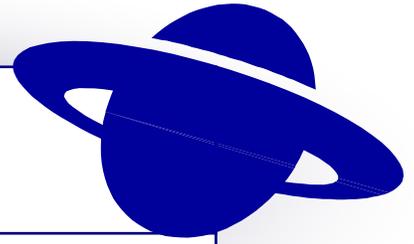


March 2005

The Voyager



East Valley Astronomy Club

Volume 19 Issue 3

From the Desk of the President by Steven Aggas, 2005 EVAC President

I am pleased to announce the new meeting location and date for our General Assembly meetings! Starting on Friday, April 15th, we will be meeting at the Southeast Regional Library (Gilbert Public Library) on the third Friday of the month. After accumulating 14 different locations to consider (thanks to everyone that contributed), the facilities in Gilbert provide the much needed room for not only growth, but for everyone to have a seat! The GPL, is located on the Southeast corner of Greenfield and Guadalupe Roads. The meeting night change was something considered for some time and was implemented as a package with the move. While it hopefully will not impact everyone's schedule too much, the benefits are that there will be less

stress by the meeting not being a held on a "work night". Additional benefits include our Observatory Advisory Committee's assistance with the Riparian Institute's observatory project. After construction is complete, the possibility exists to open the dome for some 'scopin after the meeting. I appreciate everyone's patience during this transition and hope you all are able to attend at our new home.

Additionally, it's almost trash pickup day! For those that don't know, EVAC sponsors a one mile stretch of Highway 60 near Florence Junction where we pick up litter semi-annually from the shoulder of the road. This year it is scheduled for Saturday, April 2, 2005 starting at 8 am. As with

all years there is the unofficial Best Trash Found award, you would (or not) be surprised at what has been found in years past. If you would like to help out, please see the article on page 9. Join us, for some fun, astronomy conversation, laughs at what is found, and some exercise

As our speaker for the March General Assembly meeting, we will have Dr. John A. Morse. Please join us for the meeting, March 9, 2005 at TFS starting at 7:30pm. (This will be the last meeting at TFS as we move to the Gilbert Public Library in April for our General Assembly meeting.)

The Backyard Astronomer Astro Potpourri - Part Two by Bill Dellings

Good afternoon Ladies and Germs. It's time now for part two of Astro-Potpourri where I get a chance to clear the last junk off my desk at your expense!

1) Astronomers tell us

when galaxies collide, their stars do not generally hit one another. Hmmmm, now why would that be? Well, let's take a look at the situation. A typical galaxy size, like the Milky Way for in-

stance, is about 100,000 light years in diameter. Our closest major neighbor is M31, the Andromeda Galaxy, about 2 million light years away. Two million divided by

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March Events:

- *Deep Sky Star Party 3/5 at Vekol Road*
- *Monthly meeting 3/9 at Three-Five Systems at 7:30*
- *Public Star Party 3/11 in Gilbert*
- *Messier Marathon 3/12 at Farnsworth Ranch*
- *Local Star Party 3/19 at Boyce Thompson*

The Backyard Astronomer

(Continued from page 1)

100,000 is 20; that is, these two galaxies are separated by 20 Milky Way diameters. That's akin to two dinner plates floating around on opposite sides of a living room. So it's not uncommon for them to occasionally collide. But consider the relative size to distance ratio of stars within galaxies. In our section of the Milky Way about halfway from the center to the edge, we find that the Sun is 4.3 light years distant from its nearest neighbor, Alpha Centauri. That's about 25 trillion miles. A back of the envelope calculation shows that you can fit 29 million solar diameters (865,000 miles) between these two stars. No wonder they DON'T collide!

2) A recent issue of Astronomy magazine discussed M45, the Pleiades or Seven Sisters, and pointed out something about them I never realized before: they are the closest of the Messier objects to Earth (~400 light years away). This begs the question: what is the most distant Messier object? Looking the Messier list over, it appears that many galaxies in the Virgo cluster (M49, 58-61, 84, 86, 87, 89, 90) would qualify as those galaxies are – depending on the reference – anywhere from 55 to 70 million light years away.

3) The Moon is full on such and such day. Phooey. It occurs not only on a specific day but a specific moment. It is when the Moon is 180 degrees from the Sun. Think of it this way: your back is to the Sun as it sets and you're looking east watching the full moon rise. Thus the two are 180 degrees apart. But as you're looking at the moon, it's moving around Earth at about 2000 miles per hour. So there can be only an "instant" when it is perfectly in line with you and the sun – "syzygy" (now there's a neat term for a personalized license plate!). This is why an ephemeris, like the R.A.S.C. Observer's Handbook, lists the full Moon for February 2005 as "Thursday, 24th, 04:54 Universal Time (February 23rd, 9:54 p.m.

M.S.T.).

4) Black holes come in two flavors, those made from one large star that has collapsed and super massive ones containing the mass of millions or billions of solar masses (one sun = one solar mass). Astronomers believe the latter are commonly found at the centers of galaxies where the higher population density of stars leads to collisions and merging. It's thought our Milky Way (M.W.) harbors a 2 million solar mass black hole at its center. M87, a giant elliptical galaxy in the Virgo Cluster, may have a 3 billion solar mass black hole lurking at its nucleus. You might think these monsters are huge. Well, yes and no. They're certainly big compared to you but how big are they compared to their host galaxies? The equation for determining the size of a black hole is $r_s = 2GM/c^2$. Translation: the Schwarzschild radius equals 2 times the gravitational constant times the object's mass divided by the speed of light squared. Karl Schwarzschild figured this out from Einstein's equations. He died in 1916 on the eastern front fighting for Germany. The formula can mercifully be translated into terms we laypersons can understand. Simply, the Schwarzschild Radius is equal to 2.95 kilometers per solar mass. Let's convert and round that off to 2 miles per solar mass. Then it's straight forward to see that the M.W.'s 2 million solar mass black hole has a *radius* of only 4 million miles (2 million times 2 miles), well within (11 %) the radius of Mercury's orbit. The M.W. is 100,000 light years across. That's 100,000 times 6 trillion miles. Its 8 million mile *diameter* black hole is small indeed compared to the M.W.'s diameter.

