July 2006

The Voyager

East Valley Astronomy Club

Volume 20 Issue 7

From the Desk of the President
by Steven Aggas, 2006 EVAC President

Monsoons are expected to arrive in the Valley soon, maybe even before the next New Moon on July 25th at 4:31UT so try to get your observing in before then as it could become a cloud dodging endeavor for the next couple of months. I, personally, have a project to keep me busy if it's cloudy. Having come from Michigan, the third worst observing state in the union, there was always plenty of time to become good at building scopes and eating. Once a year we'd get an awesome night for observing, but here in AZ one can become spoiled with as many great nights as we get. Monsoons kind of keep that in check (not!). I'm sure we'll get some usable nights this month, but the "down-time" is good for catching up on generating observing lists, reading, or modifying your scopes. Keep on buildin'!

Additionally, I would like to thank all those volunteers who came out and braved the 110+ degree heat to help assemble the dome that now sits atop the six foot wall, just over the hill where we host the Public Star Party, at the Riparian Institute. In the not-to-distant future we'll be observing from there immediately after the meetings on Friday nights! How cool is that!

Our speaker for the July EVAC meeting will be Paul Scowen from the Department of Physics & Astronomy at ASU. Join us at the Southeast Regional Library (Gilbert Public Library) on Friday, July 21st at 7:30PM.

The Backyard Astronomer
Common Public Myths *by Bill Dellinges*

"What power is your microscope?" Oh boy, where do you start in answering and correcting that question! I have noticed over the years of doing public star parties that I often hear the same astronomical misconceptions among our loveable peanut gallery. Let's look at a few.

The first sentence in the above paragraph contains two. First we must point out we gazers use telescopes, not microscopes. Then it must be explained both these instruments do not have set powers but can be varied by using different eyepieces. Oh, by the way, our passion is astronomy, not astrology.

"Shooting stars" are not stars that have fallen out of the sky. They are meteors - bits of dust or rock about the size of a grain of sand - burning up from friction with air molecules as they plunge into our atmosphere. The bright streak we see is mostly due to the meteor's heating of those molecules in the air about 50 miles up, thus causing them to emit light. Fragments of asteroids and comets are the source of this material. As Earth orbits the Sun, it acts as a cosmic vacuum cleaner, sweeping up this detritus.

Comets do not shoot across the sky. People confuse them with meteors, which do. Comets, the "dirty snowballs" of the Solar System, are about the size of a large city and though traveling fast, seem to just sit in the same sky position for hours because they are millions of miles away. The source of most meteors is

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- *Public Star Party in Gilbert - July 14*
- *General Meeting at Southeast Regional Library - July 21*
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The Backyard Astronomer

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probably debris liberated from dusty comet tails.

Polaris is not the brightest star in the sky. One can find about 50 stars brighter than second magnitude Polaris. It's famous not for its brightness but rather for being our "North Star", whose location near the celestial north pole indicates the direction of north (better than a magnetic compass does in the western U.S., where in Phoenix, for example, the compass needle points to magnetic north about 13 degrees east of true north).

The Big Dipper is not a constellation. It is an "asterism" (from the Greek aster, for star), the seven brightest stars of Ursa Major, the Great Bear. An asterism is made by borrowing stars from our 88 official constellations to create a non-official object.

The moon's phases are not caused by Earth's shadow. They're caused by the play of sunlight on the moon as it revolves around earth.

There is no such thing as the "dark side of the Moon." That is, there is no side of the moon which is constantly in darkness. During the lunar month, every acre on the moon will be sunlit eventually (with the possible exception of a deep crater near one of the Moon's poles).

The moon is bigger on the horizon than when higher in the sky. Ah yes, the famous "Moon Illusion." A real can of worms here. In short, it's an optical illusion. Note the constellations also look huge when they first rise. Then later in the night, on the meridian, they look only about half the size they were when seen rising. For an excellent piece on this subject, see E.C. Krupp's article in the April 2006 issue of S&T magazine, p. 43.

Our Sun is a star folks. Just like all the other stars you see at night. Except for a bright planet that might be out (which orbits or revolves around the Sun), all those points of light are "Suns" in their own right. Take a spaceship to one (bring a lunch) and when you get close enough it would begin to look just like our Sun – a big bright ball of glowing hydrogen gas. It might be a different color though, either red, yellow, or blue-white, depending on its surface temperature.

Revolution versus *rotation*: The Earth rotates about its axis in one day. It revolves around the sun once a year.

In winter, the Earth is farthest from the Sun, that's why it's cold. NO! The Earth is actually closer to the sun in January when it's winter in the northern hemisphere. At that time we're only 92 million miles from the Sun (Perihelion). In July we're 95 million miles from our solar furnace (Aphelion). The 3 million mile difference in the distance to the Sun is minor compared to the real reason we feel warm or cold – the 23 ½ degree tilt of the planet. In winter when we're closest to the sun, the north pole is tilted away from the sun; thus light rays fall at a shallow angle in the northern hemisphere. Six months later, in July, the north pole is pointed towards the Sun and though more distant, the Suns rays fall more directly upon the ground.

If that isn't enough to warp your brain, hold on, because I would be remiss not to mention two other related points. 1) It's important to note that the rotational axis of Earth in the above description is not changing or switching around; it remains pointed in the same direction all year - at Polaris. It's just that on one side of our Sun the northern hemisphere is facing away from the Sun and 6 months later, towards the Sun. Think about it; for this to happen, the axis doesn't need to flip around. (Note: over long periods, this axis does move completing one wobble every 26,000 years - that's Precession, another story!). 2) Astute thinkers may spot a flaw here. Wait, you say! If the Earth is closest to the Sun in winter for us, and it's summer in the southern hemisphere, then why doesn't the combination of closeness and their hemisphere facing the Sun more directly lead to blistering summers down there? (Or for that matter, 6 months later, have more severe winters than their northern brethren). The answer lies in the fact that the southern hemisphere has more water or oceans than the north. All this additional water mediates heat distribution and causes seasonal temperature differences to be about equal in both hemispheres.

