



# Desert Skies

Tucson Amateur Astronomy Association

Volume LIII, Number 4

April, 2007



**Veritas Array Searches for Gamma Radiation**

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**Cover Photo:** The Veritas Gamma Ray Detector at Whipple Observatory

TAAA Web Page: <http://www.tucsonastronomy.org>

TAAA Phone Number: (520) 792-6414

<i>Office/Position</i>	<i>Name</i>	<i>Phone</i>	<i>E-mail Address</i>
President	Bill Lofquist	297-6653	president@tucsonastronomy.org
Vice President	Ken Shaver	762-5094	vice-president@tucsonastronomy.org
Secretary	Steve Marten	307-5237	secretary@tucsonastronomy.org
Treasurer	Terri Lappin	977-1290	treasurer@tucsonastronomy.org
Member-at-Large	George Barber	822-2392	mal1@tucsonastronomy.org
Member-at-Large	JD Metzger	760-8248	mal2@tucsonastronomy.org
Member-at-Large	Teresa Plymate	883-9113	mal3@tucsonastronomy.org
Chief Observer	Wayne Johnson	586-2244	chief-observer@tucsonastronomy.org
AL Correspondent (ALCor)	Nick de Mesa	797-6614	alcor@tucsonastronomy.org
Astro-Imaging SIG	Steve Peterson	762-8211	astro-photo@tucsonastronomy.org
Computers in Astronomy SIG	Roger Tanner	574-3876	astro-comp@tucsonastronomy.org
Beginners SIG	Bill Lofquist	297-6653	novice@tucsonastronomy.org
Newsletter Editor	George Barber	822-2392	taaa-newsletter@tucsonastronomy.org
School Star Party Scheduling Coordinator	Paul Moss	240-2084	School-star-party@tucsonastronomy.org
School Star Party Volunteer Coordinator	Claude Plymate	883-9113	school-sp-volunteers@tucsonastronomy.org
Webmaster	Loretta McKibben		taaa-webmaster@tucsonastronomy.org
Club Sales	Ann Scott	749-4867	taaa-sales@tucsonastronomy.org
TIMPA Gate Card controller	Ray Toscano	529-3074	Ray_toscano@earthlink.net
Equipment Loan Coordinator	Richard Dougall	245-5441	elc@tucsonastronomy.org
Librarians	Claude Plymate	883-9113	librarian@tucsonastronomy.org
Grand Canyon Star Party Coordinator	Teresa Plymate		
General Information	Dean Ketelsen	293-2855	gcsp@tucsonastronomy.org
TAAA Board Of Directors	Terri Lappin	977-1290	Taaa-info@tucsonastronomy.org
	All Board Members		taaabod@tucsonastronomy.org

### Membership in the TAAA

#### Annual Fees

Individual membership ..... \$25.00  
 Family (includes two adults plus minor children)..... \$30.00  
 Youth under 18 years must join as a family upon parental or guardian acknowledgement of participation in TAAA events. Ask the Treasurer for the required form.

#### Discounts (one discount allowed, subtract from above rates)

Seniors (over 60 years) ..... \$2.00  
 College Students, Teachers (K - 12)..... \$8.00  
 Youth under 18 yrs (form required, contact the treasurer) ..... \$13.00

#### Options (add to above membership rates)

Tucson society of the Astronomical League (TAL) fees\$ 5.00  
 Sky & Telescope Magazine 1 year (12 issues)..... \$32.95  
 Astronomy Magazine 1 year (12 issues)..... \$34.00  
 2 years (24 issues)..... \$60.00  
 Postage for New Member Pack ..... \$ 4.05

**Donations** are accepted for the following funds: SA-IDA/Light Pollution, TIMPA, Education, 30" Telescope & Land, and General/Undesignated.

#### Renewal Information

- Your membership expires as indicated on your mailing label.
- TAAA members may join the Tucson society of the Astronomical League (TAL) at the time they join or renew.
- Discounted Sky & Telescope or Astronomy magazine subscriptions are available to members and can be started or renewed at anytime. Rates are given above. Allow 3 months for processing. Subscriptions must be sent through the TAAA. *Do not send money directly to the magazines.* To change an individual subscription to the group rate, pay the

subscription amount to the TAAA treasurer. Include your magazine renewal notice.

- Please include a note explaining what you are paying for. Credit cards are not accepted. Write one check or money order for fees plus any options or donations. Make it payable to TAAA and send to:

Tucson Amateur Astronomy Association  
 PO BOX 41254 Tucson, AZ 85717

**Mailing Address or Email Changes** - Send to address above or email the treasurer.

**TAAA Mission Statement** - The mission of the Tucson Amateur Astronomy Association is to provide opportunities for members and the public to share the joy and excitement of astronomy through observing, education and fun.

**Desert Skies Publishing Guidelines** - All articles, announcements, news, etc. must be submitted by the newsletter deadline. Materials received after that date will appear in the next issue. The editor retains all submissions unless prior arrangements are made. Submissions should be submitted in Word compatible files via e-mail or on a recordable media.. All material copyright Tucson Amateur Astronomy Association or specific author. No reproduction without permission, all rights reserved. We will not publish slanderous or libelous material! Send submissions to:

George Barber  
 TAAA/Desert Skies Editor  
 15940 W Ridgemoor Ave  
 Tucson AZ 85736

### President's Message

We are fortunate here in Tucson to have so many opportunities to enjoy astronomy as a hobby and as an incredibly interesting intellectual pursuit. The mysteries of cosmology and the constant technological discoveries we see unfolding are, indeed, exciting. And opportunities for our own observing and learning from more knowledgeable fellow members of TAAA abound.

The Messier Marathon on March 17 was as exciting as ever. Not as many people participated this year, either from TAAA or the Phoenix and other Arizona clubs. The weather may have had something to do with that since it was cloudy most of the day. But hope springs eternal, and those of us who went were rewarded from the time it became dark enough to see the stars to the emerging sun on Sunday morning with clear skies. I, for one, find the all night adrenaline rush of going through the list of objects to be an annual highlight, and I look forward to this March event again next year.

Another equally important opportunity is coming up in June: the Grand Canyon Star Party. Dean Ketelsen continues to provide the leadership for this event that attracts national attention. It begins on Saturday, June 9 and runs through Saturday night on the 16th. It is a week-long immersion in astronomy, with all of the added attractions of the Grand Canyon and surrounding area. If you can only get there for two or three days, it is well worth it.

In April TAAA is giving its support to the Sharing The Sky Foundation event on the UofA Mall on Saturday the 21st. Look elsewhere in this issue of Desert Skies for more details. David and Wendee Levy are leading the way for this public event that will raise funds for educational purposes. We can use help with telescopes and volunteers to staff the tables that will be set up. A sign-up sheet will be available at the April 6 General Meeting.

The May 6th General Meeting of TAAA will be Members' Night, and the annual election of the TAAA Board of Directors. Several people have already signed up to make presentations at the meeting. Please get in touch with me to get on the schedule for Members' Night. Each person will have up to 15 minutes to share their wisdom. You can call me at 297-6653 or send an email message to wlofquist@comcast.net to reserve your time slot. There will also be a sign-up sheet on the table at the April meeting. This always proves to me an informative meeting.

We hope you will take advantage of the observing nights at TIMPA and Las Cienegas as well as participate in the school and other star parties.

