

 **Current** NOVEMBER
Astronomy 2004
RIVER BEND ASTRONOMY CLUB NEWSLETTER



FORE! Wait, that's no giant's golfball. Perched over St. Charles' countryside, a 39-foot diameter fiberglass sphere protects the Doppler weather radar antenna inside, keeping the local National Weather Service office in the forefront of severe weather forecasting. PHOTO BY ERIC YOUNG

RIVER BEND



ASTRONOMY CLUB

RIVERBENDASTRO.ORG

River Bend Astronomy Club serves astronomy enthusiasts of the American Bottom region, the Mississippi River bluffs and beyond, fostering observation, education and a spirit of camaraderie.

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Affiliated with the Astronomical League, dedicated to fostering astronomical education, providing incentives for astronomical observation and research, and assisting communication among amateur astronomical societies.
www.astroleague.org



Affiliated with the NASA Night Sky Network, a nationwide coalition of amateur astronomy clubs bringing the science, technology and inspiration of NASA's missions to the general public.
nightsky.jpl.nasa.gov

Current Astronomy CLUB NEWSLETTER

EDITOR Eric Young
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Submissions to the newsletter are encouraged.
Contact the editor for more information.

Events

November Meeting

Saturday, November 13th, 2004 • 7:00 p.m.

Kronk Observatory

132 Jessica Drive, St. Jacob, IL 62281

Looked up lately?

Join River Bend Astronomy Club

Want to learn more about astronomy? The members of River Bend Astronomy Club invite you to join. You won't need expensive tools or special skills — just a passion for observing the natural world.

- Meetings offer learning, peeks through great telescopes and fun under the stars.
- You will receive the club newsletter, *Current Astronomy*, packed with news and photos.
- Get connected with our member-only web site and discussion group.
- Borrow from the club's multimedia library.
- And that's not all! Through club membership you also join the Astronomical League, with its special programs and a colorful quarterly newsletter to enrich your hobby.

We meet monthly, observe regularly, e-mail news and quips constantly, and generally have a good time. Won't you join us?

Name(s) _____
 Address _____
 City _____ State _____ Zip _____
 Phone (Day) _____ (Evening) _____
 Email address (to receive club news and information): _____

Where did you hear of our club?

How long have you been interested in astronomy? _____

Do you have optical equipment? ___ Telescope ___ Binoculars

Are you afraid of the dark? ___ Yes ___ No (just kidding)

I am submitting my application for:

_____ Adult membership(s) _____ Youth membership(s)
 @ \$20.00/year @ \$15.00/year
 (18 years or older) (under 18)

I enclose a check for a total of \$ _____
 made out to "Ed Cunnius, Treasurer RBAC."

Signature _____

Date _____



River Bend Astronomy Club

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SEPTEMBER 04

Eyes on the skies

National Weather Service office hosts open house

BY ERIC YOUNG

The weather never stops,” says Jim Kramper, warning coordination meteorologist with the National Weather Service office in St. Louis. “We never close.”

They were open, even, for an open house on October 9, 2004. Official weather-watching duties were traded with the Kansas City office so St. Louis staffers could demonstrate their equipment and discuss their work — a valuable, life-saving mission.

Visitors saw the weather radar system, watched colorful computer displays and learned how forecasts and warnings are made. The office serves 29 counties in Missouri and 17 counties in Illinois, sending weather information to local radio and TV, the Weather Channel, public service and law enforcement agencies. Information is also broadcast on NOAA Weather Radio, a continuous source of weather forecasts originating from the St. Louis office.

Besides weather personnel, representatives of local emergency management groups discussed their services during and after severe weather events.

Accuracy Just how good are the forecasts? “We’re not always perfect,” says Joe Pedigo, meteorologist. “But if you’ll look at how we do it generally turns out pretty good.” Over time, for example, the center’s temperature predictions average an accuracy of +/- three degrees.



An array of data systems: Mark Britt, meteorologist.

“It’s improved a lot,” says Kramper, “and it will be improving in your lifetime. We make changes all the time, sometimes every month.”


Technology Pedigo reminds visitors that weather forecasting is “an inexact science.”

“We rely on a pretty elaborate observing network,” he says. “Thousands of people — Ham radio operators, police, cooperative observers, SkyWarn spotters. The Doppler radar is good, but when it comes to small tornadoes and stuff like that you need eyes to help out.”

“Computers are getting good — they’re getting very good. Technology has really made great strides in our business in getting the information out.