Solar System, Galaxy, Universe hierarchy. People, people, people. Here's the deal: The Solar System is composed of the Sun and its nine planets, along with some small asteroids (thousands) and comets (millions). Since Pluto is about 3 billion miles from the Sun, that's basically the Solar System's radius. Twice that would be its diameter. The Sun is one of perhaps 200,000 billion stars in the Milky Way Galaxy which has a diameter of about 100,000 light years (one light year equals about 6 trillion miles). Thus our Sun resides within the Milky Way Galaxy. The Galaxy rotates carrying the stars about its center. The sun takes 200 million years to go around once. Galaxies are the largest single building blocks of "stuff" out there. Almost all stars must reside in one. There are some stellar and planetary stragglers between galaxies; but they likely were ejected during galactic collisions. Astronomers estimate there may be as many as 100 billion galaxies out there. Taken all together, they comprise our "Universe."

Most of the general public who attend our star parties may well fall victim to some of these fallacies. Your mission, should you choose to accept it, is to assure they go home correctly informed on these matters…and later, before they fall asleep that night, think about that incredible view of Saturn they saw in your telescope!

The Last New Moon Weekend?

by Peter Argenziano

What an ominous sounding title for a newsletter article. Truth is, the rhetorical question, in full, ponders whether we have just had our last new Moon weekend before the monsoon storms begin this year.

I had reserved this space for what I thought would be a wonderful recap of a two or three night observing trip to northern Arizona, specifically to the Five Mile Meadow site. But it was not to be.

As many of us made our plans to head for the hills for the June new Moon weekend, the Arizona wildfire season had already begun. On June 23rd the Forest Service closed the entire Coconino National Forest, thereby ending our hopes of observing from the dark skies located there. While we were all disappointed, we certainly understood the reasoning behind the closure.

On to plan B.

Next, I planned a trip down to the Sierra Vista area for Friday night to do some observing with StellarCAT owner Gary Myers. But it was not to be. By Wednesday thunderstorms had moved in to the southeastern corner of the state.

On to plan C.

In addition to the lure of its dark skies, Five Mile Meadow offers us desert dwellers another welcome and enjoyable facet: a short respite from the sweltering heat. So, in drafting an alternate observing plan many were seeking higher altitudes. For some this would entail a trip to SAC's Cherry Road II observing site. For others, including yours truly, it offered an opportunity to investigate the Griffith Ranch site. Disappointment was replaced with anticipation.

As new Moon weekend neared, many occupied themselves with the analysis of weather data. Anticipation was coupled with cautious optimism as it now appeared the weekend could include partly cloudy skies. Some cancelled their plans, others adopted a wait-and-see attitude.

Three of us -- Dan Gruber, Joe Goss and myself -- decided to head up to the Griffith Ranch site on Thursday, June 22nd. We rationalized that we would get in at least one good night before the bad weather rolled in.

As I hitched my trailer to the truck beneath the midday sun, I noticed the bank of clouds that was just upon the southeastern horizon a couple of hours earlier had now moved considerably higher. Dan and I revisited all of the usual weather sites. All except the Clear Sky Clock called for mostly clear skies on Thursday night. The Clear Sky Clock indicated mostly cloudy skies. We even called the Globe District ranger's office. They assured us we could expect mostly clear skies. OK… time to go.

As I passed through Superior the clouds had now consumed a third of the sky. I drove on. By the time I climbed out of Globe two-thirds of the sky was engulfed in clouds. Still, I drove on. By the time I reached the observing site the sky was almost completely cloudy.

Dan had arrived first, and we were joined by Joe a short while later. We parked our vehicles and gathered to discuss the situation. The outcome of our conversation, complete with a weather consultation courtesy of Joe's cell phone, was that we had driven almost two hours to get here and that that certainly merited staying the night even if it amounted to nothing more than a camping trip.

I watched as Joe and Dan unloaded their vehicles and set up their tents. My emptied trailer would serve as my overnight accommodations. An hour or so later we had all set up camp and our telescopes.

As we circled our chairs to have dinner and converse, we all openly hoped the clouds would move out after dark. The sun set and the clouds remained. Civil twilight ended beneath the same cloudy skies. The end of nautical twilight offered no improvement. But, by the time astronomical twilight ended Jupiter could be plainly seen along with five or six bright stars. Everyone spent a little time with Jupiter.

As it grew darker the skies cleared in small patches, sometimes only momentarily. In this way we would spend the next several hours, taking what we could get… none of which was very good. Joe was the first to succumb to the clouds, heading for his tent around 01:00. Dan and I lasted another hour. As I climbed into my trailer, I noticed that the skies were then the clearest they had been all night, but I was too tired to enjoy them at that point.

As we gathered for coffee in the morning, we agreed to wait until mid-afternoon to decide on staying another night. By 14:00 the cloudiness had worsened and we all decided to pack up and head back to the valley.

But it hadn't been a wasted trip at all. We got to check out a promising new site -- quite sizeable, decent horizons, minimal light domes from Globe and Phoenix. About the only negative was that the dirt road from US60 to the site (about 2½ miles worth) is rather heavily washboarded in spots. We had a pleasant evening spent talking astronomy and doing a little observing in the cooler climes afforded by 4500' elevation.

