

"CLEAR SKIES"



NEWSLETTER OF THE CHAMPAIGN-URBANA ASTRONOMICAL SOCIETY, INC.
AN AFFILIATE OF THE CHAMPAIGN PARK DISTRICT

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AUGUST, 2010

CUAS OFFICERS MESSAGE

BY GUY HAMPEL

August starts the beginning of Star Party fun with one occurring in Indiana, as Mike Lockwood pointed out last year, not the best seeing but its close location, fellow Amateur Astronomers and their families make for a good time. Who is going to which fall star party? Are there any new takers? Why should you be interested in these events? Well the simple answer is that others have enjoyed previous year's events and our own summer public and club sessions have been hot, humid and bug infested with seeing only being marginal at best. So what is the big deal of driving across 3 or 4 states and spending the better part of a week or more when all we have to do is look on the web at Hubble and other sites to see images that are far better than we can see in those way under a meter go to or not go to scopes? Again talking and being around other astronomers in fun, important and inspiring.

Last month's meeting guest Bob Holmes should be another reason. The work he has done starting with small scopes on a shoe string operating budget to over time competing with much bigger scopes at imaging and playing a part in documenting near earth objects orbits and possible threats points out the importance of Amateurs. One other point that was brought up last month just in passing was 'When will there be affordable adaptive optics for Amateur scopes and to my amazement an email went flying by my desk that SBIG already has models in the affordable range for some of their CCD cameras, well what do you know speak it and it appears. Has anyone tried these under \$2000 attachments for automatic image correction by your computer yet? Gee I seem to have a lot of questions this month well it is part of my job to challenge and inspire. Come to our next club meeting with answers and maybe some more questions.

I have been reading on the web about new discoveries and items that less than fifty years ago would have raised eyebrows followed with say what? It is amazing what better tools or just the right tool for the job can do to increase knowledge or change opinions, claims or even theories. What is next? We recently have seen evidence, pictures of or just possible explanations for stars bigger than we thought were physically possible, objects rotating opposite the spin of the object they are going around, stars traveling so fast that they are escaping their home galaxy among many others. What is up? The answer is just wait and believe that anything might be possible and some day somebody will come up with at least one explanation for it.

-Guy



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LOOKING UP THIS MONTH

In the planet traffic jam in the west, Mercury is decent view, though it does set lower and lower as each day. Look to the lower right of Venus and very low on the horizon early in the month. By the 15th, Mercury sets just after 8:30pm.



finishing a goes by.

Venus is still easy to see in the west, though it is always getting lower as well. On August 18th, it sets at 9:30pm. Through the telescope, Venus is about half lit. Venus will pass Mars and Saturn this month. On the 7th, Venus is 2.7° below Saturn and, eleven days later, it is 1.9° below Mars, though they'll be together for a large part of August. The trio make a neat triangle that changes all through the month. By the 12th, the Moon joins in passing underneath the three planets. You may have learned that the Moon's orbit is inclined about 5° from the plane of the solar system. You can see that this month as the Moon is below the planetary orbits. Both Saturn and Mars are roughly the same brightness. Venus continues eastward and farther south until it appears about a degree from the star Spica. By the end of the month, Venus is setting at roughly 9pm.

Jupiter rises just after the sunset in the south. Opposition is next month (when it will rise at sunset). That also means the disk will swell telescopically and the planet will brighten. If you're going to point a telescope this way, you might wait until the morning hours so Jupiter is higher in the sky.

Since this is August, the big news is usually the Perseid Meteor Shower. Every year around the second week of August, the Earth plows through the trail of Comet Swift-Tuttle. Think of it as a stock car going around a track and a swarm of mosquitoes wanders onto the track. If the car comes into contact with the swarm, you get spots on your windshield! In space, the meteoroid particles, about the size of a pea, slow down in the air, shocking the air molecules, causing them to glow. So you see the glowing trail of the meteor. For the Perseids, this year is significant as the shower occurs in a dark sky with no Moon. The best time may be the morning of the 12th or the morning of the 13th. Now, lets go back to that stock car. Given the motion of the car, the spots from the mosquitoes would be on the front windshield. The only spots on the back windshield would be from mosquitoes who were flying faster than the car so they'd catch up with it. Possible, but not probable! The same thing happens in space. We're on the side of the Earth that would be the front windshield after midnight, so rates pick up after midnight. Think about maybe heading out to the observatory around 1am or so to see what you can see, weather permitting, of course. The magazines report that about every three years we have dark skies for the Perseids, so lets take advantage of this year! Go to the darkest spot you can get to and set-up a lawn chair where you're facing near straight up. Dress warm (you'll be surprised how chilly it gets on August mornings) and bring mosquito repellant. If you want to, take counts every 30 minutes and see what your own personal hourly rate is.