“We make forecasts on a computer, then we check against others’ forecasts to see how they blend, coordinating with other stations nationally.”

Cost Services of the National Weather Service cost each taxpayer about \$5. “April 15th is a very important day,” says Kramper. “We need your contributions.” More seriously, Kramper adds, “We fight to keep costs down.”

Echoes of danger Using the doppler weather radar system, “You can see a 3-D picture of a storm system,” says Brandon Baker, electronics technician. “You can tell the direction and intensity of the storm and get a pretty accurate rainfall estimate.” The receiver is sensitive enough to detect the dance of a single bumblebee at a distance of 18 miles. Baker “shoots the Sun” at intervals, calibrating the receiver by reading the predicted energy from the Sun at that frequency. 

More information: www.crh.noaa.gov/lx



Joe LaGreek, Jr., communications volunteer with St. Charles County Division of Emergency Management

Listen, weather watchers

Get free sky information to live by, 24/7

BY ERIC YOUNG

Clear skies! — the goodwill wish of stargazers everywhere. But when? Whether you're reaching for a telescope or a picnic basket it helps to know what the weather holds. You can access special weather broadcasts anytime, almost anywhere using an inexpensive battery-powered radio receiver.

Voice of the National Weather Service. At the touch of a button, weather radios capture NOAA Weather Radio, a public service of the U.S. government.


Options in receivers. Weather radios pick up broadcasts on any of seven national Weather Band frequencies. (Some low-cost AM/FM radios have this capability.) Costlier models signal hazardous weather alerts and users with special needs can even link these radios to attention-getting devices. Purchase a radio that runs on batteries for use during a power outage or out in the field. Prices vary.

Forecasts, climate data, hazard alerts. Brief broadcasts repeat until updated, with regular updates during hazardous conditions. When the sky threatens, you'll be alerted to storm watches and warnings for your municipality and hear the progress of severe storms. Climatology readings and river stage information are broadcast daily.

Data Commander. Meet your broadcaster — a pleasant, computerized voice that remains calm even while gale-force winds peel tin off the shed roof.

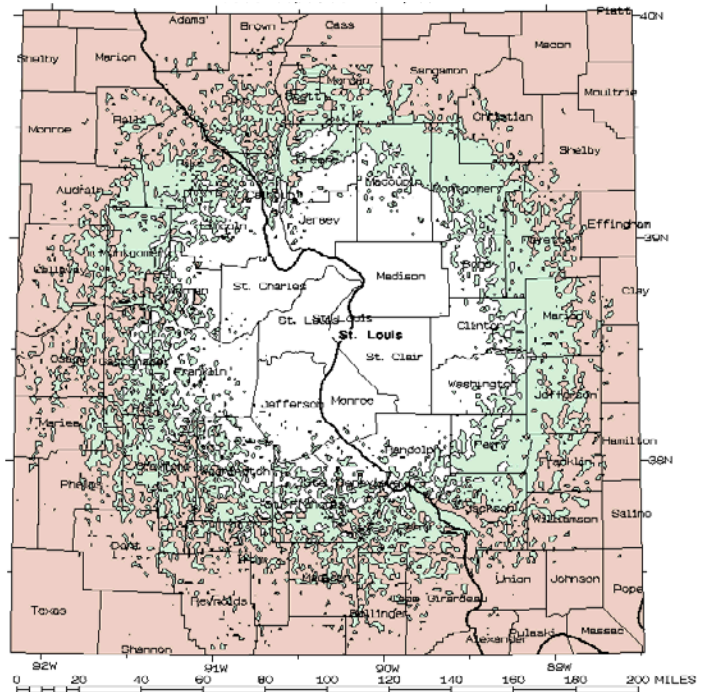
Show me. Worry that you'll miss seeing satellite cloud imagery? Maybe. But NOAA also relays conditions west of home in select Missouri towns. Pay attention and it's possible to form a mental image of the weather headed our way. All clear in Columbia, MO?...

Valuable but free. No suffering TV or radio ads, no wading through web sites: NOAA broadcasts arrive with no strings attached. Just listen.

Instant weather gratification. NOAA Weather Radio has been part of my daily life for years. You may also enjoy having a little plastic box that always does one thing extremely well, rain or shine — and someday might even save your life. 



Options include the Jensen MR-600 AM/FM Weather Band Radio, \$12.99, and the Midland 74109 All Hazard Radio, \$31.95. The St. Louis-area NOAA broadcast reaches most members of River Bend Astronomy Club.