We all agreed to return again.

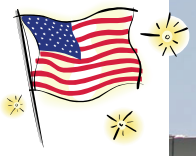
Riparian Rotary Observatory Update

As many of you already know, an observatory is being constructed on the grounds of Water Ranch at the Riparian Preserve. Nearly two years after the groundbreaking ceremony, the site really looks like an observatory.

On the weekend of June 3 -4, 2006 a group of volunteers gathered in extreme heat to assemble the dome. The crew cheerfully labored throughout the weekend to assemble the 5-meter Observa-Dome; which was subsequently hoisted atop the observatory structure on June 5.

On behalf of the Riparian Institute, Gilbert Rotary, EVAC, and the countless numbers who will ultimately enjoy this facility, please join in a sincere expression of gratitude to the following volunteers: Randy Peterson, John Holmquist, Peter Argenziano, Martin and Joan Thompson, Don Wrigley, Julie Brozio, Marty Pieczonka, Charles Crawford, Al Lubin, Randall Stark, Steven Aggas, Jack Grbcich, David Coshow, Wayne Thomas, Steve Feist, Steve Grifford, Claude Haynes, and Win Pendleton.

www.rotaryjobs.org



July Guest Speaker : Dr. Paul A. Scowen

Dr. Paul A. Scowen, Research Professional in the Physics and Astronomy department at Arizona State University, will be the guest speaker this month.

Dr. Scowen's research interests include the interplay between massive stars and star formation in the surrounding environment; collaborative development of space mission concepts and missions to survey star formation in both the near and far Universe in an attempt to understand the critical quantities and factors that affect the formation and evolution of stars and planetary systems in massive star-forming environments; and the physics of the relativistic particle wind from the Crab Nebula pulsar, and the interaction of the wind with the extended remnant.

Dr. Scowen's talk is entitled 'The Orion MIDEX Star Formation Survey Mission'.

The Orion MIDEX mission is a 1.2m UV-visual observatory orbiting at L2 that will conduct the first-ever high spatial resolution survey of a statistically significant sample of visible star-forming environments in the Solar neighborhood in emission lines and continuum. This survey will be used to characterize the star and planet forming environments within 2.5 kpc of the Sun, infer global properties and star formation histories in these regions, understand how environment influences the process of star and planet formation, and develop a classification scheme for star forming regions. Based on these findings a similar survey will be conducted of large portions of the Magellanic Clouds, extending the classification scheme to new types of regions common in external galaxies, allowing the characterization of low mass star forming environments in the Magellanic Clouds, study of the spatial distribution of star forming environments and tracing of star formation history. Finally the mission will image a sample of external galaxies out to ~5 Mpc. The distribution of star forming region type will be mapped as a function of galactic environment to infer the distribution and history of low-mass star formation over galactic scales, and characterize the stellar content and star formation history of galaxies.

2006 Financial Snapshot
by Wayne Thomas, Treasurer

What follows is a brief synopsis of the financial status of East Valley Astronomy Club for the period covering January 1 through May 31, 2006.

Membership total as of April: 195

New in May: 2

Renewals in May: 4

(Paid through 12/31/2006): 179

(Memberships Expired 2005) 86
Total as of 5/31/2006: 201

May Income

Dues $268.75

Name Badges $20.00

Sky & Telescope $230.66

Astronomy $60.00

Other $50.00

Total (Register) $629.41

May Expenses

Newsletter & Postage $45.89

Speaker Honorarium $75.00

AAMM/awards $6.83

Meeting Refreshments $22.57

Sky & Telescope $230.65

Astronomy $60.00

Name Badges $12.45

Accounting Charges $2.00

Total (Register) $455.39

Check Register

Beginning Balance		$6,347.25
Deposits	+	$ 629.41
Expenses	-	$ 455.39
Ending Balance	=	$6,521.27
Plus Petty Cash	+	$ 56.30
May Ending Balance		$6,577.57

May Cash Flow		$ 174.02
YTD Beginning Balance		$ 5,940.21
Deposits	+	$ 4,235.93
Expenses	-	$ 3,662.08
Ending Balance	=	$ 6,521.27
Plus Petty Cash	+	$ 56.30
YTD Ending Balance		$6,577.57
YTD Cash Flow		$ 581.06

Classified Advertisements

Thousand Oaks Solar Filter

Thousand Oaks white-light solar filter is a 2+ and is nearly new. It comes with a foam-fitted cigar box case. This filter fits the 4.5" newt listed below. Price $50.

If you are interested, please contact Steven Aggas.

Contact info:

president@eastvalleyastronomy.org

4.5" f9 Reflector

The 4.5" f9 telescope has a glass mirror and a 1.25" focuser. The tube has some dents as it was used as a guidescope on my 20" for imaging. The equatorial mount (no motors) has new oak legs. Price $150.

If you're interested, please contact Steven Aggas.