-DCL

MOON PHASES

Last quarter	August 3	September 1, 30
New	August 9	September 8
1 st quarter	August 16	September 15
Full	August 24	September 23



CUAS NEWS

Attendees to the July meeting were able to listen to **Bob Holmes talk** about the Astronomical Research Institute (ARI), which was formed in 2002. Originally near Charleston, Bob has now moved his telescopes to Westfield, Illinois for darker skies. He owns a 24", a 32", a 30" and a 50" in progress! He took over 160,800 images last year down to magnitude 22. Though he has discovered a comet (Holmes 2008 N1) and a supernova (SN 2006 al in Abell 1066), his search targets are usually Near-Earth Asteroids (NEO). A potentially hazardous asteroid (PHA 2009 BD81) was one of his recent discoveries. For many of the objects, they have been discovered already but lost. In 2009 Bob won the Edgar Wilson Award. He has confirmed 5 NEO's for the WISE mission and is one of the nation's leaders in NEO observations to the point where NASA is now funding his efforts. The planetarium is hoping to get Bob to return for one of their "World of Science" talks this fall.

We have a couple of **viewing sessions** coming up where the locales have changed. On September 4th (Labor Day weekend), we have been invited up to a new restored prairie area near Fairbury, Illinois, called Fugate Woods. The program begins at 7pm (weather permitting) at North Park in Fairbury. Dave Leake has agreed to do the short talk. To get to Fairbury, go to Mahomet and take route 47 north, through Gibson City, then take route 24 west to Fairbury. Turn right at First Street in Fairbury (there's a stoplight there) and go north to North Park. Fugate Woods is just off route 24 east of town. The web site is <http://www.fugatewoods.org/>. There is a link to the top to directions and a pdf trail map. Note that the October viewing session at the Middle Fork has been moved to the Homer Lake Forest Preserve, south of St. Joseph and east of Urbana. A map will appear in a later issue of the newsletter as well as more detailed directions – put this on your calendar if you're in town! Also, the Fugate Woods people has stated they'd make a donation to the club for our services.

A note about upcoming state star parties . . . here are the dates and deadlines:

- "Astrofest" – Sept 10-12 – Vana's Farm near Kankakee. Main speaker is from Fermilab. \$38 with August 10 deadline. For a brochure, see http://www.chicagoastro.org/index_files/download_files/AF2010brochure.pdf
- "Prairie Skies" – Sept 30 – Oct 3 – Camp Shaw-Wah-Nas-See near Kankakee. Pre-registration deadline is August 28. For an online brochure, see: <http://www.prairieskies.org/pdf/brochure10pdf.pdf>
- "Illinois Dark Skies" – Sept 9-12 – Jim Edgar Panther Creek Wildlife Area, near Springfield. \$45 per person fee. See <http://www.sas-sky.org/SAS%20Star%20Party%20Application/EntryPage.asp> for more info.

Light pollution update Another dark sky park, this one in Washington state (<http://www.examiner.com/x-30469-Seattle-Astronomy-Examiner~y2010m7d24-Goldendale-Observatory-State-Park-recognized-for-dark-sky-preservation-efforts>) plus another article from New Scientist on how excessive lighting affects wildlife (<http://www.newscientist.com/article/mg20727694.000-let-there-be-night-for-wildlifes-sake.html>). The Huffington Post has a nice article on the history of artificial lighting (http://www.huffingtonpost.com/jane-brox/light-less-light-the-evol_b_639873.html). Has anyone seen the Illinois dar sky directory? Should we add Middle Fork to this? See http://www.observingsites.com/ds_il.htm.

Does anyone want to pursue handing out "**dark sky certificates**" to businesses who practice environmental friendly lighting? It could be a nice publicity piece and raise awareness of the issue.

