

# *Desert Skies*

*Tucson Amateur Astronomy Association*

Volume LVI, Number 8

August, 2010



Large Binocular Mirror Telescope's Adaptive Optics

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**Cover Photo:** Testing the large binocular mirror telescope's adaptive optics system. Side view of the Adaptive Optics system during lab testing. The deformable reflecting surface of the 91-cm concave mirror is visible, along with some of

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TAAA Phone Number: (520) 792-6414

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#### 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.....	\$ 7.50
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 .....	\$ 4.80

**Donations** are accepted for the following funds: SA-IDA/Light Pollution, TIMPA, Education, TAAA Astronomy Complex, 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

#### Join our Email Lists on YahooGroups

TAAA Forum: <http://tinyurl.com/hwoau> (general astronomy discussion, posting allowed, 75/month)

TAAA Dark Site: <http://tinyurl.com/3d8ts9> (discussion of dark site issues, posting allowed)

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**Cover Photo (cont.):** the 672 circuit cards that control the magnetic forces shaping the surface.  
<http://medusa.as.arizona.edu/lbto/AO/AOpressrelease.htm>

### President's Message

Have you ever wondered what the purpose of TAAA is? Most of us probably joined TAAA because we had a strong interest in amateur astronomy, but why do we have a club that has existed for over 50 years and currently has nearly 400 members?

Astronomy clubs like TAAA serve the needs of a wide variety of amateur astronomers. In fact one could argue that the primary common bond is that we are "Amateurs" - the word is an integral part of the club's name. The word "amateur" originates from the latin word which translates as "lover". Members of TAAA are lovers of astronomy!

As lovers of astronomy, we sometimes find ourselves learning and experiencing areas of astronomy that fascinate others but do not trigger the same thrill in ourselves. The most exciting areas of astronomy to me may not be the same as the areas that you love. A personal example is my own pursuits in the field of amateur spectroscopy; many amateur astronomers have absolutely no interest in splitting and analyzing the light, preferring instead to visually observe or photograph celestial objects. Some prefer to view galaxies, others nebulae, still others ob-

serve the Sun. Some use a telescope, others the naked eye, and some would rather read about professional discoveries. All of these practices qualify as amateur astronomy, and all are equally worthy ways to spend one's time.

The leadership of TAAA has the difficult task of managing the club to best serve as many members as possible. It's important for the club to continue to offer something for as many lovers of astronomy as possible. We do so through the monthly programs, star parties and other observing opportunities, workshops, special interest groups, newsletter articles, etc. By supporting the club, you may be providing someone else with the means to truly enjoy their personal area of interest in astronomy. You may never know who you are helping to inspire - it could be a future professional astronomer, maybe a political figure who will support dark skies efforts, perhaps someone who will soon become your next-door neighbor, or maybe even just a kid who is searching for something fun to do. Let's all think of TAAA as the association that helps others pursue their love of astronomy - I suspect we'll all benefit.

Keith Schlottman

### Meeting Information and Calendar of Events

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

**ASTRONOMY ESSENTIALS:** 6:30 pm

Title: Preparation and Execution of Visual Observations

Speaker: Christian Weis

Especially for the beginner, it can be a challenging task to oversee the wide field of practically observing the night sky. A good planning of the oncoming night avoids wasting observing time. In this lecture, I will demonstrate how I plan my observations, and how I record them. I will also give some helpful hints on maximizing the capabilities of both your telescope and yourself.

I have more than 15 yrs experience in visual observation, beginning with a 60mm refractor telescope and (for now) ending with a self-made 18" Dobsonian. Since I had almost no help at all at the beginning, I literally made every mistake one could possibly make. My personal goal of this lecture is to give the novice more confidence in what he or she is doing - a key aspect in starting a lifelong enjoyment and admiration of our celestial wonders.

**GENERAL MEETING:** 7:30 pm

Title: Recent Progress at the Large Binocular Telescope: Seeing the Universe in a New Light

Speaker: R. Mark Wagner

R. Mark Wagner is Instrumentation Scientist and Head of Science Operations at the Large Binocular Telescope Observatory and a Research Scientist in the Department of Astronomy at The Ohio State University. Mark joined the LBT Observatory in 1998 and currently manages a group consisting of nine astronomers and technical specialists who maintain and support an advanced suite of astronomical instruments and scientific observations. Mark will talk to us this month about recent progress made at the LBT, where they have recently begun observing with adaptive optics which corrects for atmospheric distortion. If you were at the July lecture, you may remember the slide Dean showed comparing the LBT image to that taken by the Hubble Space Telescope. It's impressive!

Mark is a lifelong spectroscopist and has built and maintained many astronomical spectrographs. His research interests include X-ray binaries, optical and infrared studies of classical and luminous red novae, cometary spectroscopy, and instrumentation. He is best known for the determination of several Galactic X-ray binary black hole mass estimates which have helped to establish these systems as some of our best evidence to date for the existence of stellar-mass black holes.

Born and raised in Bellevue, Ohio, Mark built telescopes and photoelectric instruments in high school and won numerous national science awards. Mark received a B.S. degree in Physics from the University of Arizona in 1977 having participated in research in both astronomy and physics. His senior thesis concerned optical pumping of

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

cesium atoms using tunable lasers. Mark received a Ph.D. degree in Astronomy from The Ohio State University in 1984 in which his dissertation analyzed extensive optical spectroscopy of the enigmatic X-ray binary and micro-quasar SS433. He performed postdoctoral research at Arizona State University between 1984 and 1986. Prior to his current position, he was in residence at the Lowell Observatory in Flagstaff between 1986 and 1998 where he directed scientific operations at the Perkins 1.8 m telescope.