Cassini Realtime Operations Webcast

Presented by David Doody

Flight Operations Lead

Cassini Mission Support & Services Office

The webcast begins at 7:00 PM PDT

http://realserver1.jpl.nasa.gov:8080/ramgen/broadcast/live.rm?mode=compact

Thursday, July 20 The von Kármán Auditorium at JPL

4800 Oak Grove Drive

Pasadena, CA

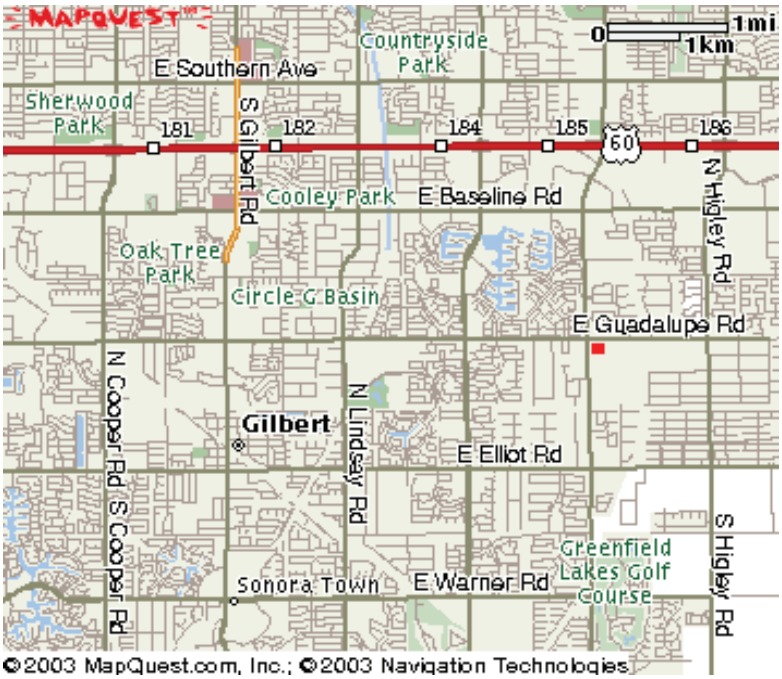
Details: http://www.jpl.nasa.gov/events/lectures/jul06.cfm

www.RotaryObs.org

Advertisements for astronomical equipment or services will be accepted from current EVAC members only. Ads will be published as space permits and may be edited. Ads should consist of a brief text description and must include a current member name and phone number. You may include your email address if you wish. Ads will be published until canceled (as space allows), so please inform the editor when your item has sold.

Ads should be emailed to: news@eastvalleyastronomy.org

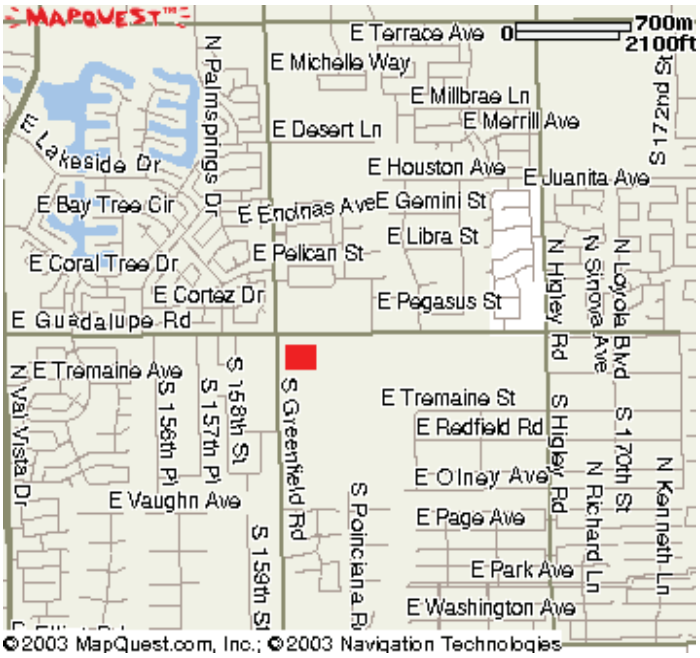
Support your local telescope dealer!



The monthly general meeting is your chance to find out what other club members are up to, learn about upcoming club events and listen to presentations by professional and well-known amateur astronomers.

Our meetings are held on the third Friday of each month, at the Southeast Regional Library in Gilbert. The library is located at 775 N. Greenfield Rd., on the southeast corner of Greenfield and Guadalupe Roads. Meetings begin at 7:30pm.

Visitors are always welcome!



2006 Meeting Dates

July 21

August 18

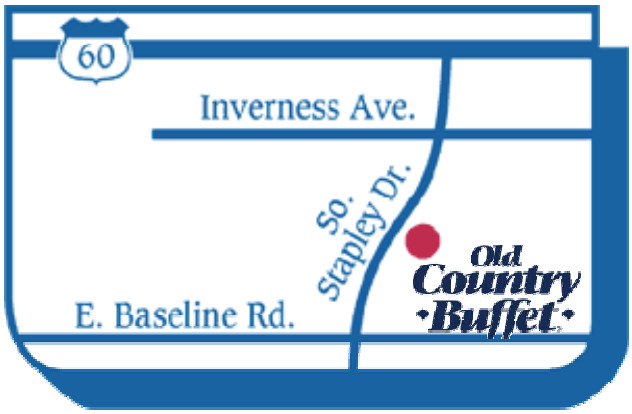
September 15

October 14 ***Special Date***

November 17

December 15

Southeast Regional Library
775 N. Greenfield Road
Gilbert, AZ 85234



All are welcome to attend the pre-meeting dinner at 5:30 PM. We meet at **Old Country Buffet**, located at 1855 S. Stapley Drive in Mesa. The restaurant is in the plaza on the northeast corner of Stapley and Baseline Roads, (near the Walmart Supercenter) just south of US 60.

Old Country Buffet 1855 S. Stapley Drive in Mesa

July 2006

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						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					

Schedule of Events

- *July 14 - Public Star Party at Riparian Preserve in Gilbert*
- *July 21 - General Meeting at Southeast Regional Library in Gilbert*
- *July 22 - Local Star Party at Boyce Thompson Arboretum State Park*
- *July 29 - Deep Sky Star Party at Vekol Road*

Minutes of June General Meeting

Meeting date: Friday, June 16, 2006

Meeting location: Southeast Regional Library in Gilbert

Roughly 60 people were in attendance at the July meeting. President Steven Aggas began by having Board members and visitors introduce themselves. Events Coordinator Randy Peterson gave dates for upcoming star parties. Peter Argenziano announced that Frank Pino received an observing award for the EVAC Galaxies program (he imaged all 113 galaxies on the list).