What about M87's black hole? Three billion times 2 miles equals 6 billion miles, about twice the radius of our solar system. That dwarfs our M.W. black hole but is minute when compared to M87's size, especially considering M87 is 40 times more mas-

sive than the M.W.

Black hole addendum #1: In reference to a black hole's "radius", this would be from the *singularity* (where all the mass has fallen to a point) to its *event horizon*, the line which, if you cross, you're forever trapped in the black hole. This event horizon can be considered an invisible spherical shell around the singularity. Cross it and you're on the mother of all rides.

#2: Though under normal circumstances the Sun and Earth could never become a black hole, it's fun to calculate how small you have to compress them such that their densities would result in their surface escape velocity exceeding that of light - qualifying them for black holes. The Sun needs to be crushed down to a 4 mile diameter ball. The Earth must be compressed to a 0.78 inch diameter ball.

5) Travel times:

It would take 4 years to skate around the middle of Saturn's rings at 15 miles per hour if they were a solid track which they are not. The rings are not made of lost airline baggage, but millions of pieces of ice and rock; each is a separate satellite in orbit around Saturn. Their mass is 10^{15} tons and could make a moon 156 miles in diameter (Astronomy Today, p. 264).

Traveling at a commercial jet speed of 500 MPH it would take you:

20 days to go to the moon.

21 years to the Sun.

807 years to Pluto.

5,767,000 years to Alpha Centauri (too long? You could reduce that to 115,345 years using current spacecraft speeds of 25,000 MPH).

2 days to circle Earth.

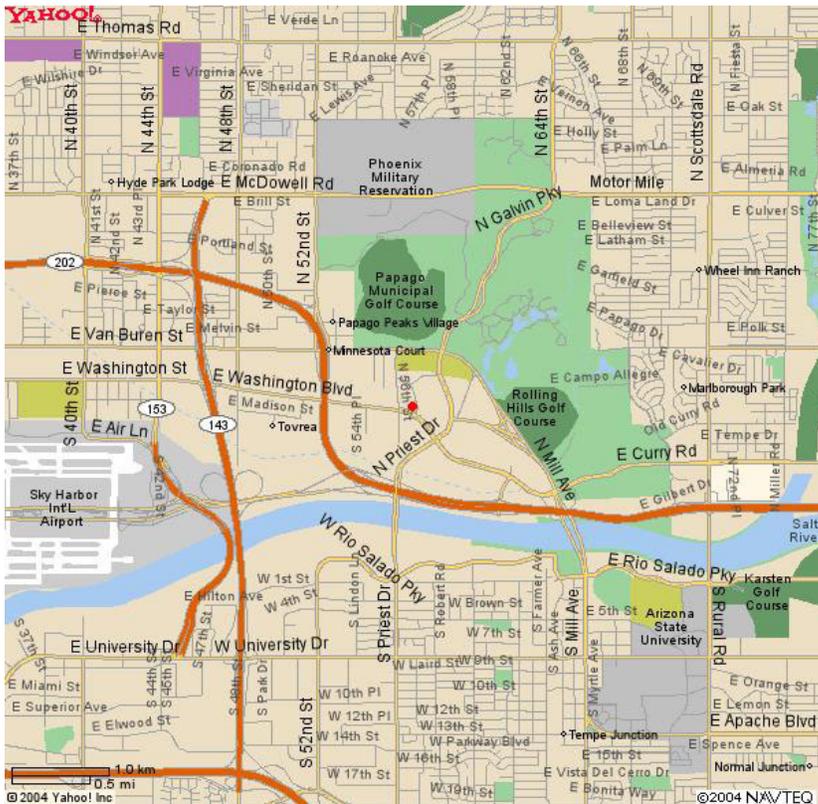
226 days to circle the Sun (do this at night when it's cooler).

6) Weight and balance

A teaspoon of a neutron star would

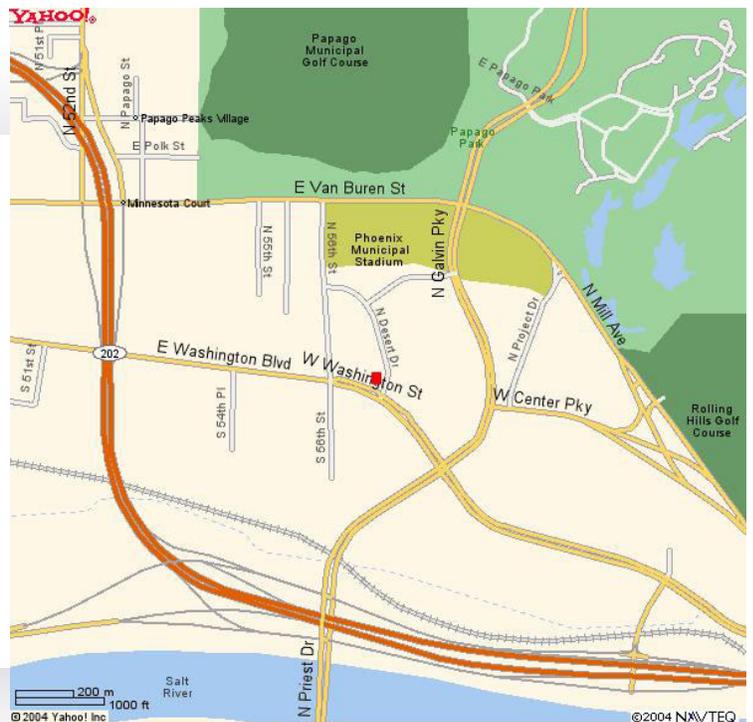
(Continued on page 4)

As the club transitions to its permanent meeting site for the monthly general meetings, we will meet in the auditorium at Three-Five Systems in Tempe for the March meeting. In April we will begin meeting in Gilbert (details on page 7).