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

### STAR PARTIES AND EVENTS:

02 August – Astro-Imaging SIG at China Rose  
 07 August – TAAA Star Party at Las Cienegas  
 07 August – TAAA Star Party at CAC  
 12 August – Astronomy Fundamentals SIG  
 14 August – TAAA and AF-SIG Star Party at TIMPA  
 21 August – UofA Optical Sciences Students

**NEWSLETTER SCHEDULE:** Deadline for articles: Sat, August 21. The newsletter is published 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: Doug Nutter, Dave and Merle Wysocki, Susan Donnelly, Gary Copeland, Ronald Allen, Ronald Brewster, Joe Catalano, Jon Bell, Linda Vaught, Tim Confer, Kenneth & Rosemarie Reiser, Ron Price, and Uwe Manthei. Glad to have all of you join! New members can pick up a member's 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.

#### Astro-Imaging SIG Meeting

Monday, August 2, 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.

#### Astronomy Fundamentals Special Interest Group

Dr. Frank Hill will be our guest speaker for our AFSIG Meeting on August 12<sup>th</sup>. He will speak to us about "Space Weather". Dr. Hill is a scientist at the National Solar Observatory.

Space weather is the study of changes in the environment of outer space primarily between the earth and the Sun. These changes generally consist of variations in the charged particles and magnetic fields that make up the plasma of the outer atmosphere of the sun. Space weather affects technology that our society has come to depend on, particularly in the areas of telecommunications, navigation systems, satellites and power grids. Dr. Hill will summarize the basic concepts of space weather, its impacts on modern society, and efforts in predicting it.

Join us for this interesting discussion – U.S.G.S Building – Room 253, NE corner Park Ave & 6<sup>th</sup> Street, 6:30 pm.

All members of TAAA and new members particularly are welcome to attend AFSIG meetings!

#### Lunar Observing Program

How much do you know about the Earth's Moon? It is our nearest celestial neighbor and is very fascinating indeed! Would you like to learn more about it? Well, we have a Lunar Observing Program sponsored by the Astronomy Fundamentals special interest group. The Lunar Observing Program consists of locating a list of prominent (and some not so prominent) lunar features, which can be seen at different stages of the lunar cycle. It is a guided observing program meaning that there will be regularly scheduled, leader-led observing sessions to aid in finding features and completing the requirements. After completing requirements for observing all of the targets, the observer will receive an AFSIG Lunar Observing Certificate. Additionally, each of the required targets is also part of the Astronomical League's Lunar Club. So, you can be well on your way to fulfilling that goal, if you so desire. For more information, please contact Mary Turner at [umurf@earthlink.net](mailto:umurf@earthlink.net) or Bob Gilroy at [rgilroy1@cox.net](mailto:rgilroy1@cox.net).

#### 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 hats, T-shirts, denim shirts, and patches. We take cash and checks.

#### Shirts Available

You've seen them around, and wondered how to get one. Well, now is your chance. The apparel coordinator now

**Club News (cont.)**

has Grand Canyon Star Party and ALCON 2010 shirts for sale. Stop by and get one before they're gone.

**Coordinator Needed**

Our TAAA Apparel coordinator will be stepping down due to other commitments this summer. This opens a position for a new person or team to volunteer. If you've been looking for a way to get more involved and help the TAAA, this might be just the ticket. Contact one of the board members if you are interested.

**TAAA Service Awards**

By John Kalas

At the July monthly meeting, two TAAA Service Awards were presented to Terri Lappin and George Barber for their dedication and long-time service to the club (see photo).

Terri Lappin

- 33 year member of the TAAA
- 20 years as treasurer
- 4 years as vice president
- 3 years as president
- Started the Beginner's Lectures (now the Astronomy Essentials lectures)
- Project ASTRO volunteer for 4 years
- Coordinates the Night Sky Network toolkit program
- Originator and co-chairperson of the Starry Messenger SIG
- TAAA Website Director
- Monthly lecture coordinator

George Barber

- 11 year member of the TAAA
- 10+ years as newsletter editor
- Currently a Member-at-Large



- Designed and coordinated construction of the Gila Monster Observatory at TIMPA
- Project ASTRO volunteer for 5 years

As you can see, Terri and George are well deserving of these awards. Their efforts have helped improve the development of the club and provide members with outstanding services over many years. We thank them and wish them continued success.



**Night Sky Network Toolkits**

Below is a list of our Night Sky Network Outreach Toolkits and other resources for teaching astronomical concepts. The Night Sky Network program recognizes the essential role that amateur astronomers play in public astronomical education by providing us with these toolkits well suited for use at star parties. They were developed by the



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## Club News (cont.)

Astronomical Society of the Pacific under contract with NASA. If your scope is not well suited for public viewing, or if you want a change of pace, consider bringing a toolkit to one of our community school or church star parties. They are also great options for those questionable, cloudy nights. Each toolkit contains several projects; you pick and choose what you want to use. A Resources CD and a Training DVD is also included. Individual training in their use is available upon request.

With each use of a NSN toolkit we are closer to qualifying for the next toolkit.

### Night Sky Network Toolkits:

**PlanetQuest:** explains planet detection techniques

**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

**Telescopes – Eyes on the Universe:** explains basic principles of optics, the human eye, and observing

**Shadows and Silhouettes:** covers lunar phases, eclipses, and transits

**Exploring the Solar System:** scale model of solar system and NASA exploration of planets

**Supernova!:** life cycle of massive stars, touches on life cycle of sun-like stars

**Mirrors and Glass – An inside look at telescopes:** how telescopes work

### Other Resources:

**SolarScope:** provides a white light image of the sun suitable for small group viewing.

**Dark Skies Education Kit:** light pollution principles, includes a Sky Quality Meter

**Comet Chef:** an apron (with a comet on it) and chef's hat to wear when mixing up comets

Please make arrangements with Terri Lappin (see page 2, Starry Messenger SIG) to borrow any toolkit.



Starry Messengers SIG -  
Opening Minds to the Universe

The next SMSIG workshop will be in September. Loretta McKibben, SMSIG leader and JPL Solar System Ambassador, will bring us up to date on NASA and ESA space missions. She'll also discuss how we can best reach people of all ages and backgrounds in our outreach efforts. The workshop will be on September 25th, so save the date. SMSIG workshops usually run from 9 am to noon. The September newsletter will have details.