Transmitter	Frequency	Call	Watts
St. Louis, MO	162.550	KDO89	1000

Visit NOAA Weather Radio on the web at www.nws.noaa.gov/nwr/

Teaching excellence

Foster earns high honor at SIUE

FROM SIUE PUBLIC AFFAIRS

While he's in front of the class, Tom Foster is trying hard not to seem like the stereotypical professor imparting his vast knowledge of physics to his students.

"I hate being the center of attention," Foster said. That's why it's a bit uncomfortable these days for the 36-year-old assistant professor from Heath, Ohio. Foster is the winner of this year's Teaching Excellence Award, which puts him squarely in the spotlight. The award is the highest honor accorded a faculty member at Southern Illinois University–Edwardsville (SIUE).

A fiercely modest individual, Foster says he attempts to create a "community" in the classroom environment to put students at ease. "I try very hard not to maintain the stereotype of the teacher as demagogue and the students as dutiful drones who scribble as fast as possible to get down every word I say.

"In fact, my students should be getting an award for putting up with my bad jokes."

Foster says he uses a sense of humor in class and encourages the students to call him Tom. "I don't want them calling me 'Dr. Foster.' I treat the students as people who have their own strengths and who know quite a bit about other things. I just happen to know more about physics than most of them."

His teaching accomplishments at SIUE include modifying the astronomy and physics courses in the

I treat the students as people who have their own strengths and who know quite a bit about other things. I just happen to know more about physics than most of them.




Tom Foster, RBAC member, teaches astronomy, science, and physics education methods at SIUE. His scholarly interests include motivation and confidence in learning, students' learning of concepts in physics, and improving science instruction. He enjoys hiking/camping, basketball, model rocketry, and gaming.

Department of Physics by incorporating more student-centered and inquiry-based teaching methods. Students say they enjoy Foster's enthusiasm, sense of humor and genuine concern for their understanding of physics concepts. "I do my best to keep my students engaged," Foster said. He teaches freshman physics for non-majors and also astronomy. "I love teaching astronomy because it's always changing with new discoveries and it's a discipline in which students can fully participate — all they have to do is look up in the night sky."

Foster also teaches graduate courses in physics teaching methods and astrobiology. "Don't get me started on the search for other life in the universe," he says with a smile. "I could go on for hours on that subject."

Because he is so modest, Foster finds himself a little embarrassed about the attention from winning the award. He was given a \$2,000 check at Honors Convocation in April and was recognized with a plaque at SIUE's May 8 commencement.

"I don't like being the guy in front of class relentlessly teaching bored students," Foster said. "I'm embarrassed but I'm also honored that the University would give me this recognition. I consider myself to be just one teacher among very talented faculty members in this department." 

The Space Place

BY DIANE K. FISHER

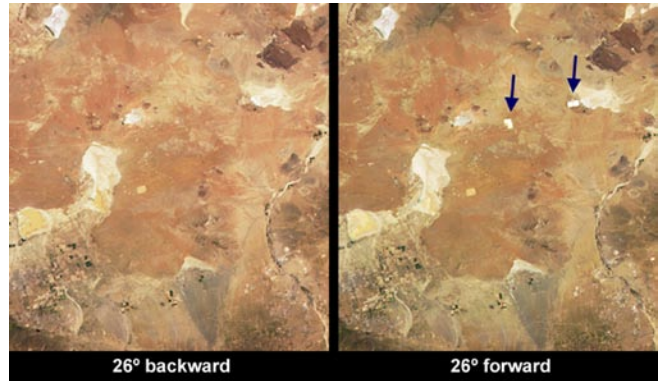
A summer vacation tracking down UFOs

Erin Schumacher's summer job for NASA was to look for UFOs. Erin is a 16-year-old high school student from Redondo Beach, California, attending the California Academy of Mathematics and Science in Carson. She was one of ten students selected to work at NASA's Jet Propulsion Laboratory (JPL) in Pasadena as part of the Summer High School Apprenticeship Research Program, or SHARP.

But is studying UFOs a useful kind of NASA research? Well, it is when they are "unidentified flashing objects" that appear in certain images of Earth from space. Erin worked with scientists on the Multi-angle Imaging SpectroRadiometer (MISR) project to track down these mysterious features. MISR is one of five instruments onboard the Earth-orbiting Terra satellite. MISR's nine separate cameras all point downward at different angles, each camera in turn taking a picture of the same piece of Earth as the satellite passes overhead. Viewing the same scene through the atmosphere at different angles gives far more information about the aerosols, pollution, and water vapor in the air than a single view would give. Ground features may also look slightly or dramatically different from one viewing angle to another.


