS-ACF w/tripod, voice assist, computerized GPS plus MANY (35+) accessories	Tim Dey	3/21/16



BK1 Orion BT-100 binocular telescope w/hard case, Orion VersaGo h.d. man altaz mount w/Vixen dovetail head and Vixen style binocular holder bracket	Ken Anderson	1/10/16
BK2 Zhumell 25x100 binoculars, hard case & Zhumell TRH-16 tripod w/soft fabric bag	Sandra Macika	1/8/16
TAK1 Night Vision Intensification binocular unit	George Korody	1/7/16
Dennis Salliotte equipment@fordastronomyclub.com		

## STAR STUFF

This Newsletter is published eleven times each year by:

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

PRESIDENT: Tim Campbell

VICE PRESIDENT: Tim Dey

SECRETARY: Jessica Edwards

TREASURER: Gordon Hansen

WEBMASTER: Greg Ozimek

NEWSLETTER EDITOR: Liam Finn

## 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 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. You may also 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 month's issue.

\* FAAC Members are welcome to join our Ford Astronomy Club Yahoo! Group. Messages photos, files, online discussions.

## Editors Notes

Any members who wish to provide input on the layout and design of the Newsletter please contact me.