Clear skies,  
Bill Lofquist

### Meeting Information and Calendar of Events

**TAAA MEETING DATE:** Friday, April 6, at the Steward Observatory Auditorium - Room N210

**ASTRONOMY ESSENTIALS:** 6:30 pm

Speaker: Mary Turner

Title: Seasonal objects

It is time again for our quarterly look at some of the celestial objects that are good candidates for viewing over the next few months. Pictures and data will be presented on objects which may include constellations, globular and open clusters, nebulae, planets, galaxies or any other the many wonders to be found in our night skies.

**GENERAL MEETING:** 7:30 pm

Speaker: Trevor Weekes, Whipple Observatory, Harvard-Smithsonian Center for Astrophysics

Title: Extreme Astronomy with VERITAS

It is generally assumed that the only bands of the electromagnetic spectrum that can be used by the ground-based astronomer are those at radio and optical wavelengths. However at very high energies gamma rays can be detected as they interact in the upper atmosphere using optical detectors. The detection technique has been pioneered at the Whipple Observatory over the past four decades; it has been used to explore this extreme universe which has proved to be very rich in sources. To produce gamma rays of these energies, very unusual conditions

must exist. Among the sources detected to date are Supernova Remnants, Active Galactic Nuclei (Quasars) and Radio Galaxies. The latest telescope to join in the search for new sources is VERITAS (Very Energetic Radiation Imaging Telescope Array System) which consists of 12 m optical reflectors with sensitive fast cameras. It is located at the Basecamp of the Whipple Observatory.

Dr. Trevor Weekes is a Senior Astrophysicist at the Smithsonian's Whipple Observatory in the Santa Rita Mountains. He was educated at University College, Dublin, Ireland. He has been a resident of Arizona since 1967 and served as first director of the Whipple (then Mount Hopkins) Observatory. He leads the Whipple Gamma Ray Group which detected the first galactic and extragalactic gamma ray sources and is the Project Scientist for VERITAS. He was awarded the Rossi Prize of the High Energy Division of the American Astronomical Society in 1997.

**BOARD OF DIRECTORS MEETING:** Wednesday, April 11, 6:30 pm. The meeting is held at Steward Observatory Conference Room N305.

**STAR PARTIES AND EVENTS:**

03 Apr - Sabino High School Star Party

09 Apr - Astro-Imaging SIG Meeting at China Rose

10 Apr - Cragin Elementary Star Party

11 Apr - Beginner's SIG Meeting at China Rose

### Meeting Information and Calendar of Events (cont.)

11-13 Apr - Venus and the Pleiades at Flandrau  
 14 Apr - TAAA and BSIG Star Party at TIMPA  
 15 Apr - UofA Astronomy Students Star Party  
 17 Apr - Vesey Elementary Star Party  
 18 Apr - Ironwood Elementary School Star Party  
 19 Apr - Agua Caliente ES Star Party  
 20 Apr - St. Gregory Preparatory School Star Party  
 21 Apr - "Sharing the Sky" Star Party

21 Apr - TAAA Star Party at Las Cienegas  
 27 Apr - Our Mother of Sorrows Star Party  
 01 May - Doolen Middle School Star Party

**NEWSLETTER SCHEDULE:** Deadline for articles: Sat, April 21. Printing: Mon, April 23. Folding Party: Tues, April 24. Mailing: Wed, April 25. The newsletter is mailed at least one week prior to the following month's General Meeting.

### Club News

#### Member News

We welcome these members who have recently joined the TAAA: Brad Barber, Donald Beaman, Arnold and Engrid Epel, Robert B Irwin, Randy Mathews, and Connie Walker. Glad to have all of you join! New members can pick up a members pack at a meeting if they didn't request it by mail. Hope you'll make it to our star parties or meetings so we can all get to know you. (Updated membership lists are available online at either YahooGroups email list website under Files, or at most meetings.)

#### Basha's Thanks A Million Program

The 2007 Basha's Thanks a Million for Friends and Neighbors program ended on March 31st. With thanks to the 16 TAAA members who participated, we'll be receiving a donation of about \$50.

#### TAAA Apparel

Looking for a special gift or a way to make that fashion statement? Try on something from our fine line of club apparel. We have got hats, T-shirts, denim shirts, and patches. We take cash and checks.

#### Astro-Imaging SIG Meeting

Monday, April 9, 7pm  
 China Rose, NE corner Speedway/Rosemont

Our presentations feature CCD images, planetary webcams, and film. Come see some of the state of the imaging art over some Chinese food. Just show up and enjoy the show! For more information, contact Steve Peterson.

#### BSIG for April

The Beginners Special Interest Group will gather for the monthly dinner meeting/TIMPA warm up at the China Rose restaurant (NE corner of Speedway and Rosemont) on Wednesday, April 11 at 6pm. The main theme for the meeting will be objects suitable for observation at the TIMPA star party the following Saturday, April 14<sup>th</sup>.

For those who are working their way through the BSIG observing program, we have an excellent opportunity to

cover the outreach requirement coming up. The "Sharing the Sky" star party (which replaced the T4T star party this year) will be held April 21<sup>st</sup>. This is a good one for your first public star party. It can be big and busy, but you will never be in a venue with more star party veterans around you to provide support and encouragement. Let us know at the BSIG meeting or at TIMPA (or by email) if you intend to participate as a BSIG member.

April is almost here, and spring is sprung. There's an excellent chance we will be able to do some observing at TIMPA this time around. Join us at the China Rose for information and good company, and at TIMPA for (we hope!) clear skies!

The BSIG Committee

#### Upcoming Lectures

Below is our upcoming lecture schedule. Members Night is next month. Members are encouraged to make a 15 minute presentation about anything related to astronomy: a current project you're working on, astrophotos you've taken, etc. Get your name on the list of speakers which will be available at the April meeting on the table of sign up sheets.

There is an opening for the June 1st Astronomy Essentials lecture so contact Terri Lappin (see page 2 for contact info) if you want to give that presentation. We can suggest a topic if you don't have one yourself. Astronomy Essentials lectures, given by TAAA members almost exclusively, are about basic astronomy and are about 30 minutes long.

5/4	Members Night begins at 6:30pm - No AE Lecture	
6/1	<i>Astronomy Essentials</i>	OPEN
	<i>Invited Lecture</i>	Buell Jannuzi, NOAO Large Scale Structure of Universe/Future of Kitt Peak
7/6	<i>Astronomy Essentials</i>	Mary Turner Seasonal Objects
	<i>Invited Lecture</i>	Mark Dickinson, NOAO "Multi-wavelength deep field surveys: watching galaxies grow"

### Club News (cont.)

#### Venus and the Pleiades

April 11, 12 and 13 (Wednesday, Thursday, and Friday)  
7-9:00 p.m.  
Flandrau Science Center

Flandrau Science Center is hosting free public viewing of the brilliant planet Venus passing near (within two degrees from) the Pleiades star cluster. TAAA astronomers with big mounted binoculars and/or wide-field telescopes are needed for three (3) star parties on the UofA mall (organized by Flandrau Science Center) on Wednesday, Thursday, and Friday nights, April 11-13 from 6:30 p.m. (setup time can start as early as 5:30 p.m.) to 9:00 p.m., weather permitting. Those TAAA volunteers who need parking permits to park on the UA mall for this event must contact Michael Terenzoni (<miket@ns.arizona.edu>, or phone 621-3646). Otherwise parking will be open and free of charge in any metered space after 5 p.m. More info about the event and parking near Flandrau is at Flandrau's WWW site: <http://www.flandrau.org>

#### SHARING THE SKY STAR PARTY 2007

by Wendee Levy

Inspiring people to simply look up and to love the night sky has always been David Levy's passion. This year, Saturday, April 21<sup>st</sup> only, will be the club's annual fundraising star party. Our intention this year is to be a little more general in our "cause." The National Sharing The Sky Foundation is a 501c(3) organization that is dedicated to motivating and inspiring the public about the sky.