March 9
Meeting to be held
at Three-Five Systems

TFS is situated on the northwest corner of Desert Drive and Washington Street. Access to the facility is on Desert Drive.



Three-Five Systems, Inc. 1600 N. Desert Drive in Tempe, Az, 85281

The Backyard Astronomer

(Continued from page 2)

weigh 3 billion tons on Earth (S&T 7/99, p.30).

Gas giant Jupiter could be a star if it were 80 times more massive; star-like fusion of hydrogen to helium could then kick in.

The balance point (barycenter) between the Earth and Moon is 1062 miles below Earth's surface. Between the Earth and the Sun it is 279 miles from the Sun's center.

I can tell you've had enough. Since this cleared off my desk pretty well, my job is done here.



This raw image was returned by the Descent Imager/Spectral Radiometer camera onboard the European Space Agency's Huygens probe after the probe descended through the atmosphere of Titan. It shows the surface of Titan with ice blocks strewn around. The size and distance of the blocks will be determined when the image is properly processed.

Image credit: ESA/NASA/University of Arizona

Investigating Video Astronomy by Peter Argenziano

One of the most appealing aspects of amateur astronomy has to be its diversity. There truly is something for everyone. The options for specialization are nearly infinite. Whether you enjoy studying cosmology, investigating galaxy morphology, pursuing astrophotography, capturing asteroid occultations or observing deep sky objects, you're likely to find others with a similar interest.

I am first and foremost a deep sky observer. This would explain my instrument of choice: an 18" Obsession (Newtonian reflector). I also enjoy observational opportunities within the solar system... all with my own two eyes (certified binoviewer enthusiast). I have experimented with a webcam, only to discover that this isn't for me. While I have a deep respect and admiration for the CCD and film astrophotographers amongst us, I long ago concluded that this entailed more work than I desired during my all-too-infrequent trips to darker skies.

But recently a new observational opportunity has piqued my curiosity: video astronomy. In a nutshell this emerging field involves the usage of surveillance cameras which have been modified for this astronomical application. Generically speaking, within video astronomy there exists two sub-fields: *live* viewing on a monitor and imaging using video capture hardware and software. My interest lies within the former.

As the deep sky purists start to groan, I'm quick to admit that this observational technique will never replace using eyepieces in my telescope. But it does offer some very interesting applications. Public sessions are one such opportunity. Us-

ing my 18" telescope at a public session presents some challenges as a ladder is required for almost all of the participants. Viewing objects on a monitor allows more people to *use* my telescope, albeit without the inherent joy of peering through an eyepiece (or two). Overall safety is also enhanced - both for the participants and the telescope.

Another application of this technology, presented here amongst the increasing din of the purists, is the ability to *see* more detail in the objects observed. When one looks through an eyepiece the brain processes the light received into an image instantaneously. These cameras allow for up to an 8 second accumulation of light. The net result is a deeper observation. Structure becomes much more apparent. Fainter objects are revealed. While certainly not for everyone, this application holds interest for me in certain observational activities.

My introduction to this field - using a StellaCam EX and StellaCam II (thanks Marty) - revealed a couple of challenges. First, is positioning the object on the small chip used in these cameras. The field of view in my telescope measured roughly 12' across. Compare that to the 48' field provided by a 24 mm Panoptic. Next, focusing with the inherent delay of up to 8 seconds can be tedious.

Hopefully as my investigation continues I can report more details on this fascinating topic in a future article.

March Guest Speaker: Dr. Jon Morse



This month we are pleased to welcome Dr. Jon Morse, from the department of Physics and Astronomy at Arizona State University .

Dr. Morse is known for research on diverse topics in both galactic and extragalactic astronomy, using space-based and ground-based observations made at many wavelengths. His research interests include star formation, high mass stars, supernovae and supernova remnants, and active galaxies. He has participated in numerous observing programs with the Hubble Space Telescope and Chandra X-Ray Observatory satellites. Dr. Morse is also a leader in developing instruments current and future space-based observatories.

As cited in the club's bylaws, all EVAC memberships expire on December 31st of each year. The bylaws further stipulate that members shall receive a ninety day grace period to renew their dues and maintain active membership status in the club. This clemency period expires on March 31st. If you haven't already renewed your membership for 2005, please do so at your earliest opportunity. Membership dues represent the only source of income for the club, revenue that is necessary to keep us operational.

You have four methods from which to choose to join or renew:

1. With cash or a check at a regular monthly meeting.
2. With a check or money order mailed to the club's address.
3. Online via PayPal, details here: http://www.eastvalleyastronomy.org/evac_online_payments.htm
4. Using your bank's online bill payment feature, details here: http://www.eastvalleyastronomy.org/evac_bank_payments.htm

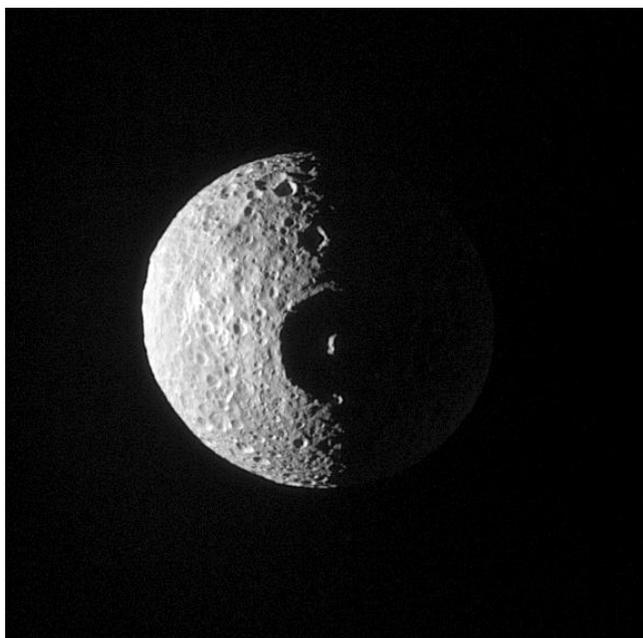
Please use whichever method is most convenient. Whichever payment option you utilize, please ensure that the Treasurer receives your membership application (available on page 9).