Erin's job was to carefully examine the pictures looking for any flashes of light that might be visible from just one of the nine angles. Such flashes are caused by sunlight bouncing off very reflective surfaces and can be seen if a camera is pointed at just the right angle to catch them. Because the satellite data contain precise locations for each pixel in the images, Erin could figure out exactly where a flashing object on the ground should be. Her job was then to figure out exactly what it was that made the flash — in particular,

**Viewing the same scene...
at different angles gives far
more information...**



Two cameras on MISR made these images of the same part of the Mojave Desert. The camera pointed at an angle of 26 forward saw the flashes from two solar electric power generating stations. These objects are nearly invisible at the other angle.

to see if she could distinguish man-made objects from natural ones.

When Erin began working at JPL, scientists on the MISR project had already identified two large flashes out in the middle of the Mojave Desert in Southern California. These turned out to be from solar power generating stations. Soon, Erin began finding flashes all over the place. She learned how to apply her math knowledge to figuring out how the objects would have to be oriented in order to be seen by a particular MISR camera. Once, she and a team of MISR scientists and students went on a field trip to the exact locations of some flashes, where they found greenhouses, large warehouses with corrugated metal roofs, a glass-enclosed shopping mall, and a solar-paneled barn. For some flashes, they could find nothing at all. Those remain "UFOs" to this day! 

Learn more about SHARP at www.nasasharp.com and Earth science applications of MISR at www-misr.jpl.nasa.gov. Kids can do an online MISR crossword at spaceplace.nasa.gov/en/kids/misr_xword/misr_xword1.shtml.

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

The River's Edge

BY ERIC YOUNG

Garage band on a Saturday night

OCTOBER 9, 2004 How appropriate, in an issue with lots of weather information, that the weather did not cooperate for our regular monthly meeting. That's okay. The stalwarts who showed up just parked their lawn chairs in Gary Kronk's garage. We whiled away the evening with friendly banter, talking of astronomy, politics, baseball, and more. Gary showed images of objects like M42 that he's made lately using his new Canon Digital Rebel camera, his refractor and image-processing software. Impressive results so far...

FEEL THE BEAT Gary's teenage son just got a pair of 300,000 watt stereo speakers and was trying them out. I couldn't evaluate the tonal quality but the overall effect measured 6.5 on the Richter scale. Maybe you'll recognize the band he was listening to: thump, thumpa thump thump, thumpa thump, thump, thump...

ARIZONA VACATION Bruce Kryfka and his wife enjoyed a late September foray up Kitt Peak to see the observatories there. The couple spent most of a day touring the facilities. Look for Bruce's pictures in the next newsletter.

LUNAR ECLIPSE The group decided to meet on October 27th in St. Jacob Park to view the total lunar eclipse that evening. "Eclipses influence society," reminds Gary. "Usually they scare the pants off people." How our guests choose to enjoy themselves is their prerogative, but we never got the chance to meet, pants-less or otherwise — we later canceled due to heavy cloud cover.

ASTROFEST REPORT "Astrofest [the big northern Illinois star party] was a blast," reports John Schwartz. "You see stuff at a large star party that you don't see around here. You get a sense for how good different equipment is and how well it delivers. Big scope users all love that 31mm Nagler eyepiece, that 'little grenade' as some people like to call it."



Bucher survives arachnid encounter

Never challenge a venomous Chilean tarantula to a staring contest — that's what Tim Bucher learned during a behind-the-scenes visit to the St. Louis Zoo. Actually, Tim cheated by closing his eyes the whole time. Or — is he wincing in pain as the spider sinks its fangs into Tim's flesh? Rosie really dug Tim's RBAC t-shirt...

WAIT WATCHERS Folks were getting antsy about the pending arrival of the club's P.S.T. That's our new Personal Solar Telescope, which uses a Hydrogen-alpha filter to safely block the Sun's harmful rays and show prominences and other features that basic solar filters don't reveal. [As this issue went "to press," the slow mule carrying our P.S.T. sped up considerably, and sungazers were planning a Halloween gathering using the little scope to ogle our favorite star.]



CLEARLY CLOUDY The U.S. Postal Service has issued 37-cent “Cloudscapes” commemorative postage stamps. “With these spectacular images, we’ve captured the wonder of nature and the power of the world’s weather to shape our lives and our land,” says William Johnstone, Secretary of the Board of Governors, U.S. Postal Service. “These cloudscapes are beautiful reminders of our ties to the larger environment we live in — an environment of air and water that sustains us all.” The Cloudscapes stamp sheet includes 15 stamps based on photographs of nine cloud formations and are arranged on the stamp pane according to altitude.