The foundation has been concentrating on two major aspects of this goal. The first is to inspire the public by means of outreach lectures and star parties. We still go to the MDA camps to allow those children to be able to love the sky as we do. The second is the ability, thanks to the generosity of Meade instruments to place telescopes with groups that have the energy and the drive, but not the funds to purchase these telescopes themselves. TAAA was one of the recipients last year.

Our star party would be much the same as the T4T star parties, but the funds would go to the Sharing the Sky Foundation instead of to MDA. Those individuals and groups that would still prefer to write their checks to MDA

may do so. Since David and I do have ties to that group, we have no problem making sure those donations go where they are supposed to go.

David and I are hoping that the club will show the same support for us as you have in the past.

#### Sharing the Sky 2007

by John Kalas

The TAAA will be supporting the Sharing the Sky activity this year on Saturday, April 21<sup>st</sup>. Saturday's activity will have solar viewing taking place from 3:00 to 6:00 pm with evening observing running from 6:00 to 10:00 pm at the University of Arizona Mall across from the Flandrau Science Center. David and Wendee Levy will be hosting the event.

John Kalas is the TAAA coordinator for the event. There will be a signup sheet at the April meeting. Many volunteers will be needed to operate telescopes (solar and evening), staff donation areas and assist in general public support. Please consider supporting this worthwhile event. If you are unable to attend the meetings to sign up, please contact John via e-mail at [jckalas@cox.net](mailto:jckalas@cox.net).

In the past, the committee instituted corporate sponsorship as a means of increasing donations and it was very successful. Sponsor forms will be available at the April meeting. If you know of a company that would be interested in supporting this great event, please pick up a sponsor form or contact John Kalas.

#### Grand Canyon Star Party 2007

9-16 June  
South and North Rims  
By Dean Ketelsen

Hello all and welcome to another edition of the Grand Canyon Star Party News! It is already getting late to be making plans if you want a hotel room at the rim, so think hard and come join us.

A bit of background for those of you just learning about this event. It was started way back in '91, and has turned into one of the largest public star parties at one of the



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## Club News (cont.)

darkest sites in the US. Mostly I talk amateur astronomers (like you) into setting up their telescopes at the Yavapai Point parking lot for the thousands of park visitors that flow through that area around sunset. It is such an amazing place for a star party - the Canyon, of course, is an incredible location by day, and the unspoiled dark skies at night are fantastic as well. The rewards are varied - a great family vacation destination, the gratitude of an adoring public for showing them the sky, and that black sky is reward enough for some too. If it is your first time and just want to check us out without bringing a scope, we'll have plenty - just show up during the above dates. Yes, the star party is held in a public parking lot and yes, we do get headlights as well as shuttle buses coming through at night, but they are really only a minor annoyance.

It is never too early to book a room at one of the Canyon lodges, so plan now if you would like one. And of course, don't forget that the North Rim is included in the star party, and a great place to visit if you have never been to that side. As is usual, the Park Service gives us a few campsites to use and if you would like one of those (you will likely be sharing it with another astronomer as these have very high demand) I will be taking names for them on 1 March. Note that these campsites are for those staying at least 6 nights of the 8-night star party. Please make your own campsite reservations if you are only coming for a few days.

The website is the repository of reservation information and it is currently under renovation, but make your plans and let me know if you have any questions. The webpage is at [www.tucsonastronomy.org/gcsp.html](http://www.tucsonastronomy.org/gcsp.html). Hopefully, by the next newsletter, it will be rewritten and up to date.

This event has been so much fun over the years; I can hardly believe I've organized it for 17 years now! It is hard to convey that GCSP feeling you get, but if you have a fast internet hookup, check out the following GIF:

[http://alice.as.arizona.edu/~ketelsen/Milky\\_Way\\_2\\_slow.gif](http://alice.as.arizona.edu/~ketelsen/Milky_Way_2_slow.gif)

You can see the long lines you get when it first gets dark, then mostly the serious observers and latecomers stay around for the shorter lines. Most of the scopes close up by midnight, but a core of observers keep at it till dawn - those dark skies are not easily ignored!

So come join us - I'll bet we see you there again! Let me know if you have any questions - [ketelsen@as.arizona.edu](mailto:ketelsen@as.arizona.edu).

### Beginner's SIG Eyepiece Loaner Kit Available

The Beginner's Special Interest Group has a loaner kit consisting of several quality eyepieces, a barlow, and a star mirror diagonal. This kit is available for short-term loan to any member, but it is especially meant to assist beginners by providing a no-cost way to evaluate basic eyepiece alternatives for a new telescope and learn more about eyepiece types, characteristics, and terminology.

If you are interested in borrowing this kit, contact the Beginner's SIG by sending an email to: [novice@tucsonastronomy.org](mailto:novice@tucsonastronomy.org).

### Paid Star Party Program - A Fantastic First Quarter

by John Kalas

After an outstanding year in 2006, the Paid Star Party Program has experienced a great first quarter for 2007. The club has provided astronomy services for nine events at local resorts yielding revenues of nearly \$3800. The success of this fundraising activity is only possible through the dedication of the volunteers. I would like to express my sincere appreciation to the following volunteers:

Michael Turner  
Steve Marten  
Robert Crawford  
Bill Lofquist  
Robert Wilson  
J.D. Metzger  
Lou Faix  
Jim O'Connor  
Tom Rolfsmeyer

Michael Turner has graciously agreed to take over the Paid Star Party Coordinator responsibilities during my upcoming medical leave in the month of April. I appreciate Michael's offer to help me out and I have tremendous confidence in the volunteer support he will require in the potentially busy month of April.



TAAA members can borrow any of the five Night Sky Network toolkits for use at outreach activities like star parties, classroom presentations, or other events where you are talking about astronomy. The five toolkits are listed below. Each contains a training tape or DVD, a Resource CD which contains PowerPoint presentations and NASA animations, plus the materials for doing the projects. Contact Terri Lappin (see page 2) for more information about these kits and their use.

PlanetQuest: materials to explain how planets are detected, why we put telescopes in space, treasure hunt for objects related to stellar evolution, star chart of naked eye stars known to have planets in orbit

Our Galaxy, Our Universe: scale model of the Milky Way galaxy and the Universe

Black Hole Survival Kit: what is a black hole and how does it affect objects nearby, includes a game that a group or family can play

### Club News (cont.)

Telescopes - Eyes on the Universe: explains the basic principles of optics, the human eye, and observing  
Shadows and Silhouettes: covers lunar phases, eclipses, and transits

The Night Sky Network has also given us a SolarScope to use in our outreach efforts. It will present a white light image of the sun suitable for a small group to view together.