The Starry Messenger Special Interest Group provides an environment in which TAAA members can enhance their knowledge and understanding of astronomy and related concepts. We offer tools and techniques for explaining

astronomy to people of all ages. Any TAAA member involved in astronomy outreach is supporting the goals of the Starry Messenger SIG. Even if you have never attended a SMSIG workshop or meeting, we consider you a member of the SMSIG and value your contribution.

## Starry Messenger in our Midst

### Bob Gilroy

Over the past year, we have recognized several Starry Messengers in Our Midst: Roger Schuelke, Paul Moss, Byron Skinner, Jim Knoll, Doug Nelson, George Barber, Lyle Johnsen, and the father-son team of Ben and Hunter Bailey. These members all have one thing in common, an enthusiasm for telling others about astronomy. If you know a TAAA member who deserves recognition, and who's enthusiastic about telling others about the night sky, please nominate them as a Starry Messenger so we can recognize their efforts. Nominees don't necessarily need to be involved in TAAA outreach activities. It could be their involvement with other astronomical organizations; however, please nominate only TAAA members. To nominate a member, send their name to smsig[at]tucsonastronomy.org, along with a brief sentence or two about this person and how to contact them.



Bob Gilroy, TAAA AFSIG chair-person

This month, we recognize Bob Gilroy. Bob has been a member of TAAA for about 8 years. He joined the TAAA because he was looking for a hobby that would be inspiring. He found it! He says, "When I attended my first star party and focused in on Albireo, I was blown away. That impressed me more than Jupiter or Saturn did. I still remember the first time I saw the Milky Way at TIMPA – it was magnificent and it was

real, not just a picture – I was hooked. Over the years I have learned a lot from many people. Now, sharing what I have learned offers me a new avenue of learning and expanding my horizons."

Bob is the chair of the AFSIG (Astronomy Fundamentals Special Interest Group). The AFSIG is an educational group within the TAAA that strives to reach out to new members, young and not so young, who are new to astronomy. The AFSIG offers a basic astronomy course to introduce them to the wonders of the universe. The AFSIG observing programs help improve their observing skills and the workshops help them to attain the tools they

### Club News (cont.)

need. Bob is not alone in running the AFSIG. A dedicated number of experienced TAAA members assist in this effort.

Why is Bob so involved with the AFSIG, you may ask? Bob believes those who are thinking about getting involved in our outreach activities often are unsure because they don't know what to do and what to expect at these events. Our beginners are often most enthusiastic about observing. Remember that enthusiasm you had after your first views through a telescope? You likely wanted to tell someone about it. That desire to share astronomy with others is important enough that it's part of the TAAA mission statement and is at the heart of all TAAA community events.

Enthusiastic beginners are at a critical juncture. Bob says, "If we don't give them the support they need at this point, we will lose them and they will miss out on an exciting and rewarding hobby." Some are comfortable with just a short explanation. Others need more in-depth mentoring to build up their knowledge, experience and confidence. Through the AFSIG, Bob assists members to become comfortable in their knowledge of astronomy. If you are a beginner, and if you feel that urge to share your new hobby with others, Bob recommends you attend some of the educational courses and observing programs offered by AFSIG and the workshops offered by the Starry



Bob Gilroy explains a handout for making a star finder at the 2010 Tucson Festival of Books.

Messenger SIG. Bob can also assist anyone who wants some guidance at a community star party by sharing his experiences, offering some tips, and possibly matching you with a Star Party Guide. (A Star Party Guide is an experienced star party volunteer who mentors an inexperienced volunteer at a school star party.)

Bob attends several star parties during the year as either a volunteer with a telescope or as a Star Party Guide. He also fits in a few special events such as the Math and

Science Fun Fest (with Flandrau Science Center), the Festival of Books (with TAAA), Tucson Botanical Gardens Star Party (with TAAA) and of course, he never misses David Levy's "Sharing the Sky" star party.

Bob was born and raised in Pennsylvania. After high school, he entered the U.S. Navy for several years and upon his discharge relocated to Westchester County in New York. He spent many years working, and studying at Pace University and University of Connecticut. Bob and his wife Carol lived in the Tri-State area for decades and after years of too much snow, ice and cold weather decided to head to a warmer climate. So when their son Bruce was accepted at the University of Arizona in 1992 they moved to Tucson. Bob and Carol cherish their visits with Bruce, his wife, and three sons, who now live in Phoenix.

It wasn't until moving out west that Bob developed his interest in astronomy. Not only is Bob involved in TAAA activities, but he is also a docent at Flandrau Science Center. He operates the Flandrau 16" telescope, which, he reminds everyone, is available for viewing free of charge. His docent work with Flandrau gives Bob another avenue for sharing what he's learned over the past decade. Quoting Bob, "There is a vast universe beyond that veil of stars we can see with our naked eye that is both exciting and awesome. Outreach programs allow me to introduce the unseen universe to people and give them a greater understanding of the awesomeness of our great and expanding universe. And, even more importantly, I continue to learn and develop as I participate in these outreach programs."

When preparing for a community star party, Bob says he'll first check what will be visible that night and makes a list of the objects he'll show. He then gathers a little background material about these objects. He uses this to prepare the students, parents and teachers for what they are going to see in the eyepiece. A green laser pointer helps to point out specific stars and naked eye objects. A pair of binoculars aids in the overall experience. Bob says, "To be able to view an object - say the Moon or Jupiter - to see it naked eye, view it through binoculars, and then up close and personal through the eyepiece, is an awesome experience." He likes to use his 10" Dobsonian for these star parties since it's very simple to explain to inquisitive minds how it works. The 10" is large enough to give a nice, sharp, crisp image of the object - and offers a great "hands-on" experience. He rounds out his gear with eyepieces, spotting scope, filters, and a small step stool to "help the little people reach the eyepiece easier."