Those members who have not paid their 2005 dues by April 1st of this year will have their membership status changed from active to inactive. Those individuals whose status remains inactive for twelve consecutive months will have their membership terminated.

A topic that has been discussed at length recently is the relative safety of attending star parties at remote sites such as that used by EVAC for its Deep Sky Star Party: Vekol Road. Unfortunately, the Vekol Road site lies in a general area that has become a corridor for illegal activities from south of the border.

Since EVAC has no ownership of this site, we cannot control these activities. Further, we cannot guarantee the safety of our members using this, or any, remote site on public land.

To this end it is the responsibility of each of us individually to take adequate safety precautions and use common sense to ensure we are not placing ourselves unnecessarily at risk.



Saturn's moon Mimas has many large craters, but its Herschel crater dwarfs all the rest. This large crater, 130 kilometers (80 miles) wide, has a prominent central peak, seen here almost exactly on the terminator. This crater is the moon's most prominent feature, and the impact that formed it probably nearly destroyed Mimas. Mimas is 398 kilometers (247 miles) across.

Image courtesy of NASA/JPL/Space Science Institute

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Meade Pictor 416XT CCD

All components, filters, manuals, adaptors, autoguider and CCD camera are still in their original factory sealed condition and plastic wrap. Why? Well, the Pictor and it's software are intended for use with a Windows computer and I never got around to buying a Windows laptop -- sounds silly -- but that's the fact. The Pictor 416XT uses the Kodak KAF-0400 CCD chip with the extended blue response. As a CCD camera, it's considered among the best available under \$5000! The autoguider and camera will connect directly to the control panel jacks of Meade LX50, LX90 (APM) and LX200 telescopes (and probably others with similar electronic relay autoguider ports). See a current ad for this unit at: http://telescopes.net/ccd_cameras.html

The Pictor 416XT normally sells for about \$2000 (I paid \$2035 with tax), but I'll sell it for \$1299 (brand new!!).

John Matthews (602) 952-9808
john-cathy@cox.net

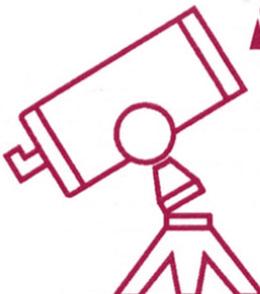
john-

16" f4.5 Meade Starfinder with Equatorial Mount

Optics remounted into a new tube with a JMI focuser built by Pierre Schwarr. Includes 7, 12.5, 17, 20, and 32mm eyepieces plus 2.8 klee Barlow, laser collimator and OM1 camera.

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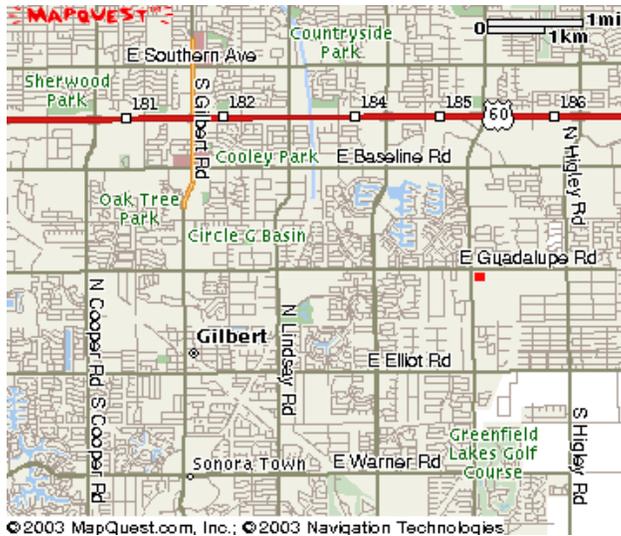
Only non-commercial advertisements for astronomical equipment will be accepted from current EVAC members. Ads will be published as space permits and may be edited. Ads should consist of a brief text description and must include a current member name and phone number. You may include your email address if you wish. Ads will be run until canceled or until they have appeared in three issues of the newsletter (whichever occurs first). Ads should be emailed to: news@eastvalleyastronomy.org

*Support
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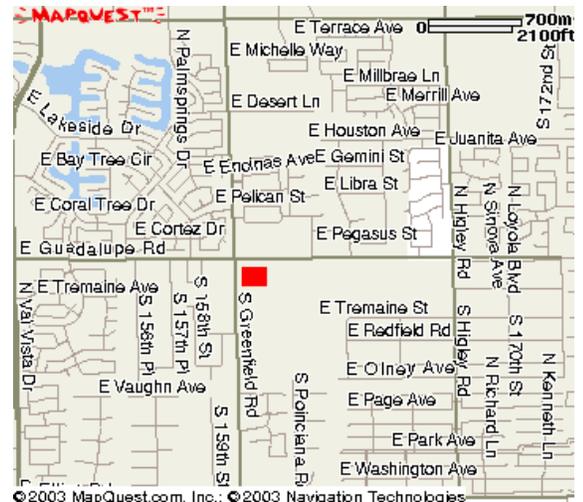
5201 N. Oracle Rd. Tucson, Az 85704 520-292-5010
www.starizona.com

EVAC is on the Move in April: New Location and Meeting Night



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**Southeast Regional
Library
775 N. Greenfield**



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The negotiations are complete and the club has located a new home in the East Valley! Beginning with the April general meeting -- **Friday, April 15th** -- we will begin holding our monthly general meetings on the third Friday of the 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 will begin at the usual time of 7:30 PM.

Note: the March general meeting will be held at Three-Five Systems in Tempe.