#### **Southern Arizona Regional Science and Engineering Fair**

By Ken Shaver

The Southern Arizona Regional Science and Engineering Fair (SARSEF) judging occurred on March 20th at the Tucson Convention Center. I have to say that I was very impressed with the quality and quantity of Astronomy related projects we saw. It was very apparent astronomy knowledge is improving throughout the school systems here in Tucson. I noticed an influence from the Project Astro lessons in many of the projects. We judged several impact crater projects, many moon phase project and some on the reason for seasons on Earth. These projects ranged from the 3<sup>rd</sup> through the 8<sup>th</sup> grade.

TAAA presented several very nice awards for the top astronomy related projects and deciding on the recipients proved to be very difficult for the three judges, Molly Hancock, Richard Grimaldi, and myself. In the end, we awarded an ETX 70 telescope and a one year club membership to a project called "Digging in the Astronomical Data mine: A Search for Variable Stars". The project was completed by Theo Jones. Theo utilized a blinking method to compare images of various stars over time in an attempt to identify a new variable star. Amazingly we discovered that this entry was submitted by Donna Jones, Theo's' mother and home school teacher.

Two \$100 Starizona Gift certificates with a one year club membership were also awarded. The first went to High School Junior, Daniel Kirps for his project "Deep Field Galaxy Classification". In this project Daniel spent several nights imaging remotely on the New Mexico Skies facility and classifying galaxies he originally found in a Kitt Peak Deep field image. Daniel attends Howenstine High School. The second certificate was awarded to sixth grader, Peter Angeli. His project was titled "Measuring the Height of the Moon Mountains with a Simple Telescope". Peter utilized a small refractor telescope to image the moon shadows at the terminator, and then using geometry he calculated the height of the mountains. His calculations did not prove to be as accurate as he had originally hypothesized, but he acknowledged this shortfall. This is exactly what science experiments are all about.

As I mentioned earlier, it was very difficult to determine the winners of the above awards. Because of this, the judging panel decided to award 3 additional projects an Honorable Mention. These awards come with a one-year membership in the TAAA. The first project was by Jessica

Honea for "Starry Eyes" This project entailed counting the number of stars in a field and then monitored the effect of various colored filter on that number. Jessica is an 8<sup>th</sup> grade student at Satori Charter School. The next Honorable Mention went to Taylor Lundquist and Justis Leader for their project "Length of Days". Taylor and Justis modeled the relationship of the Earth's tilt and demonstrated why the days are longer in Summer than in Winter. They are 4<sup>th</sup> grade students at Winifred Harelson Elementary. The last Honorable Mention project was "It's Just a Phase". This project was a 3 person team effort by Noah Shambo, Paul Morales, and Chris Machado. They created a light box that had different viewing angles to look demonstrate the different phases of the moon. This was a very impressive project by some inventive 3<sup>rd</sup> graders at Butterfield Elementary.

Join me in extending a very warm TAAA congratulation to all of the winners and participants in this year's SARSEF event.

#### **2007 All Arizona Messier Marathon**

By Tom Watson

The 2007 All Arizona Messier Marathon did not start in a promising fashion. When it came time for me to drive out to Farnsworth Ranch the skies were rapidly filling with clouds, and we were on the way to setting a record high temperature for the date (March 17th). The CSC gave me little reason to hope for a clear night, but the NWS forecast was for cloudless skies, so I decided the odds were even and made the trip anyway. I spent the afternoon under a shade canopy, wilting in the company of several TAAA members and Cloudy Nights participants. Man, was it hot out there! Even with the clouds enough of the afternoon sun came through to make my patch of shade a popular spot. Elsewhere on the site people were wandering around and peering anxiously at a variety of hand-held electronic devices, trying to pick up signals and, when successful, to decipher a CSC that, by mid-afternoon was showing a different forecast almost every half hour. Things began to look hopeful by mid-afternoon, when the CSC showed nearly complete clearing by 10pm. An hour later it offered the hope for at least a late start to the Marathon. Then, less than an hour before sunset it became obvious that the good old NWS had gotten it right all along. The skies cleared first in the west-southwest, and by the time the sun was down most of the clouds were well off to the east and the Marathon was on. We endured only a few scattered clouds early on, and then the skies were clear! With the sun down it cooled off nicely, and quickly, but never actually became cold. So we ended up with a fine, clear, comfortable night for the Marathon. (The seeing conditions were nothing to write home about, but I was 'running,' not observing, so no worries.)

I started my own Marathon with a hit and a miss, finding M77 without much trouble, but never so much as glimpsing M74 with the 8" Newt. From that point on, however, everything went smoothly. The Virgo Galaxy Cluster

### Club News (cont.)

slowed me down some, as did a few of those globular clusters in Ophiuchus (M14, for one, gave me a merry chase). Of the TAAA/CN group there were three of us (that I'm aware of) working on the Marathon: Ken Shaver and yours truly from the TAAA, and Scott, a CN participant from Phoenix. You could tell which of us were 'running' the race; we weren't talking all that much. But it wasn't all Marathon, all the time. There were views shared from one telescope to another, eyepieces compared (notably the I3 image enhancement eyepiece brought here from Michigan by CN member Gary) and many stories told (some of them were even about astronomy). There was a lot of energy out on the field, inspired by the sudden departure of the clouds. But by the hours of early Sunday morning we were pretty much down to the Marathoners, and the observing field was strangely quiet. Except for those students from the NAU club, who apparently spent the entire night laughing about something. They were still laughing as the sun rose. Well, at least they were having fun with whatever it was they were doing.

My own count by the end of it all was 102 objects, very definitely a personal best. I might have gotten all that were available, but at some point I simply ran out of energy. It's possible to become so tired that you become physically uncomfortable, and I draw the line when I reach this point. I'm still not quite quick enough in the early evening to be able to take a nap and recharge for the

early morning home stretch, although from this year's results I'd say that for the next Marathon I should be able to do so. I'm happy with the '07 result. To go from 84 objects found in '06 to 102 objects located this year is a big enough improvement that, with the added enjoyment of the good company and the clear, cool night, I went home quite satisfied.

#### From the Editor

Other TAAA members participated in the 2007 All Arizona Messier Marathon, and here are the published results:

Total	Name	Instrument	Remaining
109	Kevin Jones	8" SCT	M30
108	Gary Gardner	24" DOB	M74 M30
108	Ken Shaver	16" f4.5 DOB	M74 M30
104	Bill Lofquist	12.5" DOB	M77 M74 M2 M72 M73 M30
102	Thomas Watson	8" Eq SVP	M74 M55 M75 M15 M2 M72 M73 M30
23	Beverly McCune	9x63 binox	(too numerous to list here)

I'd like to thank Loretta McKibben and Terri Lappin for completing the newsletter while I was on vacation. I had a fantastic time SCUBA diving in Palau and Truk!

### Desert Skies Classified

For Sale	Bogen 3035 tripod with Bogen 3047 3 way pan head. Includes (2) quick release mounting shoes. Contact: Neal Scofield, 883-5456 or <a href="mailto:Retired-Badge@msn.com">Retired-Badge@msn.com</a> - \$100.00 firm. [05/07]
For Sale	Meade 10" LX200 R w/UHTC Coatings - New - \$ 3200 OBO. Comes with all standard accessories - GPS, Primary Mirror Lock, Zero Image-Shift Microfocuser, Heavy Duty Tripod, Power Cable for car or battery, many others. It does not come standard with a separate power supply for household current. Original warranty still in effect until Oct. 2007. Reasonable offers considered. 480-981-1295 reaches me here in Mesa, AZ. Charles Crawford [04/07]

SAIDA NEEDS MORE HELP FROM MORE TAAA MEMBERS. AFTER ALL, WE WILL ALL BENEFIT FROM DARK SKIES IN OUR AREA !!!