Bob reiterates, "The main thing I try to bring to a star party is enthusiasm. Attending a star party is fun. It is a place where I can relax, socialize and share my limited knowledge with children and adults and, hopefully, create a spark of interest in this exciting activity."

Bob finds gratification in meeting people who are eager to learn what the cosmos is all about. He's always astounded by their understanding and intelligent

**Club News (cont.)**

questions. Bob remembers a 7-year old who came up to him at a star party and started asking about Jupiter, his favorite planet. After discussing Jupiter for a few minutes, Bob was delighted when the young man began to share his knowledge of the solar system with him. Bob says, "It was gratifying to know that one so young was so inspired." We can never know how Bob's sharing this experience that night may influence that young person's life.

If Bob has inspired you to look into participating in community outreach activities offered through the TAAA, let him know. He'll help you along the way to this rewarding experience that so many of us in the TAAA share.

**Cosmology and Space Exploration (CSE 1)**

Al Anzaldua and Jim Butler would like to recruit members to a potential new SIG which will explore the latest events in cosmology and space exploration. We currently have 10 members, and are looking for others. Our first topic was the Presence of Water in the Solar System. Please email us at [butlerjamesr@yahoo.com](mailto:butlerjamesr@yahoo.com) and [alanzaldua706@yahoo.com](mailto:alanzaldua706@yahoo.com)

**Upcoming Lectures**

Sep 3	<i>Astronomy Essentials</i>	AFSIG Status Report
	<i>Invited Lecture</i>	TAAA SIG and Project Reports
Oct 1	<i>Astronomy Essentials</i>	Mary Turner Seasonal Objects
	<i>Invited Lecture</i>	Dimitrios Psaltis Theoretical Astrophysics
Nov 5	<i>General Meeting</i>	Members Night Starts at 6:30pm, no Astronomy Essentials Lecture
Dec 3	<i>Astronomy Essentials</i>	<b>OPEN</b>
	<i>Invited Lecture</i>	Don McCarthy James Web Space Telescope

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Southern Arizona section

We get people to use better lighting, so we'll have a dark sky

Some of the things we do:

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- Demonstrations at Desert Museum
- PowerPoint presentations on CD

- Work with government agencies
- Identify non-compliant lighting in So AZ

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Contact: Joe Frannea  
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**Items of Interest**

**Websites: Trips on the Internet Super-Skyway**  
By Rik Hill

Just about every night, when I go out observing at home or on the mountain I see satellites. Current estimates put the number of Earth-orbiting satellites at over 2,200, with untold pieces of junk like 3<sup>rd</sup> stage rockets, boosters, clips, etc. Have you ever made an observing session of just identifiable satellites? It's fun!

The first website you have to bookmark for this activity is Heavens Above:  
<http://www.heavens-above.com/>

I mentioned this site a few years ago, but it's one that is an invaluable resource for a number of celestial objects

like planets, comets, asteroids, constellation charts, and more. The charts for the asteroids and comets are very handy if you're at the telescope. Enter your coordinates in their database, and it can give you most of the naked eye satellites for the night and predictions for some of the more important objects like HST, Envisat, ISS, and others. You can also get predictions for the Iridium flares. (I recommend looking for double and triple flares for your site!)

One activity I recommend is going to the "Select a satellite from the database" link and entering the year 1958. I remember the launch of these American satellites and it's amazing how many are still in orbit! If you go to the page for one of these, you can go to "Visible Passes" and find out when and where to look to see them still in orbit over

### Items of Interest (cont.)

50 years later! The trick is to find a bright star they pass near and set your telescope on that star a few minutes in advance. At the right time you'll see the ancient satellite pass through the field. I've videotaped Vanguard 1, 2 and 3 (and the rockets for 1 and 2) in this manner. It's a very useful and fun website. If you use it I'll bet you spend whole night just tracking satellites.

If this intrigues you, I recommend going to the Visual Satellite Observer's Home Page at:  
<http://satobs.org/>

There are several dozen links to various satellite phenomena, observing practices, and how to identify satellites. This website alone will keep you busy for a whole cloudy evening! I especially recommend their Iridium Satellite photo galleries. There are some amazing photos there.

Years ago I reviewed Pete Manly's book "The 20-cm Schmidt-Cassegrain Telescope". (A good book I recommend to any owners of an 8" SCT.) Pete was a Phoenix resident and author and enjoyed writing about telescopes. Towards the end of the book is a 3 page discussion on observing Geosynchronous Satellites. I set out to follow these instructions and found a few in one evening. I heartily recommend this activity and if you enjoy it, you will want to check out these websites:

<http://www.satobs.org/geosats.html>  
<http://www.satsig.net/sslist.htm>

With these you will be well armed to begin looking. The cool thing is you don't need a computer drive to find them! Remember, they are GEOSYNCHRONOUS meaning they don't move with respect to your local meridian, or at least not much. So an undriven Dob. is an excellent telescope to start with. Many of the geosynchs are brighter than 10<sup>th</sup> mag. For our latitude a Dec. of -5 deg. is a good place to start looking. There are good instructions on the first website.

So head out and observe some of the moving stars in our sky and let me know how you do with this. It's fun... maybe worth a SIG of its own?

As always, if you know of a particularly good website, or an interesting amateur astronomical activity you would like mentioned here, drop me a line at: [rhill@lpl.arizona.edu](mailto:rhill@lpl.arizona.edu)

#### AOP Public Program Specialist

Kitt Peak National Observatory has a seasonal part-time position available to help conduct its Advanced Observing Programs. The position requires knowledge of astronomy, excellent imaging processing skills and strong CCD data acquisition skills (astrophotography, web cam and digital camera preferred). Proficiency with operating amateur telescopes is also required. Schedule must be flexible to work evenings and some weekends. Transportation, room and board provided. Relocation is not available.