Relocating to this site for our meetings is part of an overall strategy to concentrate our presence at this location. The club hosts a monthly public star party at the Riparian Institute, located just east of the library. This location will also be the site of the Gilbert Rotary Observatory, on which construction is set to begin. What better place for an astronomy club to meet than adjacent to an observatory? Especially since EVAC will be the source of the staff operating this facility.

Stellar Nights at Arizona Science Center

A new program is being introduced by planetarium director Christine Shupla at the Arizona Science Center's Dorrance Planetarium. The program, called Stellar Nights, will be a family-friendly astronomical gathering initially scheduled for the third Thursday of the month, beginning in March.

Entertainment and education aren't the only draws; the events will also facilitate Space Exploration and Astronomy badge programs within local scouting organizations. Participation in the programs will enable Girl Scouts and Boy Scouts to accumulate half of the requirements for their badges.

The events will also include space-related activities and projects inside the Science Center.

We are actively soliciting your participation as either an attendee or as an amateur astronomer. Christine would like to have at least three telescopes set up outside for observing, and perhaps a couple more with their owners providing a rudimentary lesson on the mechanics of a telescope.

Stellar Nights is scheduled for:

Thursday March 17th

Thursday, April 21st

Thursday May 19th

Your participation in these events doesn't have to be restricted to a telescope. Perhaps you have an idea for a space-related craft, information or experiment table.

If you would like to volunteer to assist with this program, please contact Christine Shupla, Planetarium Director by email at: shuplac@azscience.org or by telephone at 602-716-2078.

MARCH 2005

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

- *March 5 - Deep Sky Star Party at Vekol Road*
- *March 9 - Monthly Meeting at Three-Five Systems Inc, 1600 N. Desert Drive, Tempe*
- *March 11 - Public Star Party at the Riparian Institute in Gilbert*
- *March 12 - All-Arizona Messier Marathon at Farnsworth Ranch*
- *March 19 - Local Star Party at Boyce Thompson Arboretum State Park*

Dorrance Planetarium Needs You

Over the past couple of years EVAC has held special meetings in Dor-rance Planetarium at the Arizona Science Center in downtown Phoe-nix. Planetarium director Christine Shupla has usually made such us-age complimentary, but even when we have paid for the facility it was at a deeply discounted rate. Now it's our turn.

The planetarium is in need of vol-unteer ushers for shows on Satur-days and Sundays. The hours would generally be from 10:30 AM to 4:30 PM with a two-hour break between 11:30 and 1:30. There are four shows per day, each lasting about 40 minutes. Duties include taking tickets at the door, assisting show presenter before show begins, keep-ing an eye on the audience during the shows, and assisting folks who

might want to leave during the show. You can volunteer as often as you would like: every weekend, once per month, once per year... it's up to you!

Besides just helping out our friends at the Science Center and the com-munity at large, your generosity also helps the club. By helping to maintain a pool of volunteers, we would be able to use the facility for special meetings during the year.

If you are interested in volunteer-ing, please talk to VP Howard Is-rael or send an email to info@eastvalleyastronomy.org

Dorrance Planetarium Schedule

Jan. 10 – Mar. 4, 2005

- 11 a.m. Starry Storytime
- 1:30 p.m. Saturn in Sight
- 2:30 p.m. Galaxies
- 3:30 p.m. Saturn in Sight

Mar. 5 – May 27, 2005

- 11 a.m. Starry Storytime
- 1:30 p.m. Galaxies
- 2:30 p.m. The Mind's Eye
- 3:30 p.m. Galaxies

East Valley Astronomy Club -- 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 (select according to the month you are joining the club):

- \$20.00** January through March **\$15.00** April through June
 \$10.00 July through September **\$25.00** October through December
Includes dues for the following year

Renewal (current members only):

- \$20.00** January - December

Magazine Subscriptions (include renewal notices):

- \$29.00** 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

Name:

Phone:

Address:

Email:

City, State, Zip:

- Publish email address on website

URL:

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

- Electronic delivery (PDF) US Mail

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?

All financial matters can be addressed with the Treasurer (Wayne Thomas) at: treasurer@eastvalleyastronomy.org

Volunteers Wanted! *By Randy Peterson*

On Friday April 8, 2005, a very partial eclipse of the sun by the moon will take place in the metro area. To catch the full eclipse, you can sail a few thousand miles south of San Francisco to the Southern Pacific Ocean. I will forgo that trip.

From our vantage point, the moon will block about 5% of the sun's diameter at the peak of the eclipse. The eclipse will begin around 14:35 MST and end 43 minutes later at about 15:18 MST. During the last solar eclipse (a much better one than this one, to be sure), we had seven solar equipped telescopes set up at the Riparian Preserve. We also had two solar scopes set up at Scottsdale Community College. There were very long lines of people waiting for each telescope during the entire eclipse. We could have used twice as many scopes for that event!

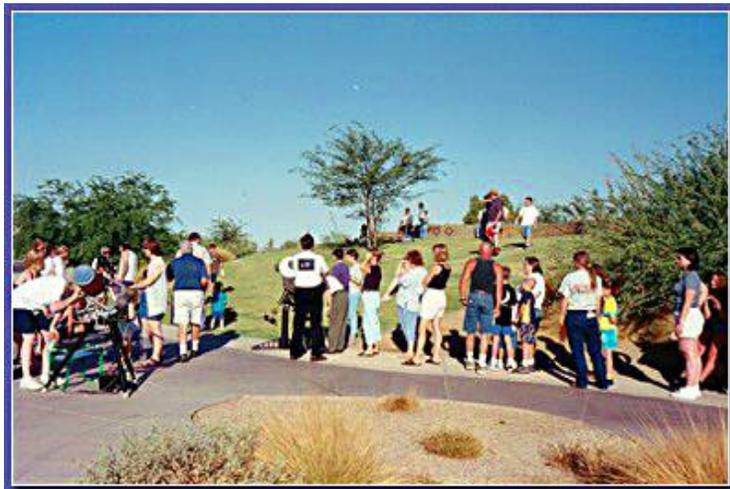
Even though this is a very minor event, some of us would like to set up solar equipped telescopes at the Riparian Preserve for public viewing starting about 1 pm. Any size telescope will work, as long as you have an adequate solar filter. If you don't have a scope, but are able to be there, let me know that too. I have two solar scopes if you want to help with one of them. Anyone with a hydrogen-alpha scope is especially welcome to join us! If you are available to help out, please send me an email so I have an idea of the expected turnout of scopes!