For more information, go to: [www.sa-ida.org](http://www.sa-ida.org)

Or feel free to contact:

John Polachek  
President of SAIDA  
E-mail: [jpolach@dakotacom.net](mailto:jpolach@dakotacom.net)  
Telephone: 743-1362

SAIDA meets on the second Wednesday of each month from 5:30 to 7:30 PM in the IDA office located at 3225 N. First Ave, just North of Ft. Lowell. And.....

WE USUALLY HAVE PIZZA !!!



## Public Star Parties and Community Events

All members of are asked to support the TAAA School Star Party program and other community events listed below. TAAA either sponsors or co-sponsors these events. These are great opportunities for beginners as you may only need to know a few objects in the sky. Even without a telescope, you can be valueable in other capacities. Sign up sheets for many events can be found at the meeting or contact a TAAA officer.

### **Sabino High School Star Party** **East** Tuesday, 4/3/2007 No. of Scopes: 2

Sabino High School will be hosting Starry Night at 5000 North Bowes Rd... Speedway east to Wilmot-north to Tanque Verde-east on Tanque Verde to Bear Canyon-north on Bear Canyon to Snyder-east on Snyder to Bowes Rd.-north on Bowes to High School. Viewing will be on the baseball fields. Contact person Maryanne Carpenter can be reached at 584-7753 or email [MaryAnn.Carpenter@tusd1.org](mailto:MaryAnn.Carpenter@tusd1.org). Set-Up Time: 7:00pm. Observing will be from 7:30 pm to 9:30 pm. Sunset: 6:45pm Dark Sky: 7:39pm Moon Phase: near Full Moon.

### **Cragin Elementary Star Party** **Central** Tuesday, 4/10/2007 No. of Scopes: 6

Cragin Elementary will be preparing "Pie In the Sky" at 2945 N. Tucson Blvd. From Grant and Campbell: take Grant east to Tucson Blvd, turn left (north); School is on corner of Tucson Blvd and Blackledge. (Between Glenn and Ft. Lowell). School Viewing Area Location: Field near Ramada on West side of school. Contact person Tina Zadro can be reached at 795-4470 or email [tzadro@earthlink.net](mailto:tzadro@earthlink.net). Set-Up Time: 7:15pm. Observing will be from 7:45 pm to 9:45 pm. Sunset: 6:50pm Dark Sky: 7:44pm, Moon Phase: (no moon during viewing).

### **UofA Astronomy Students Star Party** **West** Sunday, 4/15/2007 No. of Scopes: 10

UofA Astronomy Students will be having a Star Party at Saguaro Natl Park West. Take Speedway Blvd. west past I-10 and continue about 3.5 mi. where Speedway becomes Gates Pass Road. Go over Gates Pass and continue about 5 mi. west to Kinney Road. Turn right (north) on Kinney Road and continue past the Desert Museum. Observing will be in the parking lot of the Visitor Center. Contact person Tom Fleming can be reached at 621-5049 or email [taf@viking.as.arizona.edu](mailto:taf@viking.as.arizona.edu). Set-Up Time: 7:30pm. Observing will be from 8:00 pm to 10:00 pm. Sunset: 6:53pm Dark Sky: 7:48pm Moon Phase: Late Crescent.

### **Vesey Elementary Star Party** **Southwest** Tuesday, 4/17/2007 No. of Scopes: 4

Vesey Elementary will be celebrating Vesey Family Science Night at 5005 S Butts Rd. Take I-10 to I-19 and continue to Irvington exit and turn right at stop sign (go west-bound). Continue west on Irvington for several miles, past stop sign at Camino De Oeste, for about ½ mile.

Viewing will be on the east side of the building outside of the cafeteria (dark parking lot and easy access for the astronomers to set up equipment) Contact person Jennifer Culbertson can be reached at 908-4600 or email [jennifer.culbertson@tusd1.org](mailto:jennifer.culbertson@tusd1.org). Set-Up Time: 7:15pm. Observing will be from 7:45 pm to 9:45 pm. Sunset: 6:57pm Dark Sky: 7:52pm Moon Phase: Crescent after New Moon.

### **Ironwood Elem. School Star Party** **Northwest** Wednesday, 4/18/2007 No. of Scopes: 5

Ironwood Elementary School will be hosting 5th Grade Science and Math Night at 3300 W. Freer Dr. Take the Ina exit from freeway. Ina east to Thornydale, left on Thornydale. Go north on Thornydale from Ina to Overton (Walgreens on northeast corner - 3rd stoplight north of Ina). Make a right on Overton. go 1/2 mile to Camino de la Tierra and make a left into the community called Overton Heights. Follow Camino de la Tierra to the end. School will be on your right. Drive through the gates to the left of the school to access the playground. Contact person Michelle Grey Miles can be reached at 579-5150 or email [m.m.grey@maranausd.org](mailto:m.m.grey@maranausd.org). Set-Up Time: 7:15pm. Observing will be from 7:45 pm to 9:45 pm. Sunset: 6:55pm Dark Sky: 7:51pm Moon Phase: First Quarter.

### **Agua Caliente ES Star Party** **East** Thursday, 4/19/2007 No. of Scopes: 6

Agua Caliente ES will be holding Star Party/Family Fun Picnic at 11420 E. Limberlost Rd... Go east on Tanque Verde, turn left (north) on Catalina Hwy. Turn right (east) on Prince, past Houghton, then Melpomene, go to end (Homestead), take left (north). Less than a block on left side. Pass school, take right onto Homestead. Viewing will be on the playing field east of school building. Access gate to field/setup is on right. Drive onto field. Contact person Dan Beach can be reached at 520-749-2235 or email [dbeach14@cox.net](mailto:dbeach14@cox.net). Set-Up Time: 7:00pm. Observing will be from 7:30 pm to 9:30 pm. Sunset: 6:56pm Dark Sky: 7:51pm Moon Phase: near First Quarter.

### **St. Gregory Prep. School Star Party** **Foothills** Friday, 4/20/2007 No. of Scopes: 2

St. Gregory Preparatory School will be holding "Night With the Stars" at 3231 North Craycroft Rd. Go north on Craycroft past Grant (stoplight) and Glenn (stoplight) to St. Gregory School Rd (stoplight), turn left (west). Viewing will be on the Soccer Field (North Side of Campus). Contact person Dennis Conner can be reached at 621-2234 or

## Public Star Parties and Community Events (cont.)

email [dconner@stgregoryschool.org](mailto:dconner@stgregoryschool.org). Set-Up Time: 7:15pm. Observing will be from 7:45 pm to 9:45 pm. Sunset: 06:57pm Dark Sky: 07:52pm Moon Phase: Crescent after New Moon.