Win Pendleton gave a status report on progress for the Gilbert Riparian Observatory. A team of 19 people installed the dome in 7 hours, and it is an inspirational sight as one approaches the club meetings. He is looking for a reasonable estimate for electrical work, after which the telescope will be installed. A target grand opening date is mid-September. Win also announced that the official name is now the Gilbert Rotary Centennial Observatory.

Wayne Thomas gave a brief Treasury report, and mentioned that his term will be up at year's end. He would gladly train an "apprentice" for this position to ease the transition into 2007.

Howard Israel followed up on the SOFIA airborne observatory project's solicitation for renewal in the 2007 federal budget, which were conveyed by last month's EVAC speaker Ted Dunham. Howard's son Steve is one of 435 U.S. representatives. He met with Dunham, and then the NASA administrator, and things appear to be on track again. Howard followed with a beginner's Q&A session, which went for 10 minutes of good questions and even better answers.

Steven Aggas gave a member presentation on building the beast -- a 36" telescope. He discussed the construction of the giant mirror cell, which will allow for collimation from the eyepiece. Like Steven's other projects, it will be an impressive piece of work when it's complete.

The main speaker was Tom Polakis, who presented on "The Return of Sky Photography." Tom showed how he has used simple equipment for the past 30 years to create pleasing astroimages. After some technical discussion, he showed examples of his work.

STS-121 Discovery

The Space Shuttle Discovery and its seven-member crew are set to launch from NASA's Kennedy Space Center at 3:49 p.m. EDT on Saturday, July 1.

Commander Steve Lindsey and his crew will continue evaluating new shuttle safety improvements during the 12-day mission. They'll also carry supplies and a third crew member to the International Space Station. At least two spacewalks are planned.

East Valley Astronomy Club -- 2006 Membership Form

Please complete this form and return it to the club Treasurer at the next meeting or mail it to EVAC, PO Box 2202, Mesa, Az, 85214-2202. Please include a check or money order made payable to EVAC for the appropriate amount.

IMPORTANT: All memberships expire on December 31 of each year.

Select one of the following:

☐ New Member ☐ Renewal ☐ Change of Address

New Member Dues (dues are prorated, select according to the month you are joining the club):

☐ **$30.00 Individual** January through March

☐ **$35.00 Family** January through March

☐ **$15.00 Individual** July through September

☐ **$17.50 Family** July through September

☐ **$22.50 Individual** April through June

☐ **$26.25 Family** April through June

☐ **$37.50 Individual** October through December

☐ **$43.75 Family** October through December

Includes dues for the following year

Renewal (current members only):

☐ **$30.00 Individual** ☐ **$35.00 Family**

Magazine Subscriptions (include renewal notices):

☐ **$34.00** Astronomy ☐ **$33.00** Sky & Telescope

Name Badges:

☐ **$10.00** Each (including postage) Quantity: _____

Name to imprint: _____

Total amount enclosed: _____

Please make check or money order payable to EVAC

☐ Payment was remitted separately using PayPal ☐ Payment was remitted separately using my financial institution's online bill payment feature

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Name: _____ Phone: _____

Address: _____ Email: _____

☐ Publish email address on website

City, State, Zip: _____ URL: _____

How would you like to receive your monthly newsletter? (choose one option):

☐ Electronic delivery (PDF) *Included with membership* ☐ US Mail **Please add $10 to the total payment**

Areas of Interest (check all that apply):

☐ General Observing ☐ Cosmology

☐ Lunar Observing ☐ Telescope Making

☐ Planetary Observing ☐ Astrophotography

☐ Deep Sky Observing ☐ Other

Please describe your astronomy equipment:

Would you be interested in attending a beginner's workshop? ☐ Yes ☐ No

How did you discover East Valley Astronomy Club? _____

PO Box 2202
Mesa, AZ 85214-2202
www.eastvalleyastronomy.org

All members are required to have a liability release form (waiver) on file. Please complete one and forward to the Treasurer with your membership application or renewal.

Liability Release Form

In consideration of attending any publicized Star Party hosted by the East Valley Astronomy Club (hereinafter referred to as "EVAC") I hereby affirm that my family and I agree to hold EVAC harmless from any claims, liabilities, losses, demands, causes of action, suits and expenses (including attorney fees), which may directly or indirectly be connected to EVAC and/or my presence on the premises of any EVAC Star Party and related areas.

I further agree to indemnify any party indicated above should such party suffer any claims, liabilities, losses, demands, causes of action, suits and expenses (including attorney fees), caused directly or indirectly by my negligent or intentional acts, or failure to act, or if such acts or failures to act are directly or indirectly caused by any person in my family or associates while participating in an EVAC Star Party.

My signature upon this form also indicates agreement and acceptance on behalf of all minor children (under 18 years of age) under my care in attendance.

EVAC only recognizes those who are members or invitees and who also have a signed Liability Release Form on file as participants at an EVAC Star Party.

_____ _____

Please print name here *Date*

_____

Please sign name here

PO Box 2202
Mesa, AZ 85214-2202
www.eastvalleyastronomy.org

From Thunderstorms to Solar Storms...

by Patrick L. Barry

When severe weather occurs, there's a world of difference for people on the ground between a storm that's overhead and one that's several kilometers away. Yet current geostationary weather satellites can be as much as 3 km off in pinpointing the true locations of storms.