Also, if you have an interest in buying a pair or two of non-magnifying "solar glasses", let me know. By putting them on, you can safely look directly at the sun. They do fit over eyeglasses. The cost is a very reasonable \$1.50 each pair. However, the minimum order quantity is 25 pair! I would like to order a few pair at that price, but don't want 25 of them.

Splitting up 25 pair with several of us together sounds more reasonable.

Randy Peterson
rgpeterson@cox.net

March 3: Last-Quarter Moon at 10:37
March 10: New Moon at 02:11
March 17: First-Quarter Moon at 12:19
March 25: Full Moon at 13:59



Some of the crowd enjoying an EVAC public solar eclipse observing event at the Riparian Preserve in Gilbert

- ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★
- ★ *What are you waiting for?* ★
- ★ *Isn't it time you began (or completed) one of* ★
- ★ *the EVAC Observing Programs?* ★
- ★ *<http://www.eastvalleyastronomy.org/observe.html>* ★
- ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

A Different Angle on Climate Change

by Patrick L. Berry

Look toward the horizon in almost any major city, and you'll clearly see the gray-brown layer of smog and air pollution. Yet when you look straight up, the sky can appear perfectly blue; you might think there's no smog at all!

The smog is overhead as well, but it's much harder to see. Why is there such a difference?

It comes down to viewing angles: A vertical line straight up through the atmosphere crosses much less air than a line angled toward the horizon. Less air means less smog, so the sky overhead looks blue. On the other hand, when you look toward the horizon, you're looking through a lot more air. The smog is easier to see.

A one-of-a-kind sensor aboard NASA's Terra satellite capitalizes on this angle effect to get a better view of how clouds and air pollutants scatter and absorb sunlight. By doing so, this sensor—called the Multi-angle Imaging SpectroRadiometer (MISR for short)—is helping scientists fill in a major piece of the climate change puzzle.

Most satellite instruments look only straight down at the Earth. Layers of airborne particles (called aerosols) and smog are harder to see with this vertical view, and clouds often appear only as two-dimensional sheets of white. Clouds and aerosols both can reflect incoming sunlight back out to space, thus cooling the planet. But they can also absorb sunlight and trap heat rising from below, thus helping warm the planet.

What is the net effect? MISR helps scientists figure this out by looking at the atmosphere at several angles—nine to be exact. Its nine cam-

eras fan out across a range of angles from steeply looking forward (70.5 degrees from vertical), to straight down, to the same steep angle backwards. As the Terra satellite passes over a region, the cameras successively view the region at nine different angles.

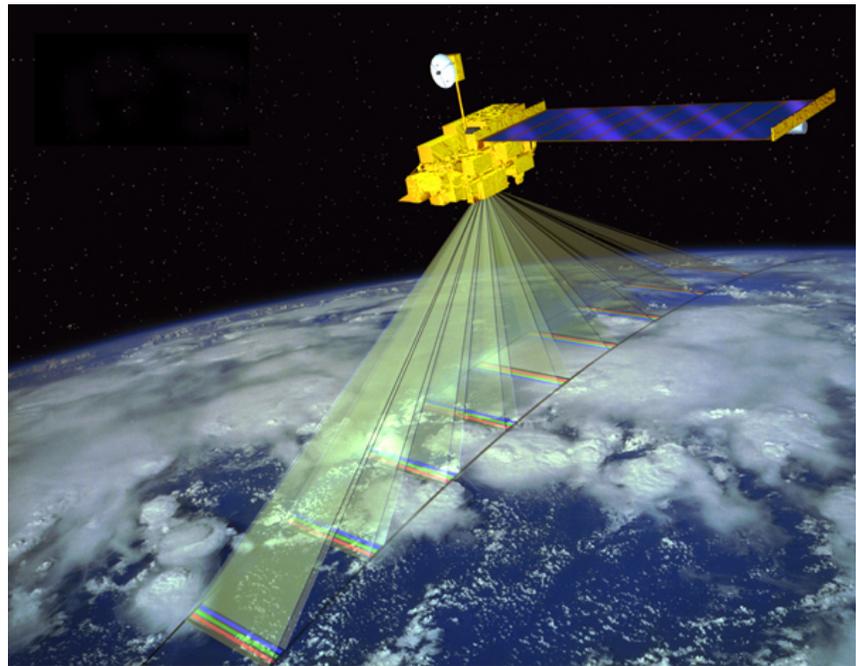
From these data, scientists can construct a three-dimensional picture of the cloud cover, revealing much more about cloud dynamics than a flat image alone. They can also see light bouncing off aerosol pollution from nine different directions, thus getting a fuller picture of how aerosols scatter sunlight. And they can even spot thin layers of heat-

trapping air pollutants that might go unnoticed by other satellites.

All this information comes just from looking at the atmosphere from a different angle.

For more information, see <http://www-misr.jpl.nasa.gov>. Kids can learn about MISR, see MISR images, and do an online MISR crossword at

http://spaceplace.nasa.gov/en/kids/misr_xword/misr_xword2.shtml



The MISR instrument on the Terra satellite views the atmosphere and Earth's surface from nine different angles.

If it's Clear...

by *Fulton Wright, Jr.*
Prescott Astronomy Club

March 2005

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 Thursday, March 3, at 3:16 AM (sorry about the time), you can watch the occultation of a bright star. With a small (3 inch) telescope look 25 degrees above the southeast horizon for the half illuminated Moon. Antares (mag 1) is the bright red star near the bottom. The star reappears at 4:13 AM on the unlit limb to the right of the center of the Moon. This reappearance will be especially interesting because Antares is a double star, and the much dimmer (mag 5) component will come out about 5 seconds before the bright component.