### **Our Mother of Sorrows Star Party** **East** Friday, 4/27/2007 No. of Scopes: 4

Our Mother of Sorrows will be planning Night Sky With the Planets at 1800 S. Kolb Road. Go East on Speedway to Kolb. Turn South (right) on Kolb, go past 22nd street. OMOS School is on the right between Calle Denebola and Calle Ileo (Calle Ileo is the next light after 22nd street). Viewing will be on basketball court. Contact person Susan Tek can be reached at 747-1027 or email [suetek@cox.net](mailto:suetek@cox.net). Pizza and soda will be available for TAAA volunteers! Set-Up Time: 7:30pm. Observing will be from

8:00 pm to 10:00 pm. Sunset: 7:02pm Dark Sky: 7:58pm Moon Phase: Last Quarter.

### **Doolen Middle School Star Party** **Central** Tuesday, 5/1/2007 No. of Scopes: 3

Doolen Middle School will be holding "Night With the Stars" at 2400 N Country Club Road. North East corner of Grant and Country Club. Viewing will be in the School Court Yard. Contact person Jim Haley can be reached at 232-6976 or email [James.Haley@tusd1.org](mailto:James.Haley@tusd1.org). Set-Up Time: 7:30pm. Observing will be from 8:00 pm to 10:00 pm. Sunset: 7:04pm Dark Sky: 8:02pm Moon Phase: near Full Moon.

## Items of Interest

### **Websites: Trips On The Internet Super-Skyway**

By Rik Hill

Checking your depth...

There are hundreds, perhaps even thousands, of amateur astronomers all over the country using CCD cameras of one sort or another. The web abounds with images from the ordinary to the spectacular. I'll bet you have some stashed away as well. But have you ever tried to see how deep your exposure is in terms of stellar magnitude? Let's look at some examples.

Among the favorite galaxies of spring are M81 and M82 (NGCs 3031 and 3034 respectively). Many amateur astronomers have imaged this pair with various CCD cameras, some in color some not. I absolutely love the shots. These two galaxies show a lot of detail, especially the clusters and H2 regions in M81. Many amateurs don't realize it but they easily get down to 18th mag. with just an 8" telescope in such shots. If you have images like this you can get a real good idea of your magnitude depth by comparing your images to the photometric charts at:

<http://www.rochesterastronomy.org/snimages/reference/>

There's a lot of information on these images as used on this website, found at the bottom of the page. These charts have relative red over blue magnitudes next to selected stars, produced from DSS or Digitized Sky Survey (see: [http://archive.stsci.edu/cgi-bin/dss\\_form](http://archive.stsci.edu/cgi-bin/dss_form)) images and some taken by Odd Trondal (no really, that's the guy's name). His website is worth a look with an observatory at +59' 56' 58"! Aw heck, let's call it +60. Take a look:

[http://www.geocities.com/Odd\\_Trondal/index.html](http://www.geocities.com/Odd_Trondal/index.html)

Now these magnitudes are derived from relative photometric procedures and have some level of error inherent

in each magnitude, but it's small. However, if you are a stickler for knowing exactly, to a hundredth or two of a magnitude, how faint you are going I would strongly recommend the Landolt Equatorial Standards:

<http://www.cfht.hawaii.edu/ObsInfo/Standards/Landolt/>

and

<http://www.noao.edu/wiyn/obsprog/images/tableA.html>

Dr. Arlo Landolt is professor of Physics and Astronomy at Louisiana State University at Baton Rouge and one of the most meticulous astronomers when it comes to stellar magnitudes. (He is also one of the kindest astronomers I've known over the last 30 years.) He has spent a lifetime measuring the exact brightnesses of thousands of stars, setting up standard fields all over the sky that are used to determine relative magnitudes as in the first website. Without his work there would be no references for a lot of the photometry done today.

So there you have it, a number of means by which you can determine the faintest stellar magnitudes in your images. While you're at it, you might keep your eyes open for any supernovae!

As always, if you know of a particularly good website you would like mentioned here, or some web topic you like covered, drop me a line at: [rhill@lpl.arizona.edu](mailto:rhill@lpl.arizona.edu)

### **VERITAS First Light Celebration**

April 27 - 29, 2007

To mark First Light on the VERITAS Array, the VERITAS Collaboration is planning a two day celebration. On the first day there will be a Scientific Workshop to discuss the VERITAS scientific program and to discuss cooperative

### Items of Interest (cont.)

programs with other projects in GeV-TeV gamma-ray and neutrino astronomy.

The Public is invited to attend a lecture by Lawrence M. Krauss of Case Western Reserve University titled "A Cosmic Mystery Soup". Dr. Krauss will be speaking at the

Green Valley Recreation Center West (1111 Via Arcoiris, Green Valley) at 7:30 pm on April 27th.

There will be an open house at the Whipple observatory on Sunday, April 29th.

### Member's Events

#### TAAA and BSIG Star Party at TIMPA

Saturday, April 14

Come on out and enjoy the spring skies! TIMPA star parties are great for both beginners and experienced observers. Our novice members can get help with observing issues or equipment problems, as there are many experienced members there who would be happy to help. If you don't own a telescope, come anyway, because there are lots of telescopes set up and everyone is invited to look through them. This is a great way to check out different telescope designs before you make that all-important decision to buy. We'll do our best to get you the answers you need. If you have friends or relatives who are curious about amateur astronomy, feel free to bring them along. The TIMPA site features a large parking area, and full restroom facilities. Be prepared for cold temperatures. Directions to the TIMPA site are located on the outside flap of this newsletter.

#### TAAA Star Party at Las Cienegas (Empire Ranch)

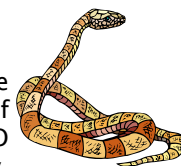
Saturday, April 21

Las Cienegas (formerly Empire Ranch) has been our normal dark-sky observing site for quite a number of years. Please try to arrive before sunset. Stay as long as you like, but let everyone know when you are ready to leave; someone may be taking astro-images. Bring a telescope if you have one, but you don't need one to

attend. Any member would be glad to let you look through their telescope. And, there are now restroom facilities at the site. Las Cienegas is at 4000 feet so be prepared for cold temperatures. Attendees should park their vehicles either perpendicular to the airstrip facing toward the center of the strip, or parallel to the airstrip along either side facing west. That way, when you are ready to leave, you will not have to back up and turn on your bright white backup lights. See the directions to Las Cienegas on the outside flap of this newsletter.

#### Rattlesnake Alert!

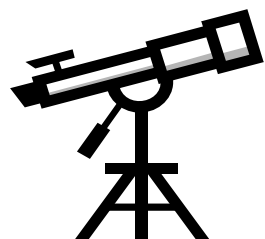
Be alert for rattlesnakes! Rattlesnakes are generally aggressive only if disturbed. If you see one, keep a safe distance and DO NOT try to interact with it in any way. Snakes are much faster than our reflexes, and should be handled only by professionals. Wear boots and long jeans. For more information, go to <http://www.friendsofsaguaro.org/rattlesnakes.html>.



Along with rattlesnakes, other desert critters, such as gophers and ground squirrels, make their home at TIMPA. These residents can leave holes and other potential tripping hazards, so be careful when walking.

Finally, the Tucson water department has declared the water at TIMPA is NO LONGER POTABLE. It is strongly advised that you bring your own water.

### Telescopes for Borrowing



Free service



Only for Members

Don't own a telescope?  
Our Loaner Program is your answer!