The position is based on Kitt Peak Mountain, 56 miles southwest of Tucson, AZ. Transportation, lodging and meals are available while on duty. Information about NOAO/KPNO may be found at: <http://www.noao.edu/kpno/>

Send resume to [hrnoao@noao.edu](mailto:hrnoao@noao.edu) to apply for this position: refer to Job 1022, Public Program Specialist. Electronic submission preferred. You may send resume to:

NOAO Human Resources Office  
 Public Program Specialist-Job #1022  
 P.O. Box 26732  
 Tucson, Arizona 85726-6732  
 FAX: 520-318-8494

NOAO and NSO are affirmative action and equal employment opportunity employers. Preference granted to Native Americans qualified for the position living on or near the Tohono O'odham Reservation.

NOAO actively support efforts to broaden participation in all Observatory activities. Women and candidates from underrepresented minorities are particularly encouraged to apply.

#### Fun and Educational Websites



The Space Place website  
<http://spaceplace.nasa.gov>

The *SciJinks Weather Laboratory* at <http://scijinks.gov> targets middle-schoolers. It explains the reasons for the seasons, the tides, and other weather and Earth science mysteries in colorful "Now I get it!" pages.



NASA Climate Kids at <http://climate.nasa.gov/kids> demystifies the "Big Questions" about global climate change using 4-6<sup>th</sup>-grade-level

language, colorful illustrations, humor, interactivity, and games.

Climate Kids was recognized as the "site of the month" for April on the Kids.gov website. Both Space Place and Climate Kids are in the top ten government sites for kids, as acknowledged by Kids.gov.

## Public Star Parties and Community Events

All members 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 valuable in other capacities. Sign up sheets for many events can be found at the meeting or contact a TAAA officer.

**UofA Optical Sciences Students S.P.**  
Saturday, 8/21

**Far West**  
8 Scopes

The TAAA has again been invited to support this annual event at Kitt Peak. TAAA telescope volunteers plus one additional person are invited to enjoy dinner with the students and staff starting at 6:00 pm (16 total TAAA people). Telescope set-up is required by 7:30 pm with ob-

servings running to about 9:00 to 9:30 pm. The event will be held at the Kitt Peak picnic area where the club holds our fall and spring Kitt Peak star-b-cues. There will be a sign-up sheet at the August monthly meeting. If you are unable to attend the meeting and would like to volunteer for this event, contact John Kalas at 620-6502 or [jckalas@cox.net](mailto:jckalas@cox.net).

## Member's Events

**TAAA Star Party at Las Cienegas (Empire Ranch)**  
Saturday, August 7

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 his or her telescope. And, there are now restroom facilities at the site. Las Cienegas is at 4000 feet so be prepared for cool temperatures after sunset. It's also a good idea to bring insect repellent. 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 last page of this newsletter.

**TAAA Star Party at CAC**  
Saturday, August 7

The Chiricahua Astronomy Complex (CAC) is the club's newest observing site. Located in Cochise County approximately 100 miles from the center of Tucson, the site includes a full bathroom facility. At an elevation of 4800 feet, be prepared for cold temperatures. Try to arrive before sunset. Unlike the other two club observing sites, TIMPA and Las Cienegas, the CAC site requires that members make reservations for both monthly club star parties and private member use. We are restricted by a 60 person/30 vehicle maximum limitation. If you would like to attend, contact CAC Director John Kalas via e-mail at [jckalas@cox.net](mailto:jckalas@cox.net) or by phone at 620-6502. Reservations will be on a first come - first serve basis. Depending on the number of members interested in attending, guests may not be allowed.

Directions to CAC:

The Chiricahua Astronomy Complex is about 90 miles and a 1½ hour drive from the TTT Truckstop at Craycroft Road and Interstate 10.

- Take I-10 East from Tucson past Benson.
- Exit I-10 at Dragoon Road (Exit #318) – Turn right onto Dragoon Road at bottom of exit ramp.
- Travel 13.5 miles southeast to intersection with Route 191 and turn right (south).
- Travel 17.9 miles south (past Sunsites and Margie's Corner Café at High St. on the right and Border Patrol checkpoint) to intersection with Route 181 at Sunizona and turn left (east).
- Travel 10.9 miles east to intersection with S. Price Ranch Road and turn right (south). S. Price Ranch Rd. is a dirt road just before you reach mile post 49 (cluster of mailboxes on right on Rte. 181).
- Travel ½ mile south on S. Price Ranch Rd. to intersection with E. Perseus Way (wide dirt road with E. Perseus Way street sign on left) and turn left (east).
- Travel east on E. Perseus Way slightly more than ¼ mile to entrance of Chiricahua Astronomy Complex, address 9315 on right (twin brown gates flanked by white rail fences set back 50 feet from road). Look for TAAA sign on left side of entry road.

**TAAA and AF-SIG Star Party at TIMPA**  
Saturday, August 14

Come on out and enjoy the summer 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. There is no scheduled talk for this activity, just come out and enjoy. 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

**Member's Events (cont.)**

parking area, and full restroom facilities. Be prepared for cool temperatures after sunset. It's also a good idea to bring insect repellent. Directions to the TIMPA site are located on the last page of this newsletter.

The new observatory at TIMPA, featuring a 14-inch telescope, should also be open for use.

**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.desertmuseum.org/books/nhsd\\_rattlesnakes3.php](http://www.desertmuseum.org/books/nhsd_rattlesnakes3.php).