On Monday, March 7, 2:32 AM (ugh!) you can see Ganymede's shadow leave Jupiter. 3 minutes later Ganymede itself move in front of Jupiter. You will want a medium (6 inch) telescope to watch this or other events with Jupiter's moons.

On Wednesday, March 9, starting at 9:46 PM, you can watch Io pass in front of Jupiter. Here is the schedule: 9:46 PM Io's shadow falls on Jupiter 10:20 PM Io moves in front of Jupiter 11:58 PM Io's shadow leaves Jupiter 12:30 AM Io moves from in front of Jupiter

On Thursday, March 10, it is new moon so you have all night to observe with a dark sky.

On Friday, March 11, about 7:00 PM you can see Mercury and the Moon near each other. With your unaided eye look 10 degrees above the east horizon for the magnitude 0 planet.

The Moon is a very thin crescent 4 degrees to the upper left. Mercury will be visible for a few days on either side of this date. The Moon will be higher in the sky each subsequent night.

On Saturday, March 19, after 7:00 PM you can see a pattern made by 2 stars, a planet, and a satellite. With your unaided eye look 70 degrees above the east horizon for the gibbous Moon. Mostly up and a little to the left are Pollux and Castor. Mostly to the right and a little up is Saturn. Use your small (3 inch) telescope to look near the southern end of the terminator for the large crater Clavius with its string of decreasing sized craters in it. The lighting and the libration (tipping) of the Moon make this an especially good time to see it.

On Friday, March 25, at 6:53 PM the full Moon rises.

On Friday, March 25, at 1:06 AM (pretty late to stay up) you can see Io come out from behind Jupiter. 9 minutes later Ganymede comes out from behind the planet.

On Friday, March 25, at 10:13 PM you can see Io's shadow leave Jupiter. 11 minutes later you can see Io itself move from in front of Jupiter.

On Wednesday, March 30, at 10:53 PM you can see Europa's shadow leave Jupiter. 8 minutes later you can see Europa itself move from in front of the planet.

EVAC Meeting Minutes

Wednesday, February 09, 2005,
Diane Cook, EVAC Secretary

Interim Meeting location: Three-Five Systems in Tempe.

President Steve Aggas opened the meeting at 7:30 p.m., followed by the introduction of Officers and Board members.

Treasurer Wayne Thomas presented EVAC's current financial report and clarified the process for magazine renewals through EVAC membership.

AJ Crayon spoke about the 2005 Messier Marathon scheduled for March 12-13 at Farnsworth Ranch near Arizona City.

Newsletter Editor Peter Argenziano discussed the new format for the newsletter and provided numerous handouts.

Win Pendleton provided an update on the Gilbert Rotary Observatory. Construction to begin soon with a completion date of mid-July. EVAC Sales: What do you want EVAC to offer besides calendars, T-shirts, Observers Handbook? Send suggestions via email to EVAC president.

Recognition

Bill Dellinges – Completion of the EVAC Double Star Observing program.

Joe Orman, *Ring Around the Sun - CD*, Sun Halo photos on Tim Flannery's latest CD.

Jim Fitzpatrick – Photo of movable VLA radio telescopes located in the Gallery of the Visitor's Center at the VLA in Socorro, New Mexico.

Member Presentations

Joe Orman – Arizona Sky Shots

Chris Schur – Northern Arizona Astropics

Guest Presentation

Dr. Jay Melosh of the University of Arizona spoke about the Deep Impact mission.

2005 All-Arizona Messier Marathon

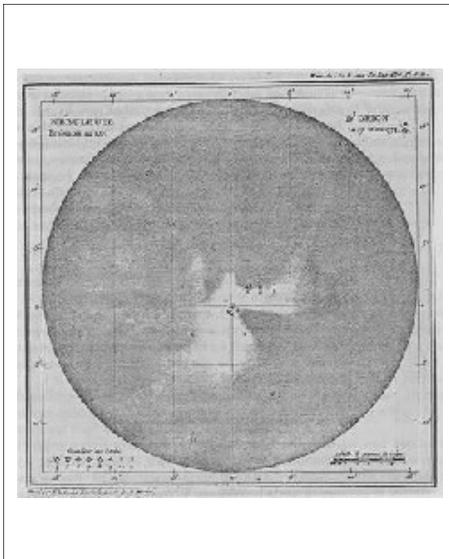
Most of us are familiar with the Messier catalog - that list of 110 objects named after the 18th century comet hunter, Charles Messier. The original list contained 103 objects and has grown over time to its current 110. The list was originally started to indicate bright objects that were not comets.

The Messier Marathon is an annual event that finds participants racing to observe all objects in a single night. It is a race run not against other participants, but against the Sun.

Depending on the location of the observer, there are varying numbers of objects available for observation.

Conveniently, the objects are not evenly distributed in the celestial sphere. In particular, there are no Messier objects situated between 21:40 and 0:40 right ascension, except for M52 (an open cluster in Cassiopeia also known as NGC 7654). As a result, this arrangement means that all 110 Messier objects can usually be observed in one night from our latitude during mid to late March. Of course, the best window of opportunity coincides with a new Moon.

An interesting bit of trivia regarding this event has its roots right here in Arizona. It is widely held that Gerry Rattley was the first person to complete the Messier Marathon (though not recognized as such at that time) on the night of March 23-24, 1985.



Charles Messier's drawing of M42, the Orion Nebula

This year the Saguaro Astronomy Club once again sponsors the All-Arizona Messier Marathon. The event will be held at Farnsworth Ranch, located south of Arizona City, on Saturday, March 12 (the event spans March 12 and 13).

This year the maximum number of objects viewable appears to be 109. M74, M77, M33, M31, M39 and M29 can be observed with good advance planning, while M30 may be elusive yet again.