These telescopes are in the program

Sears 60mmf/15 on equatorial mount  
Unitron 62mmf/14.5 on equatorial mount  
Meade 90mm ETX  
Coulter Odyssey8 8-inch f/4.5 Dobson  
Meade 8-inch f/4 Schmidt-Newtonian LXD-55  
Meade 10-inch f/4.5 on equatorial mount  
Meade 10" LX200 GPS (requires training session)

Beginners, here's your chance to learn and observe the sky before buying any equipment. The Loaner Program is available to any current member after meeting requirements detailed in the TAAA Loan Policy. Contact the Equipment Loan Coordinator (see page 2) for details about these telescopes.

### TAAA Board of Directors Meeting - February 21, 2007

Attending: TAAA Board Members present: Bill Lofquist, presiding, Ken Shaver, Steve Marten, and Terri Lappin. Members present: None. President's Call to Order: 5:45PM

January Minutes. Accepted. Unanimous.

Telescope Donation. Board accepted donation of 60mm scope from the community. Ken will review with other Board members via email on how to create process for awarding scopes to interested students. Michael has agreed to continue training sessions for members borrowing the Meade 10" scope.

Projectors. Bill will send email to the two SIG leaders to be custodians of projectors, with one projector going to each SIG. Third projector will be assigned to Bill Lofquist available for member events with approval of the Board.

SARSEF Award. An ETX-70AT, recently donated to TAAA, will be awarded to a student participant at the Science Fair at the discretion of TAAA judges. Two additional awards, Starizona \$100 gift certificates, will be awarded. All three student project winners will be awarded TAAA one year membership. The Board also approved increasing the award budget by \$60 for this fiscal year.

Nominating Committee. The Board accepted John Kalas' resignation from and voted to approve Robert Wilson to the Nominating Committee.

Adjourned at 7:35p.m.

Respectfully Submitted,

Steve Marten, Secretary

### Dark Skies for April 2007

**DARK SKIES** (no twilight, no moonlight) for Tucson in 24-hour MST: 18=6pm, 20=8pm, 22=10pm, 0=12am  
**RISE, SET, VISIBILITY** for sun and bright planets: rise for morning object, set for evening object

Sa/Su 31/ 1    -   -   -	Tu/We 10/11   20:15 - 2:21	Sa/Su 21/22   0:16 - 4:20
Su/Mo 1/ 2    Full Moon	We/Th 11/12   20:16 - 3:00	Su/Mo 22/23   1:06 - 4:19
Mo/Tu 2/ 3    -   -   -	Th/Fr 12/13   20:16 - 3:35	Mo/Tu 23/24   1:47 - 4:18
Tu/We 3/ 4    -   -   -	Fr/Sa 13/14   20:17 - 4:08	Tu/We 24/25   2:22 - 4:16
We/Th 4/ 5   20:09 - 20:54	Sa/Su 14/15   20:18 - 4:30	We/Th 25/26   2:51 - 4:15
Th/Fr 5/ 6   20:10 - 21:53	Su/Mo 15/16   20:19 - 4:29	Th/Fr 26/27   3:17 - 4:14
Fr/Sa 6/ 7   20:11 - 22:52	Mo/Tu 16/17   20:20 - 4:27	Fr/Sa 27/28   3:42 - 4:12
Sa/Su 7/ 8   20:12 - 23:50	Tu/We 17/18   20:21 - 4:26	Sa/Su 28/29   4:06 - 4:11
Su/Mo 8/ 9   20:13 - 0:45	We/Th 18/19   20:53 - 4:24	Su/Mo 29/30   -   -   -
Mo/Tu 9/10   20:14 - 1:36	Th/Fr 19/20   22:07 - 4:23	Mo/Tu 30/01   -   -   -
	Fr/Sa 20/21   23:16 - 4:22	

Weekend	Sun	Sun	Mercury	Venus	Mars	Jupiter	Saturn	
	Set	Rise	Rise Vi	Set Vi	Rise Vi	Rise Vi	Set Vi	Vi=Visibility
31/ 1	18:41	6:11	5:12 5	21:32 -3	4:13 3	23:58 -2	3:56 0	-3 brilliant
7/ 8	18:46	6:02	5:13 6	21:46 -3	4:01 3	23:30 -2	3:28 0	0 conspicuous
14/15	18:51	5:53	5:16 8	21:59 -4	3:49 2	23:02 -2	3:00 0	3 moderate
21/22	18:55	5:45	5:21 -	22:11 -4	3:37 2	22:33 -2	2:32 0	6 naked eye limit
28/29	19:00	5:38	5:30 -	22:22 -4	3:24 2	22:04 -2	2:05 0	9 binoculars limit

By Erich Karkoschka

### Constellation Report by Chris Lancaster

## Puppis

The Poop Deck

The southern sky holds the giant ship Argo, which is divided into several individual constellations. Puppis is the poop deck, or stern, of the ship which has its bow pointing below the horizon and its stern standing vertically. The stars of Puppis are 2nd magnitude and dimmer and sit east of a line formed by the two most conspicuous winter stars, Sirius and Canopus. You'll notice that the Greek lettering of this constellation, a system that was established by the German astronomer Johann Bayer, is incomplete. When Bayer distributed the letters, the stars of Puppis did not yet make a constellation of its own, but instead served to form part of the giant constellation Argo Navis.

### Constellation Report by Chris Lancaster (cont.)

We have seen quite often that constellations which lie along the Milky Way are rich in star clusters, and Puppis is no different with its clusters outnumbering all other deep sky objects by a wide margin. Since Puppis is so close to the horizon, those objects which are near the northern areas of the constellation are the best targets. Two of these are M46 and M47. They can be mentioned together since they are only 1.3 degrees apart from each other. Even though they share the same neighborhood, they have much different personalities. M47's stars are a mixture of almost a dozen bright stars (the brightest being mag. 5.7) and another 30 or so dim stars which give the cluster a total magnitude of 4.4. M47 is located at RA 7h 36.6m Dec -14d 30'. M46 contrasts nicely, being a magnitude 6.1 cluster made of over one hundred noticeable stars of mostly magnitudes 9, 10, and dimmer. One interesting feature of this constellation is the magnitude 10.1 planetary nebula on the northern edge of the cluster. This is NGC2438, a round halo measuring about 1' in diameter. Both M46 and M47 are close to 30' in size.