A new generation of weather satellites will boost this accuracy by 2 to 4 times. The first in this new installment of NOAA's Geostationary Operational Environmental Satellites series, called GOES-N, was launched May 24 by NASA and Boeing for NOAA (National Oceanic and Atmospheric Administration). (A new polar-orbiting weather satellite, NOAA-18, was launched May 2005.)

Along with better accuracy at pinpointing storms, GOES-N sports a raft of improvements that will enhance our ability to monitor the weather—both normal, atmospheric weather and "space weather."

"Satellites eventually wear out or get low on fuel, so we've got to launch new weather satellites every few years if we want to keep up the continuous eye on weather that NOAA has maintained for more than 30 years now," says Thomas Wrublewski, liaison officer for NOAA at NASA's Goddard Space Flight Center.

Currently, GOES-N is in a "parking" orbit at 90° west longitude over the equator. For the next 6 months it will remain there while NASA thoroughly tests all its systems. If all goes well, it will someday replace one of the two active GOES satellites—either the eastern satellite (75°W) or the western one (135°W), depending on the condition of those satellites at the time.

Unlike all previous GOES satellites, GOES-N carries star trackers aboard to precisely determine its orientation in space. Also for the first time, the storm-tracking instruments have been mounted to an "optical bench," which is a very stable platform that resists thermal warping. These two improvements will let scientists say with 2 to 4 times greater accuracy exactly where storms are located.

Also, X-ray images of the Sun taken by GOES-N will be about twice as sharp as before. The new Solar X-ray Imager (SXI) will also automatically identify solar flares as they happen, instead of waiting for a scientist on the ground to analyze the images. Flares affect space weather, triggering geomagnetic storms that can damage communications satellites and even knock out city power grids. The improved imaging and detection of solar flares by GOES-N will allow for earlier warnings.

So for thunderstorms and solar storms alike, GOES-N will be an even sharper eye in the sky.

Find out more about GOES-N at goespoes.gsfc.nasa.gov/goes . Also, for young people, the SciJinks Weather Laboratory at scijinks.nasa.gov now includes a printable booklet titled "How Do You Make a Weather Satellite?" Just click on Technology.

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

New GOES-N satellite launches, carrying an imaging radiometer, an atmospheric sounder, and a collection of other space environment monitoring instruments.

If it's Clear...

by Fulton Wright, Jr.
Prescott Astronomy Club

July 2006

Shamelessly stolen information from Sky & Telescope magazine, Astronomy magazine, and anywhere else I can find info. When gauging distances, remember that the Moon is 1/2 a degree or 30 arc minutes in diameter. All times are Mountain Standard Time unless otherwise noted.

On Saturday, July 1, after 9:00 PM, be sure to catch the odd arrangement of satellites and stars near Jupiter which we mentioned last month. There are several interesting patterns during the first week or so.

On Sunday, July 9, almost any time that night, you can see the northwest part of the Moon at its best. Libration tips that part toward us.

On Monday, July 10, at 8:01 PM, the full Moon rises, so forget the faint fuzzies for tonight.

On Wednesday, July 12, at 10:58 PM, you can see a couple of events with Jupiter's moon, Europa. With a medium (6 inch) telescope look 20 degrees above the southwest horizon for Jupiter. The shadow of Europa will just be falling on the planet. 6 minutes later the satellite will appear on the other side as it moves from in front of the planet. Earlier

in the evening Callisto passes directly north of Jupiter.

On Thursday, July 20, at 1:39 AM (sorry) you can see 2 of the Pleiades stars appear from behind the Moon. With binoculars or a small (3 inch) telescope look just above the northeast horizon for the crescent moon. The stars will appear from behind the dark part of the Moon, near the top of the invisible part of the disk. The first is Pleione (28 Tauri, mag 5), the second (4 minutes later) is Atlas (27 Tauri, mag 4).

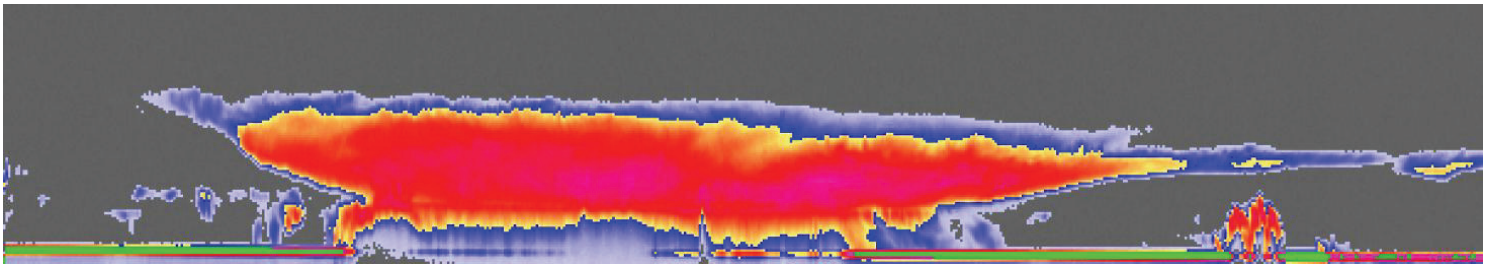
On Friday, July 21 (and the next day), about 8:30 PM, you can see a star near a planet. With binoculars or a small (3 inch) telescope look 10 degrees above the west horizon for Regulus and Mars (each about mag 2) less than 1 degree apart.

On Monday, July 24, it is new Moon, so you can hunt for faint fuzzies all night.