Staerkel Planetarium update the grand (re)opening for the planetarium has been determined to be Thursday, September 9. The event will be from 5-7pm and *CUAS members are invited*. It is really an

open house. Note that this is the night of our September meeting! We can have a meeting after festivities are over. There will be planetarium demos at roughly 5:30 and 6:15pm. The official opening weekend will be September 10 and 11 with the opening shows being “Fall Prairie Skies,” “In My Backyard,” and “Violent Universe.” Come early for munchies and a beverage. Also know that the planetarium begins the month conducting a public sale of some of its old equipment. See the website (www.parkland.edu/planetarium) for a list of available equipment. Anyone can purchase this equipment, which is marked below market prices.

On September 18, 2010 amateur astronomers, educators, scientists and the general public will gather together around the world to celebrate **International Observe the Moon Night** (InOMN) by observing and learning about our nearest neighbor! Do we want to participate?

Consider taking your **CUAS newsletter** by email only and save the club some money. By your request, we can email you a pdf file monthly instead of spending money on stamps.

Also remember that the club offers magazine discounts for both *Astronomy* and *Sky & Telescope*. If you are interested, contact treasurer Willard Brinegar.

Join the **club listserv** and get viewing information in advance! This is a yahoo group that you have to join. See the web site www.cuas.org and look for “email listserver” link on the navigation bar on the left.

TREASURERS REPORT

BY WILLARD BRINEGAR, TREASURER

As of 7/31/2010

Assets*

\$ 3355.71 Checking account

\$ 3355.71 Total Assets

Income*

\$ 7.50 One Half year Membership

\$ 7.50 Total Income

Outgo*

\$ 161.88 Astronomy Calendars

\$ 488.22 Repairs to the shed at the dome site.

\$ 650.10 Total Outgo

*Note: Magazine subscription funds are not reflected in Income and Outgo since they are simply sent on to the respective publishers. As of 4/30/2010, all received subscription payments have been sent on, so they are not reflected in the Assets category either.



OBSERVATORY NEWS

As was reported last month, the shed is repaired and the mowers are back where they were stored. There are new steps leading into the dome as well, all thanks to Mike Rosenberger. Mike also reports that the county has done some work on the ditches on 700E. PLEASE be careful when driving to the dome. We have a new culvert into the site and it's smaller than the original one, so the drive is narrower. Mike will

discuss this with the county road commissioner. We also have a small berm of dirt near the road

Small projects list for the summer we probably need to **scrape paint** again, both inside and outside. The inside looks pretty bad in the daylight! Also, cooling **fans** in the telescope. Guy brought a paint expert out to the dome and has a paint solution. Might a work day be in store?

The mow list returns! If your name appears below, then please mow when your turn comes up and then contact the next person immediately. We usually have to mow weekly and the job takes several hours, but it's great exercise! Mowers are at the dome site. If you want to either be added or taken off the list, let Dave Leake know ASAP. Mike Rosenberger has already mowed.

- | | | | |
|---------------------|---------------------|------------------|---------------------|
| 1) Mike Rosenberger | 4) Audrey Ishii | 7) Mike Lockwood | 10) John Stone |
| 2) Dave Leake | 5) Willard Brinegar | 8) Dick Robrock | 11) Chris/Eva Smith |
| 3) Mark Prather | 6) Guy Hampel | 9) Wayne James | |



LOOKING AHEAD

August 7 Middle Fork Observing 8pm Middle Fork Forest Preserve
There's a program at the campground in the activity center at 8pm with observing to start roughly 45 minutes later at the water fowl area, north of the campground. Dave is doing the talk at the Activity Center. Note that the Middle Fork staff report that the bridge is still out between the park and Penfield, so I is recommended to take Route 45 out of Rantoul to Ludlow and turn right. This event is weather permitting. We have the option of observing (with no program) Sunday night if we wish.

August 11-12 Perseid Meteor Party? 11pm-? Observatory
The Moon is in the right spot (two days or so after New), should we try to run an event? This is in the middle of the week, which isn't great. Thoughts? Note this is NOT an official CUAS event.

August 12 CUAS Club Meeting 7-8:30pm Staerkel Planetarium
Hopefully Dave Leake will show-off some of the features of the Digistar 4 system.

August 14 CUAS Family Skywatch 8-10:30pm Observatory
If it's clear, lets meet at the observatory . . . weather permitting. Volunteers are needed. Take I-57 south to the Monticello Exit, go west (turn right) 1.4 miles and then turn left on County Road 700E. The dome is 0.8 miles to the south on your left. Call 351-2567 for cancellation notices.