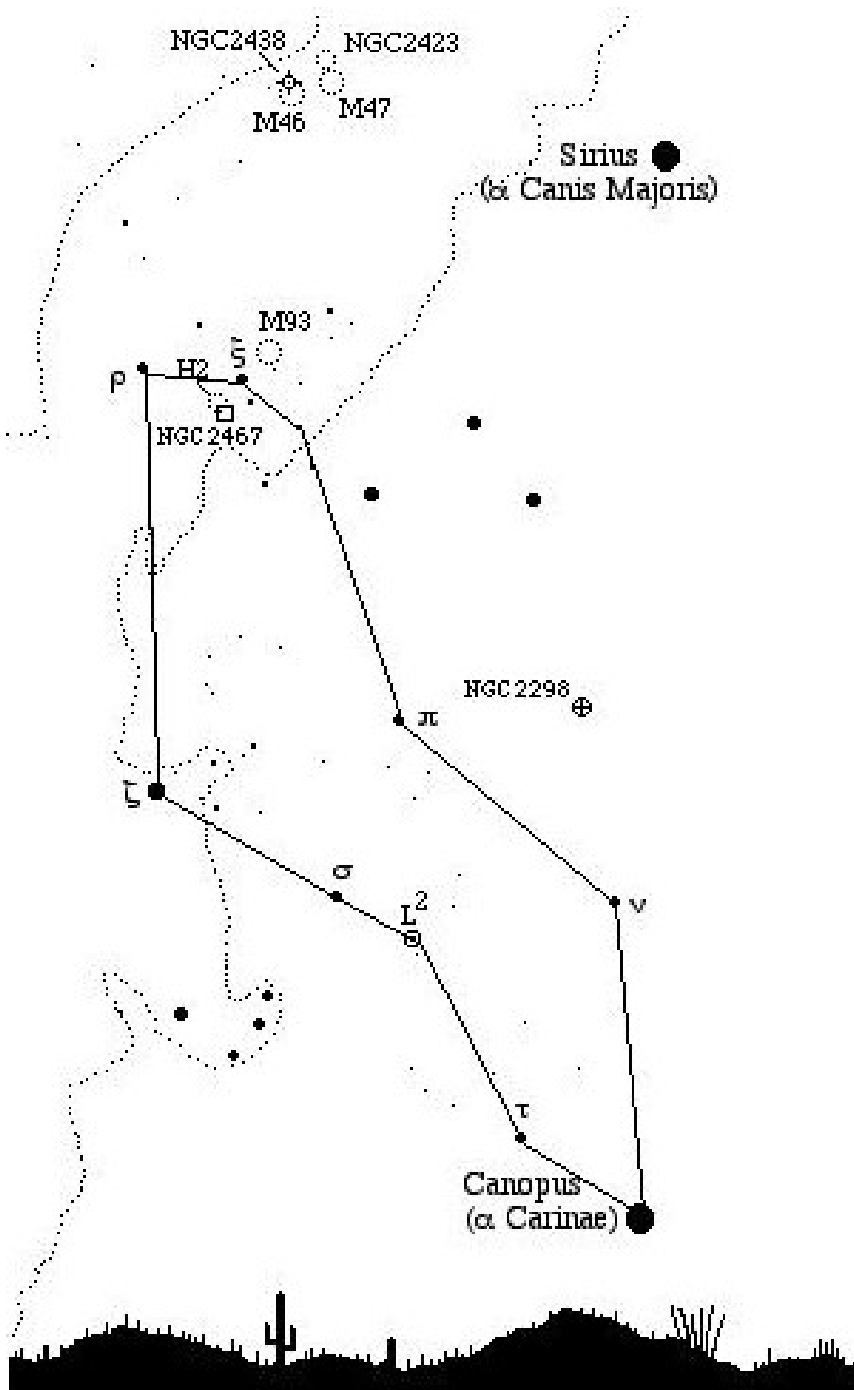
Stay in the neighborhood and you will see another cluster, NGC2423, about 0.6 degrees north of M47. This magnitude 6.7 cluster packs about 60 dim stars in an area 19' in diameter.

Moving south, we find M93. This cluster has a magnitude of 6.2, a size of 22', and a location of 7h 44.6m Dec -23d 52', or 1.5 degrees northwest of Xi Puppis. It appears elongated along the southeast-northwest axis with lanes comparatively empty of stars which make it appear divided into 4 sections.

As a change of pace, let's move southeast, past Xi Puppis, about the same distance as M93, but on the opposite side. Here is a challenging diffuse nebula designated NGC2467. It could be described as masquerading as a planetary nebula since its overall shape is round with noticeable mottling to the edges. It even has an 8th magnitude star sitting in the middle of the nebulosity to add to the disguise. The size of this magnitude 7 nebula is respectable at 16', making for medium surface brightness. Crowding it is another star cluster, H2. This modest cluster has about 20 11th magnitude stars covering 9'.

A considerable distance away near the western boundary of the constellation is NGC2298. Fairly easy to find, but hard to resolve into stars, this is a globular cluster of magnitude 9.4 and measuring a small 6.8'. It is well down in the sky, so it's beneficial to wait until it's as close to the meridian as possible before observing it. You'll mostly see a imperfectly round smudge at RA 6h 49m Dec -36o 00'.

Fans of variable stars will want to seek L2. As a member of the long period variable class, this star ranges in brightness from approximately 3 down to less than 6, and during the process passes through the narrow range in spectral type from M5 to M6. It stays above the horizon only for 7 hours, but that is not a problem since its period is a leisurely 141 days, and both sides of its light curve are equal. Even if you are not measuring its variability, you might still want to do an appraisal of its unique red color.



Tucson Amateur Astronomy Association  
P.O. Box 41254  
Tucson, AZ 85717

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Please consider renewing your membership on time. Renewal month and dollar amount appears on your address label. Magazine subscriptions are not included. TAL fee is included if participating in TAL. See details on page 2.

### Directions to TIMPA and Empire Ranch

#### Directions to TIMPA Site

GPS coordinates: 32 deg 15.868' N, 111 deg 16.390' W

##### **From the North:**

1. Take Ina Rd. west about three miles past I-10.
2. Turn left (south) on Wade Rd.. Wade Rd. becomes Picture Rocks Rd. when the Rd. bends to the right (west).
3. Take Picture Rocks Rd. west to Sandario Rd..
4. Turn left (south) on Sandario Rd. to Manville Rd..
5. Turn right (west) on Manville Rd. to Reservation Rd..
6. Turn left (south) on Reservation Rd. (dirt Rd.) and go about two miles. The TIMPA entrance is on the left.

##### **From the East:**

1. Take Speedway Blvd. west and it turns into Gates Pass Rd..
2. Go over Gates Pass and continue west to Kinney Rd..
3. Turn right (north) on Kinney Rd. and continue past the Desert Museum.
4. Kinney Rd. bends left at the entrance to Saguaro National Park West and becomes Mile Wide Rd..
5. Take Mile Wide Rd. west about five miles to Reservation Rd.. Mile Wide Rd. ends at Reservation Rd. and you must turn right (north) onto Reservation Rd..
6. Take Reservation Rd. north about one mile. The entrance to TIMPA will be on the right.

#### **NOTE**

A gate card is required for TIMPA access. Please **DO NOT** ask the caretakers for entry to the TIMPA SITE. A list of TIMPA key keepers is available on the TAAA website, or by contacting a board member. For scheduled TIMPA star parties, a designated TAAA representative will provide access to the site.

#### Directions to Las Cienegas (Empire Ranch)

GPS coordinates: 31 deg 47.356' N, 110 deg 37.913' W

Take I-10 East from Tucson. Take Exit 281 (Route 83 Sonoita-Patagonia Highway South). Travel south on Route 83 for about 19 miles, watch for green and white milepost 40 sign on the right side of the road. Approximately ¼ mile past milepost 40, turn left into Las Cienegas. The road is dirt and is "washboarded" so go carefully. At about 2.9 miles, there is a fork in the road. Stay to the right. When the road ends in a "T", take a left. Cross over a concrete section of the road down in a wash. Just up the hill from the wash (about .2 mile), turn left. 0.1 mile ahead will be the end of an abandoned airstrip with a covered ramada. The club members have been setting up several tenths of a mile down the runway. If you arrive after dark, as a courtesy to other members, use only your parking lights to approach the set-up location.