NIGHT LIGHT Recently, Deb Wagner purchased one of these goodies, a nifty chart-viewer with a Telrad bullseye built-in. Here’s what the web site has to say: “The Teleguide has a lighted Telrad-style reticle, made from scratch resistant Lucite, which you can lay down on the page to clearly see where you need to go on the map. Simply find the object you want to view on your sky chart, place the Teleguide over it and line up your Telrad to match the view. The unit has a variable intensity so the brightness can be adjusted to your individual tastes.” The product is available for other finders and star atlases, too. **More information:** www.actonastro.com



NEW VIEW An unusual telescope from Orion... But \$999? Here are comments from optical pro Jack Glassman, assistant professor of physics at SIUE:


“Orion’s site gives precious little info. on its new ‘Clear Aperture’ reflector, but I gather that it’s a 3.6” aperture that uses an off-axis parabola (OAP) instead of the usual on-axis kind. This allows the secondary mirror to be moved out of the path of the incoming light.

“OAPs are pricey! The easiest way to make them is to grind a big mirror (at least twice the diameter of the “daughter” mirror — the one you actually want) and then to cut out the daughters from the ‘mother.’ (There are computerized techniques that allow this step to be bypassed, but it’s usually not worth the effort.) Orion may start with an 8” mirror and get somewhere between four and eight daughters from each mother. That’s why the aperture is so small — any bigger and the mother would be much more cumbersome.



“The biggest downside of a ‘scope like this, other than the price, is that OAPs are famously difficult to align. There’s one more degree of freedom than with a conventional parabola. The primary mirror must be adjusted for rotation as well as the usual ‘tip-tilt.’ This adds expense to the system and difficulty to its ownership. Failure to get the rotation dead-on will lead to aberrations far more detrimental to image quality than those caused by the obstructions avoided by the use of the OAP!

“Orion doesn’t give the $f/\#$ of their gizmo, but I’d guess that it’s somewhere between $f/8$ and $f/6$. By accepting an $f/\#$ of about $f/10$ (or slower), one could accomplish the same goal, removing the center obstruction, while using a spherical mirror. This is the workaround used by Hershel. Of course, this leads to a ‘scope that is cumbersome and not terribly good for deep-sky objects. (Recall that Hershel was into planets, so a slow system was just fine for him.)

“I’d want to have a good, long look at Orion’s mechanical system before I dropped \$1k on this telescope. Even so, I’m glad to see an advanced optical system trickle down to the amateur market.”  **More information:** www.telescope.com

November 2004



October 2004

S	M	T	W	T	F	S
26	27	28	29	30	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

December 2004

S	M	T	W	T	F	S
28	29	30	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1

■ Holidays
 ■ Moon Phases
 ■ RBAC
 ■ Space Mission
 ■ Observing
 ■ Trivia

Sun	Mon	Tue	Wed	Thu	Fri	Sat
31 <ul style="list-style-type: none"> ● Halloween ● DST ends 	1	2	3 <ul style="list-style-type: none"> ● Taurids peak ● 1957: Laika in orbit 	4 <ul style="list-style-type: none"> ● Last quarter 11:54 p.m. 	5 <ul style="list-style-type: none"> ● Venus close (33') to Jupiter 	6
7	8	9 <ul style="list-style-type: none"> ● Carl Sagan born 1934 	10	11 <ul style="list-style-type: none"> ● In 1572 Tycho Brahe sees his famous "nova stella" 	12 <ul style="list-style-type: none"> ● New Moon 8:27 a.m. 	13 <ul style="list-style-type: none"> ● RBAC meeting 7 p.m.
14	15 <ul style="list-style-type: none"> ● SMART-1 Moon orbit insertion 	16	17 <ul style="list-style-type: none"> ● Leonids peak in the a.m. 	18 <ul style="list-style-type: none"> ● First quarter 11:50 p.m. 	19	20 <ul style="list-style-type: none"> ● Edwin Hubble born 1889
21	22	23	24	25 <ul style="list-style-type: none"> ● Thanksgiving Day 	26 <ul style="list-style-type: none"> ● Full Moon 2:07 p.m. 	27
28 <ul style="list-style-type: none"> ● Mariner 4 Launch (1964) 	29	30	1	2	3	4