August 28 Sweetcorn Festival all day Downtown Urbana
Though the club won't have a table at the festival, the local museums group will. If anyone would like to work an hour or so, staffing a table and handing out a few brochures, let Dave Leake know at dleake@parkland.edu.

September 4 New Moon Observing 9pm - ? Fugate Woods
Note the change in location! We have been invited to a new restored prairie area just east of Fairbury, Illinois. See club news for more details.

September 9 Planetarium reopening party TBA Staerkel Planetarium
The club is invited to a celebration of the reopening of the planetarium, complete with new light, sound, and projection system. The donor "star wall" will also be unveiled as well as our new Hubble Space

Telescope “Viewspace” video exhibit in the lobby. More details will be available as we get closer to the date.

September 9 CUAS Club Meeting 7-8:30pm Staerkel Planetarium
Program to be announced. This is also the night of the planetarium opening party, which will be 5-7pm. All club members are invited to this open house and you can stay for the meeting. Refreshments will be provided if you come early. See the planetarium update in “club news” for details.

September 10 Planetarium Public shows 7pm & 8pm Staerkel Planetarium
The planetarium will reopen to regular public programming including “Fall Prairie Skies” and the new digital program “Violent Universe.” All tickets are available at the door. 351-2446 or www.parkland.edu/planetarium.

September 11 CUAS Family Skywatch 8-10:30pm Observatory
If skies are clear, we ‘ll need a few volunteers. Thanks to Mike Rosenberger, the shed is normal operating condition.

October 2 Homer Lake Observing 8pm - ? Homer Lake Forest Preserve
Note the change in location! We have permission to be inside the gates of Homer Lake after sunset. Take I-74 to St. Joseph, then south and look for the signs. After you enter the main gate, take a right to the observing area. Weather permitting.

October 9 New Moon Observing 8pm - ? Observatory

October 14 CUAS Club Meeting 7-8:30pm Staerkel Planetarium
We’ll have officer nominations this month for calendar year 2011. Voting to occur next month.

October 16 Family program 2-3pm Champaign Public Library
The library has requested some sort of program aimed at kids K-5. Details to follow.

October 16 CUAS Family Skywatch 8-10pm Observatory

November 6 New Moon Observing 8pm - ? Observatory

November 11 CUAS Club meeting 7-8:30pm Staerkel Planetarium

November 13 CUAS Family Skywatch 8-10pm Observatory
Our last one for the year – lets hope it’s clear!

November 26 “Season of Light” opens 8pm Staerkel Planetarium
A new digital holiday show replaces “Rites of the Season,” which ran at Staerkel since 1989. Tickets are available at the door and range from \$3 to \$4. This show will run Fridays & Saturdays through December 18.

December 9 CUAS Club meeting 7-8:30pm Staerkel Planetarium

December 21 Total Lunar Eclipse 12:30am

The Sun Can Still Remind Us Who's Boss

by Dr. Tony Phillips

Grab your cell phone and take a good long look. It's indispensable, right? It tells time, surfs the web, keeps track of your appointments and, by the way, also makes phone calls. Modern people can hardly live without one. One good solar flare could knock it all out.

"In the 21st century, we're increasingly dependent on technology," points out Tom Bogdan, director of NOAA's Space Weather Prediction Center in Boulder, Colorado. "This makes solar activity an important part of our daily lives." Indeed, bad space weather can knock out power systems, telecommunications, financial and emergency services—basically, anything that needs electronics to work. That's why NOAA is building a new fleet of "space weather stations," the GOES-R satellites. "GOES-R will bring our existing fleet of weather satellites into the 21st century," says Bogdan. "They're designed to monitor not only Earth weather, but space weather as well."