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



**Dark Skies for August 2010**

**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	31/01	20:55	-	22:09	Tu/We	10/11	20:43	-	4:16	Sa/Su	21/22	4:02	-	4:26
					We/Th	11/12	20:42	-	4:17					
Su/Mo	01/02	20:54	-	22:40	Th/Fr	12/13	20:46	-	4:18	Su/Mo	22/23	-	-	-
Mo/Tu	02/03	20:52	-	23:16	Fr/Sa	13/14	21:22	-	4:18	Mo/Tu	23/24	FULL MOON		
Tu/We	03/04	20:51	-	23:58	Sa/Su	14/15	22:00	-	4:19	Tu/We	24/25	-	-	-
We/Th	04/05	20:50	-	0:47						We/Th	25/26	-	-	-
Th/Fr	05/06	20:49	-	1:44	Su/Mo	15/16	22:42	-	4:20	Th/Fr	26/27	-	-	-
Fr/Sa	06/07	20:48	-	2:48	Mo/Tu	16/17	23:28	-	4:21	Fr/Sa	27/28	-	-	-
Sa/Su	07/08	20:47	-	3:58	Tu/We	17/18	0:18	-	4:22	Sa/Su	28/29	20:18	-	20:42
					We/Th	18/19	1:12	-	4:23					
Su/Mo	08/09	20:45	-	4:14	Th/Fr	19/20	2:08	-	4:24	Su/Mo	29/30	20:17	-	21:16
Mo/Tu	09/10	20:44	-	4:15	Fr/Sa	20/21	3:05	-	4:25	Mo/Tu	30/31	20:15	-	21:55

Weekend	Sun	Sun	Mercury	Venus	Mars	Jupiter	Saturn							
Sa/Su	Set	Rise	Rise	Vi	Set	Vi	Set	Vi	Set	Vi	Rise	Vi	Vi=Visibility	
31/01	19:20	5:37	20:37	4	21:30	-3	21:51	2	21:55	-3	21:57	2	-3	brilliant
07/08	19:14	5:41	20:25	5	21:19	-3	21:35	2	21:27	-3	21:31	2	0	conspicuous
14/15	19:07	5:46	20:06	6	21:08	-3	21:19	3	20:58	-3	21:06	3	3	moderate
21/22	18:59	5:51	19:38	-	20:56	-3	21:03	3	20:29	-3	20:40	3	6	naked eye limit
28/29	18:51	5:55	19:00	-	20:43	-3	20:47	3	20:00	-3	20:14	4	9	binoculars limit

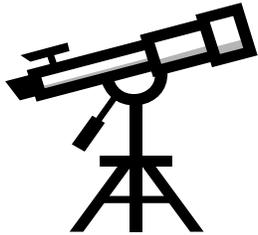
By Erich Karkoschka

**Desert Skies Classified**

FOR SALE	Collection of 35 years of both Sky & Telescope and Astronomy magazines. Contact Dorinda Crouthers at <a href="mailto:doriecrouthers@cox.net">doriecrouthers@cox.net</a> [11/10]
FOR SALE	Meade 12" f/5 LightBridge Newtonian Telescope outfitted with a JMI Train-n-Track (TNT) alt-azimuth motor drive system with trainable tracking. Two eyepieces, red-dot finder. \$900. Joe. 520-722-6963 or e-mail <a href="mailto:jqj62[at]cox.net">jqj62[at]cox.net</a> [09/10]

Your ad will run for 4 months unless specified. Month and year of last appearance is last item of ad. For additions or changes to this list, call or e-mail the newsletter editor.

## 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 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) or any club officer for details about these telescopes.

## CHIRICAHUA ASTRONOMY COMPLEX

### Facility Update

John Kalas - Construction Coordinator/CAC Site Director

In early July, the monsoon season arrived in Cochise County resulting in the cancellation of the July 10<sup>th</sup> monthly star party at CAC. That was unfortunate since the sign-ups for this activity were the highest for any month since we opened the site in February. Nineteen people had made reservations for the July star party.

The initial spraying of herbicide to address the weed problem worked very well. John and Elaine Croft visited the site on 7/10 and were able to easily clear the dead weeds around the bathroom facility. I revisited the site on 7/13 and continued spraying the weeds along the sides of the entry road. Additional spraying is required to complete the weed control. Opportunities to spray will have to be scheduled around the monsoons.

The first instance of vandalism was discovered on the site in early July. The stainless steel water fountain mounted to the front of the bathroom facility was pulled away from the block wall. We suspect that illegal aliens, who we know travel across the property, probably tried the fountain and found it not working. It is turned off by a shut-off valve located in one of the locked bathrooms. They may have thought that there was a shut-off valve inside the cabinet and pulled the bottom of the unit away from the concrete block wall (the anchors were rather wimpy). The fountain has since come off of the upper hanging bracket and is now hanging by the water supply line and the drain piping (see photo). The damage is minor and it appears that it simply needs to be re-mounted to the wall with improved anchors. The contractor has been notified of the problem and has been requested to repair it before the next CAC Star Party scheduled for 8/7.

Work continues on the documentation required for the submission of the building permit for Phase 2. Luke Scott



Water Fountain pulled away from Bathroom Facility

is finalizing the drawings for the small roll-off roof observatory. I met with the contractor, Randy Maddox, on 7/22 to review the designs for the Phase 2 features. Suggestions made by Randy will be incorporated into our designs. Submission of the Phase 2 building permit is now targeted for mid to late August.

**TAAA Board of Directors Meeting - 14 July 2010**

**Attending:** Board members present (7): Keith Schlottman (presiding), Bill Lofquist, Teresa Plymate, George Barber, John Kalas, Ken Shaver, and Michael Turner. Members present (10): Terri Lappin, Liz Kalas, Claude Plymate, Jim Butler, Al Anzaldúa, Al Dohner, Mary Lofquist, Mark Meanings, Bob Gilroy, and Dennis McMacken.

**Call to Order:** The President called the meeting to order at 6:30 pm.

**Minutes:** Minutes from the May Board meeting were approved unanimously. There were no minutes for the June meeting because it was canceled.

**Member Feedback**

- Suggested TAAA sponsor additional activities similar to ALCON, to bring in vendors and new members.

**Announcements for Record**

- Susan Donnelly has inquired about the opening for club apparel coordinator.
- Extra shirts from GCSP and ALCON will be sold through club apparel.

**Upcoming Meetings**

- The speakers for August's meeting have been booked.