On Sunday, July 30, starting at 8:05 PM, you can see some events with Jupiter's moons. With a medium (6 inch) telescope look 35 degrees above the southwest horizon. (It will be a little hard to find in the twilight.) The shadow of Europa will just be leaving the planet. 8 minutes later

the shadow of Io falls on the planet. At 9:06 PM Io moves from in front of the planet, and at 10:21 PM Io's shadow

leaves the planet.



NASA's new CloudSat satellite captured its first tropical storm, Alberto, as it spun over the Gulf of Mexico the morning of June 12, 2006. The CloudSat data show a storm that reaches about 16 kilometers (10 miles) in height and extends perhaps 1,000 kilometers (621 miles) in scale. The green line at the bottom of the CloudSat image is the radar echo of the Earth's surface. Where this line starts to disappear (change color) under the storm is where the rainfall is heaviest. Very heavy rainfall can be seen over about 400 kilometers (249 miles) of the satellite track.

Image Credit: NASA/JPL/NOAA/The Cooperative Institute for Research in the Atmosphere (CIRA), Colorado State University

First Quarter Moon on July 3 at 09:37

Full Moon on July 10 at 20:01

Last Quarter Moon on July 17 at 12:13

New Moon on July 25 at 21:31

2006 Grand Canyon Star Party -- North Rim

by Bill Dellinges

Once again I attended the north rim SP to avoid the June masses of the south rim. The key word this trip was FIRE. Driving north, I could see the Sedona fire. Then I saw a good size fire south east of Flagstaff. Approaching the north rim plateau on Highway 89, we could see we'd have to drive through it, or pretty close anyway. This turned out to be not a problem on this day, but 5 days later a wind change forced the closing of both 89 and route 67 from Jacob Lake to the lodge. Folks were not allowed in or out. Luckily, we slipped out on our departure day as the road was closed the days before and after our departure. From Jacob Lake the fire's plume rose like an A-Bomb explosion. While there, the burned area increased from 10,000 acres to 49,000 acres.

The smoke didn't bother us being 30 miles south of the fire. All 5 of our nights were clear. At 8000 feet (1000' higher than the south rim) the night sky was glorious, save for the usual slightly annoying lodge lights here and there.

The number of scopes ranged from about 6 to 10 during our stay. EVAC member Tim Sexton was there with his NP101 and Nexstar 11. Several Dobs from 18-25" were on hand along with smaller ones and a couple TV85's. PST's and a 60mm Coronado on an SDF 4" provided solar views during the day. I was delighted to spot a Kaibab Squirrel (big bushy white tail, only found there) and a Western Tanager during hikes. One night a small owl flew into the lodge wall or window in front of us and knocked itself out – how often do you see that? Fortunately, after about 15 minutes, it came to and flew off between two people at their scope.

Using my C8 one night, I was very surprised to discover that the star 5 Serpentis is a neat double: Mags 5.1 and 10.1, Sep 11.4", PA 35 degrees. This is the star in the same field as the globular star cluster M5. Used it a million times to find M5 and had never noticed it was a double! Check it out, it's a cutie.

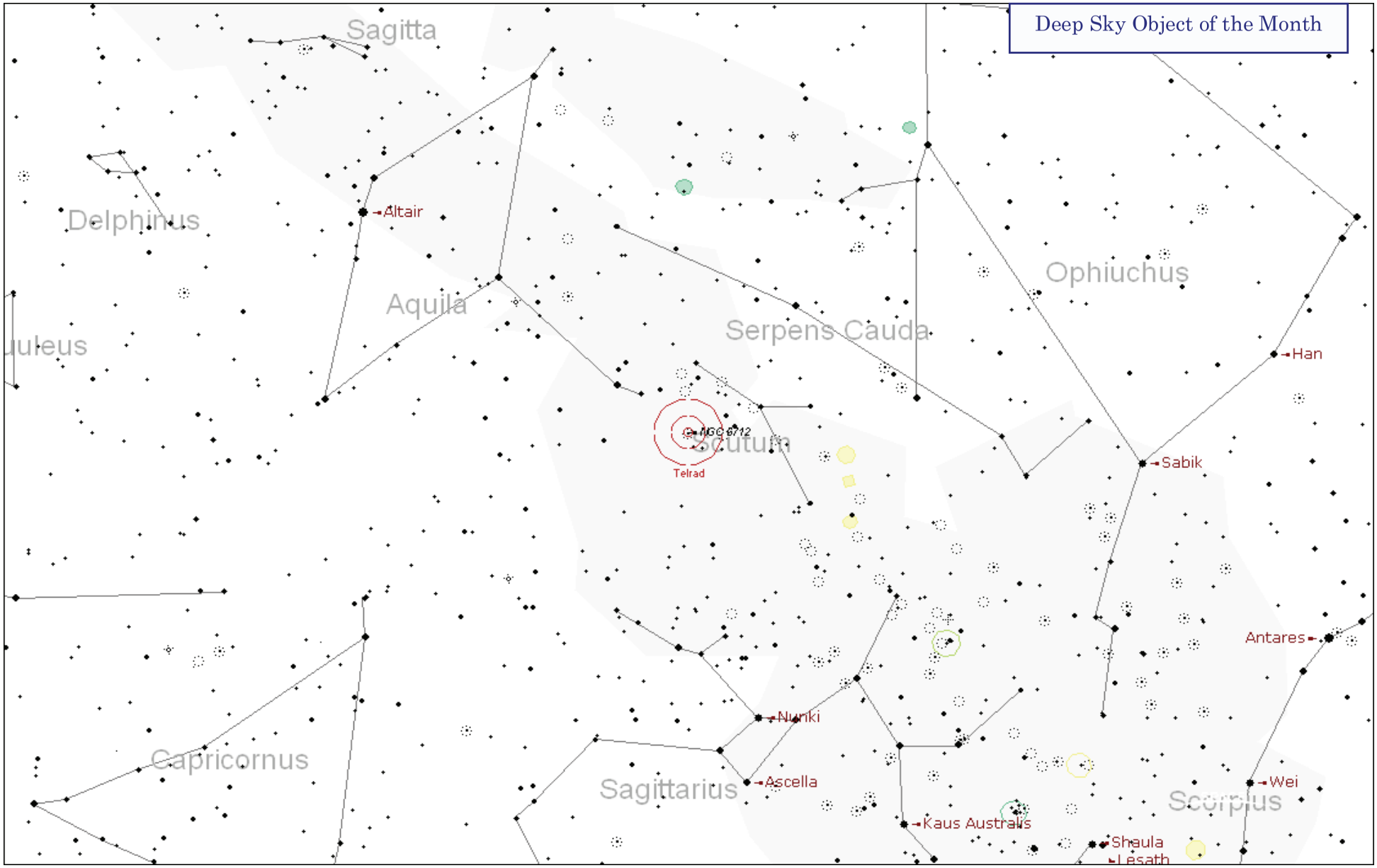
As usual, I didn't want to come home. There is something about the north rim that makes you want to never leave. It wouldn't have bothered us to be stranded there because of the fire! But we would have missed our cat.