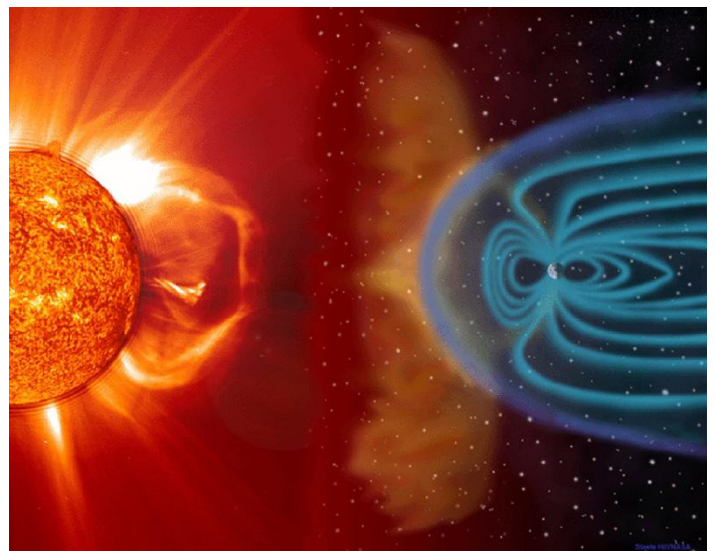
NOAA's existing fleet of Geostationary Operational Environmental Satellites (GOES) already includes some space weather capabilities: solar ultraviolet and X-ray telescopes, a magnetometer and energetic particle sensors. GOES-R will improve upon these instruments and add important new sensors to the mix. One of Bogdan's favorites is a particle detector named "MPS-Low," which specializes in sensing low-energy (30 eV – 30 keV) particles from the sun.

Who cares about *low-energy* particles? It turns out they can be as troublesome as their high-energy counterparts. Protons and other atomic nuclei accelerated to the highest energies by solar flares can penetrate a satellite's exterior surface, causing all kinds of problems when they reach internal electronics. Low-energy particles, particularly electrons, can't penetrate so deeply. Instead, they do their damage on the outside. As Bogdan explains, "Low-energy particles can build up on the surfaces of spacecraft, creating a mist of charge. As voltages increase, sparks and arcs can zap electronics—or emit radio pulses that can be misinterpreted by onboard computers as a command."

The Galaxy 15 communications satellite stopped working during a solar wind storm in April 2010, and many researchers believe low-energy particles are to blame. GOES-R will be able to monitor this population of particles and alert operators when it's time to shut down sensitive systems. "This is something new GOES-R will do for us," says Bogdan. The GOES-R magnetometer is also a step ahead. It will sample our planet's magnetic field four times faster than its predecessors, sensing vibrations that previous GOES satellites might have missed. Among other things, this will help forecasters anticipate the buildup of geomagnetic storms.

And then there are the pictures. GOES-R will beam back striking images of the sun at X-ray and extreme UV wavelengths. These are parts of the electromagnetic spectrum where solar flares and other eruptions make themselves known with bright flashes of high-energy radiation. GOES-R will pinpoint the flashes and identify their sources, allowing forecasters to quickly assess whether or not Earth is in the "line of fire."

They might also be able to answer the question, *Is my cell phone about to stop working?* The first GOES-R



satellite is scheduled for launch in 2015. Check www.goes-r.gov for updates. Space weather comes down to Earth in the clear and fun explanation for young people on SciJinks, <http://scijinks.gov/space-weather-and-us>.

Most of us know that Summer Solstice has the most daylight hours and Winter Solstice the fewest. The Vernal and Autumnal Equinoxes have equal amounts of daylight and dark. But do we know why? And what do these dates have to do with the equator and the Tropics of Cancer and Capricorn? Find and understand the answers once and for all on SciJinks, <http://scijinks.gov/solstice>.

MEMBERSHIP FORM

- Enroll me as a new member!
 Membership renewal [attach mailing label]
 Change of address only

Name _____
Address _____
Phone # _____
Email address: _____

Make all checks payable to:
"Champaign-Urbana Astronomical Society"

Circle all that apply:

Basic membership	\$15
Observatory key fee	\$10
<i>Astronomy</i> magazine renewal*	\$34
<i>Sky & Telescope</i> renewal*	\$33
Donation	\$ _____
Total Enclosed	\$ _____

*enclose mailing label

Detach and mail to:

C.U.A.S. Treasurer
c/o Staerkel Planetarium/Parkland College
2400 West Bradley Avenue
Champaign, IL 61821

CHECK OUT ALL CLUB EVENTS ON THE CUAS HOME PAGE: <http://www.cuas.org>

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District. <http://www.champaignparkdistrict.com>

William M. Staerkel Planetarium has public shows on Friday evenings in August. Call 217/351-2446 for more information. <http://www.parkland.edu/planetarium>



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