The rules are quite simple. It's an honor system so no one is going to be looking over your shoulder to verify your observations. You must use one of the observation logs supplied by SAC if you want your participation to be official. All objects

must be observed with your eye through the main eyepiece of your telescope. Check off objects on your log as they are observed. The heading of the form must be completed and the form must be submitted before you leave the site on Sunday.

Advance registration is not required. The event is free and open to all. EVAC will cover the cost of the plaques awarded to any member who finishes the Marathon in first, second or third place.

Have fun!

March 12	Sunset	6:37 PM
	Twilight	7:55 PM
	Moonset	9:19 PM
March 13	Twilight	5:18 AM
	Sunrise	6:36 AM
	Moonrise	8:35 AM

All times are MST

Site Coordinates

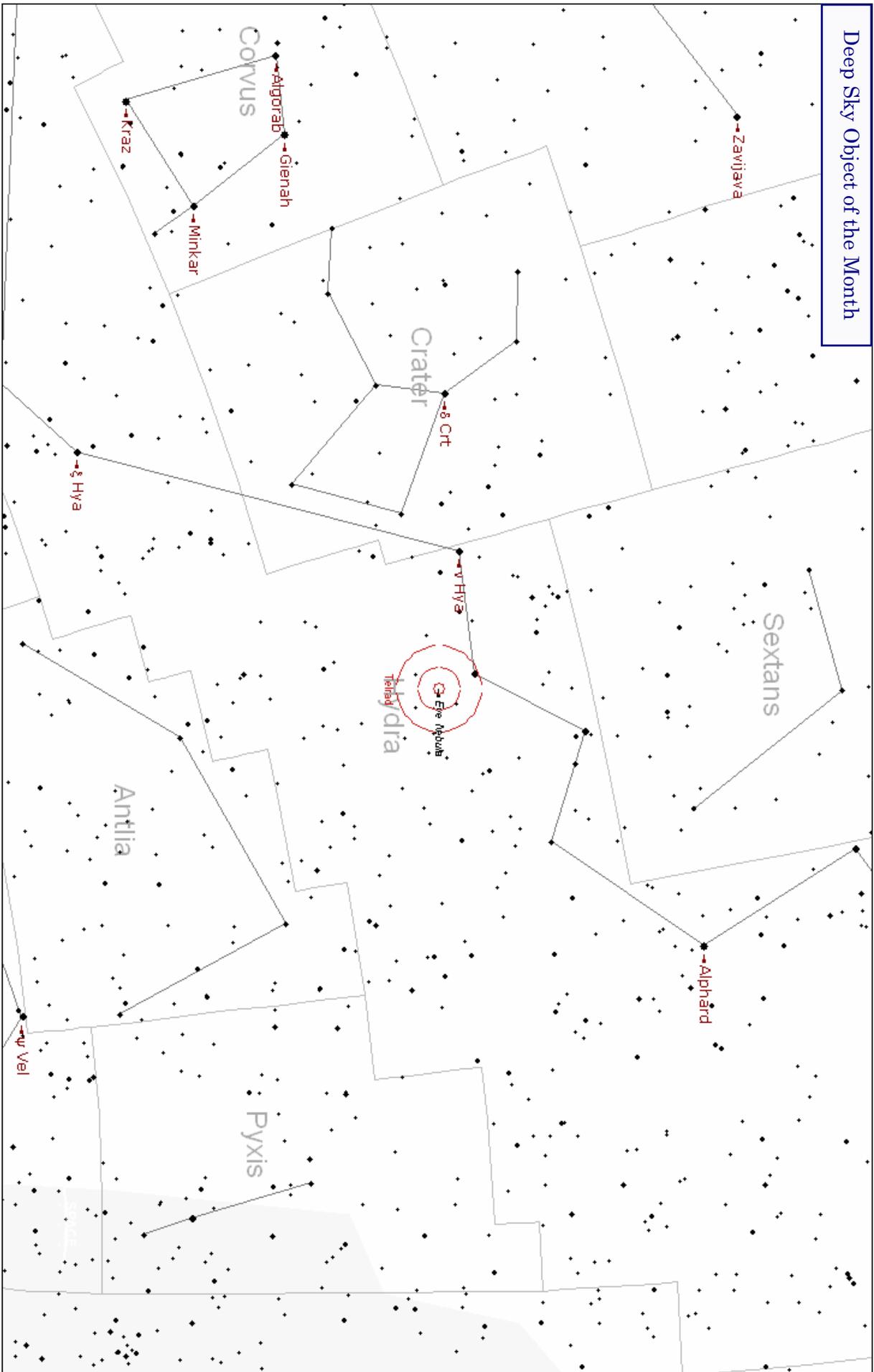
32° 27' 45.2" N

111° 43' 53.2" W

Elevation: 1800 ft (548.6 m)

For complete details about the 2005 All-Arizona Messier Marathon, please visit the website of Saguaro Astronomy Club at: www.saguaroastro.org/content/messier.htm

EVAC Event Coordinator Gwen Grace is planning a pre-marathon cookout on Saturday. She'll circle the wagons at 4:00 PM for some food and socialization. If you'd like to help out contact Gwen at events@eastvalleyastronomy.org



NGC 3242 (Ghost of Jupiter or Eye Nebula) Planetary nebula in Hydra

Magnitude: 8.6 Size: 25" Magnitude of central star: 13.3 Distance: 2800 ly

RA 10h 24m 46.1s Dec 18° 38' 32"

The Voyager is published monthly by the East Valley Astronomy Club and made available the week preceding the monthly club meeting. An electronic version (Adobe PDF) is available online.

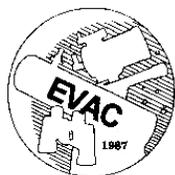
Please send your contributions, tips, suggestions and comments to the Editor (Peter Argenziano) at:

news@eastvalleyastronomy.org

Contributions may be edited.

www.eastvalleyastronomy.org

Keep Looking Up!



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