Club members Kevin Geiss and Peter Argenziano set up for an evening of observing at the June Local Star Party

M13 in Hercules by Jon Christensen

May 28, 2006
12.5 inch RCOS RC at F/9
SBIG STL11000 Camera
60 Minutes Luminance, 15R, 10G, 15B

Deep Sky Object of the Month



NGC 6712 Globular Cluster in Scutum

Magnitude: 8.1 Size: 9.8’

RA 18h 53m 04.3s Dec -08° 42’ 22”

Chart created with Starry Night Pro software.

What is Twilight?

Before sunrise and again after sunset there are intervals of time, twilight, during which there is natural light provided by the upper atmosphere, which does receive direct sunlight and reflects part of it toward the Earth's surface. Some outdoor activities may be conducted without artificial illumination during these intervals, and it is useful to have some means to set limits beyond which a certain activity should be assisted by artificial lighting. The major determinants of the amount of natural light during twilight are the state of the atmosphere generally and local weather conditions in particular. Atmospheric conditions are best determined at the actual time and place of events. Nevertheless, it is possible to establish useful, though necessarily approximate, limits applicable to large classes of activities by considering only the position of the Sun below the local horizon.

There are three kinds of twilight defined: civil twilight, nautical twilight, and astronomical twilight. For computational purposes, civil twilight begins before sunrise and ends after sunset when the geometric zenith distance of the center of the Sun is 96 degrees - 6 degrees below a horizontal plane. The corresponding solar zenith distances for nautical and astronomical twilight are 102 and 108 degrees, respectively. That is, at the dark limit of nautical twilight, the center of the Sun is geometrically 12 degrees below a horizontal plane; and at the dark limit of astronomical twilight, the center of the Sun is geometrically 18 degrees below a horizontal plane.

Reasonable and convenient definitions have evolved.

Civil twilight is defined to begin in the morning, and to end in the evening when the center of the Sun is geometrically 6 degrees below the horizon. This is the limit at which twilight illumination is sufficient, under good weather conditions, for terrestrial objects to be clearly distinguished; at the beginning of morning civil twilight, or end of evening civil twilight, the horizon is clearly defined and the brightest stars are visible under good atmospheric conditions in the absence of moonlight or other illumination. In the morning before the beginning of civil twilight and in the evening after the end of civil twilight, artificial illumination is normally required to carry on ordinary outdoor activities. Complete darkness, however, ends sometime prior to the beginning of morning civil twilight and begins sometime after the end of evening civil twilight.

Nautical twilight is defined to begin in the morning, and to end in the evening, when the center of the sun is geometrically 12 degrees below the horizon. At the beginning or end of nautical twilight, under good atmospheric conditions and in the absence of other illumination, general outlines of ground objects may be distinguishable, but detailed outdoor operations are not possible, and the horizon is indistinct.

Astronomical twilight is defined to begin in the morning, and to end in the evening when the center of the Sun is geometrically 18 degrees below the horizon. Before the beginning of astronomical twilight in the morning and after the end of astronomical twilight in the evening the Sun does not contribute to sky illumination; for a considerable interval after the beginning of morning twilight and before the end of evening twilight, sky illumination is so faint that it is practically imperceptible.

This information is derived from the Explanatory Supplement to the Astronomical Almanac, ed. P. K. Seidelmann (1992) and the USNO website.

Coming in August… our guest speaker will be noted astrophotographer and EVAC member Chris Schur.

Star Party Disclaimer

The East Valley Astronomy Club (EVAC) is not responsible for the property or liability of any star party participant, nor will the club be held liable for their actions or possessions. EVAC is not responsible for any vehicular damage, theft, or mechanical difficulties that may occur while attending a star party. EVAC strongly recommends adherence to the doctrine of 'safety in numbers' when it comes to remote observing sites. In the interest of safety it is recommended that you don't go to remote sites alone and that someone knows where you have gone each time you go out observing.

The Voyager is published monthly by the East Valley Astronomy Club and made available electronically (PDF) the first week of the month. Printed copies are available at the monthly meeting.

Please send your contributions, tips, suggestions and comments to the Editor (Peter Argenziano) at: news@eastvalleyastronomy.org

Contributions may be edited.

www.eastvalleyastronomy.org

Keep Looking Up!

East Valley Astronomy Club

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