**Treasurer's Report**

- Total funds in checking: \$54,527.85. Approximately \$32,000 of this was specifically donated for CAC.
- Club has 105 members in Astronomical League
- Claude and Teresa Plymate are investigating cost and other factors involved in creating a 2011 TAAA-oriented calendar, rather than ordering calendars from Astronomy magazine as in past years. They have agreed to coordinate the project.

**Main Meeting speakers and possible SIG**

- The type of topics presented at the TAAA main meeting was discussed by Jim Butler, as to whether the number of science-oriented presentations could be increased.
- Formation of science-oriented information SIG was proposed by Al Anzaldúa. The board recommended that a formal proposal be drafted for board review.

**By-Laws and Constitution Review**

- A committee to review these TAAA documents on a regular basis was recommended. Steve Marten was appointed to form and chair this committee.

**Member's Handbook**

- Creation of a handbook of essential information for members was suggested by Steve Marten.
- Printing and distributing this information would be cost prohibitive.
- Most of the information is already present on the website. The website director is currently working to make this readily available. A separate webpage with links to the desired information was suggested by Terri Lappin.

**Loaner Telescope equipment status**

- A workshop will be scheduled for knowledgeable members to assess and repair all equipment currently in the loaner program. Equipment in poor condition and not very attractive as loaner units may be removed from the system and disposed of.
- Storage of equipment at TIMPA will be investigated.

**TIMPA Repairs and Enhancements**

- Bob Gilroy presented various items requiring repair. The board has requested an outline of necessary tasks and a cost quote for their completion.

**Fundraising Committee**

- A single unified standing committee, reporting to the board, would be the most effective way to raise funds and donations for various club functions, including TIMPA and CAC. Bill Lofquist was appointed as chairman of this committee by Keith Schlottman.

**TAAA Board of Directors Meeting - 14 July 2010 (cont.)**

- The unified committee should contain at least one designated member from each SIG.
- Steve Marten will review the TAAA constitution regarding standing committees.

**Naming of TAAA facilities**

- Bill Lofquist stated a policy is needed regarding naming of TAAA observatories and other permanent facilities.
- Bill Lofquist volunteered to draft a naming policy for board review.

**U of A Scholarship Program**

Keith Schlottman recommended that TAAA establish a scholarship program for U of A students. The board decided to allow the fundraising committee to contact the U of A for details.

**Sky Puppies manuals**

- This Astronomical League program would provide activities designed to engage children.
- A motion to allocate \$200 for purchase of these manuals was unanimously passed. Terri Lappin will pursue the purchase of the manuals and coordinate them through the SMSIG.

**Chiricahua Astronomy Complex**

- John Kalas reported that weed killer has been sprayed, with the task nearly completed. Weed control has been effective.
- John Kalas reported that the water fountain has been dislodged from the front wall of the bathroom facility. John has requested that Randy Maddox assess the damage and repair.

Meeting adjourned at 9:10 pm.

Respectfully submitted,  
George Barber  
Member at Large

**"HOW GOOD IS MY OBSERVATION SITE?" BY CHRISTIAN WEIS**

The goal of this article is to provide you with an evaluation method to determine which observing site suits your needs best. in Arizona (like susceptibility to fog). Nevertheless, I leave those in the sheet, just to give you some idea of what you might want to add.

Several years ago, while still living in the heart of Germany, I spent 2 hours driving to an observation site, which usually provides a good sky, just to find out that the seeing conditions were absolutely terrible. Disappointed by that, I didn't even attempt to set up my telescope, but headed home immediately. After another one and a quarter hour (one might be reminded that there usually are no speed limits on German Autobahns – so I spurred my poor car), the sky I found back home, was a little brighter but with considerably less turbulence. After more than ten years of observation experience I finally developed an evaluation sheet which I would like to share with anybody interested.

Before grading an observing site, you should have spent several nights there throughout the year in order to be able to get useful mean values. For example, if you have observed 20 times on a certain site and the faintest star visible was 6m5 for 19 occurrences and 6m9 on one occurrence, you should note 6m5, of course. Furthermore, feel free to add KO (knockout) criteria. This might be any factor which falls below your personal acceptance limit.

**Evaluation Sheet**

1. Do you feel comfortable at the observing site?

I would like to emphasize that all factors in this sheet are completely subjective and customized to my demands. Additionally, please be aware that my European standards might be different than yours (e.g. a two hour drive is a fairly long ride for me). Everybody needs to decide on his or her own factors which are most important or can be neglected. The sheet does not claim any attempt to be complete, so please feel free to add other factors (I am only observing visually, so there are no factors for astro-photographers, like access to electric power). Also, there are some factors which might not be put into account here

Yes Observing site is tentatively suitable for observation  
No KO, Observing site is not suitable for observation

2. What is the average faintest star (FST) in zenith?

FST > 7 <sup>m</sup> 0	15 Points
7 <sup>m</sup> 0 > FST > 6 <sup>m</sup> 6	14 Points
6 <sup>m</sup> 6 > FST > 6 <sup>m</sup> 4	13 Points
6 <sup>m</sup> 4 > FST > 6 <sup>m</sup> 2	12 Points
6 <sup>m</sup> 2 > FST > 6 <sup>m</sup> 0	11 Points
6 <sup>m</sup> 0 > FST > 5 <sup>m</sup> 8	10 Points

**"HOW GOOD IS MY OBSERVATION SITE?" BY CHRISTIAN WEIS (cont.)**

5 <sup>m</sup> 8 > FST > 5 <sup>m</sup> 6	9 Points
5 <sup>m</sup> 6 > FST > 5 <sup>m</sup> 4	8 Points
5 <sup>m</sup> 4 > FST > 5 <sup>m</sup> 2	7 Points
5 <sup>m</sup> 0 > FST > 4 <sup>m</sup> 8	6 Points
4 <sup>m</sup> 8 > FST > 4 <sup>m</sup> 6	5 Points
4 <sup>m</sup> 6 > FST > 4 <sup>m</sup> 4	4 Points
4 <sup>m</sup> 4 > FST > 4 <sup>m</sup> 2	3 Points
4 <sup>m</sup> 2 > FST > 4 <sup>m</sup> 0	2 Points
4 <sup>m</sup> 0 > FST > 3 <sup>m</sup> 6	1 Point
FST < 3 <sup>m</sup> 6	0 Points

3. How good are the seeing conditions?

excellent	15 - 12 Points
good	11 - 9 Points
mediocre	8 - 6 Points
acceptable	5 - 3 Points
poor	2 - 1 Point(s)
very poor	0 Points

4. How large is the usable portion (UP) of the sky?

UP = 100%	12 Points
100% > UP > 75%	11 - 8 Points
75% > UP > 50%	7 - 4 Points
50% > UP > 25%	3 - 1 Point(s)
UP < 25%	0 Points

5. Does direct lighting disturb observing?

no	10 Points
a little	9 - 6 Points
yes, relatively disturbing	5 - 1 Point(s)
yes, very disturbing	0 Points

6. How large is the extinction (in the UP)?

no extinction or very little	10 Points
little, not disturbing	9 - 7 Points
moderately disturbing	6 - 4 Points
very disturbing	3 - 1 Point(s)
extremely disturbing	0 Points

7. How long does the journey there take?

t = 0 min (at home)	10 Points
t = 0 min < t < 15 min	9 - 7 Points
t = 15 min < t < 30 min	6 - 4 Points
t = 30 min < t < 60 min	3 - 1 Point(s)
t > 60 min	0 Points

8. How much effort does it take to get all your observing items (telescope, equipment etc.) into the car (or your means of transportation)?

no efforts at all (at home)	10 Points
a little effort	9 - 7 Points
mediocre effort	6 - 4 Points
much effort	3 - 1 Point(s)
extreme effort	0 Points

9. What is the tendency for fog?

no tendency at all	8 Points
scarcely	7 Points
very little	6 Points
little	5 Points
mediocre	4 Points
high	3 Points
very high	2 - 1 Point(s)
fog is probable	K.O.

10. How often do (unwanted) non-astronomers (cars passing by, hunters, trappers, border patrol, illegals, etc.) interfere or interrupt the observation?

never	6 Points
very seldom	5 Points
seldom	4 Points
sometimes	3 Points
often	2 Points
very often	1 Point
always	0 Points

11. Do animals frighten you?

no	4 Points
seldomly	3 Points
sometimes	2 Points
often	1 Point
always	0 Points

**Evaluation**

As you might have noticed, the sheet is designed to give a maximum of 100 points, which helps calculating. I could have easily used any other random number, but in my opinion, 100 makes the most sense.

My personal evaluation looks like this:

100 - 90 Points	You have an outstanding observing site
89 - 80 Points	Your observing site is good
79 - 70 Points	Your observing site is fair average
69 - 60 Points	Your observing site is mediocre
59 - 50 Points	Your observing site is below-average but usable
49 - 40 Points	You have a bad observing site
< 40 Points	Observing site is not usable at all

**An example**

Since I have been in the United States for only two months, I do not have the required minimum number of observations spread over a year's period at a certain place. However, I would like to give an example of Geology Vista, which is just below 7000 feet halfway on Mt. Lemmon. So far, I have had the pleasure of observing there about 10 times.

My evaluation:

- I feel comfortable, so the site is tentatively usable
- FST is usually around 6m5, giving 13 points
- seeing is pretty good, but not excellent, I rate 11 points

**"HOW GOOD IS MY OBSERVATION SITE?" BY CHRISTIAN WEIS (cont.)**

- UP is only 40 %, which is 2 points
- no direct light disturbing = 10 points
- the extinction is really low (compared to what I am used to in Europe), I give 9 points
- From my home I need roughly 35 minutes, that adds 3 more points
- The effort is mediocre, but since I have to squeeze a 16" Dobsonian into a South-Korean roofed wheelchair, I rate it 6 points
- I do not suppose that Arizonans do actually know how to spell fog correctly, so: 8 points
- I have never had an observing session without at least five cars passing by: 0 points
- No, not yet, there are 4 more points

personal impression. Just for comparison: The introductory mentioned observation site with the two hour drive achieved 69 points, and my home at that time totalled 72 points.

However, considering that you have maybe 300 clear nights a year while I happen to have maybe 40 (including full moon seasons!) in central Europe, I like Geology Vista by far better.

**References:**

A.M. MacRobert: Starhopping for Backyard Astronomers. Appendix D, Sky Publishing Corp. 1994

Altogether, Geology Vista (or the parking pullout one mile beyond Geology Vista) achieves a grading of 66 points. So, for my needs, I would consider this place to be mediocre (not too good but also not bad). This also matches my

**Constellation Report by Chris Lancaster**

## Scorpius

The Scorpion

It should be no surprise that this constellation is named after a scorpion. I can think of no other constellation that looks more like its namesake than this one. The bright red star Antares marks the scorpion's heart, and its tail curves down to the southeast, ending in the pair of stars Shaula and Lesath which form the stinger. In mid-July, Scorpius is crossing the meridian as soon as the sky becomes fully dark. In mythology, Scorpius is the scorpion which the goddess Hera sent to attack Orion to prove to the mighty hunter that he, indeed, was not invincible. The scorpion's sting proved fatal, and we see this event played out every spring night--when Scorpius is rising, Orion sets.

Due to its red color, Antares (Alpha Scorpii) gets its name from the Greek components "anti" and "Ares", which when put together mean "rival of Mars." When the two meet again in the early morning sky during January and February of next year, their color can be easily compared. In the family of stars, however, Antares has a different rival. It and Betelgeuse are the only two M-type supergiants of first magnitude brightness. If viewed at very high power, a sixth-magnitude companion can be glimpsed through the glare of Antares 3 arc seconds distant.

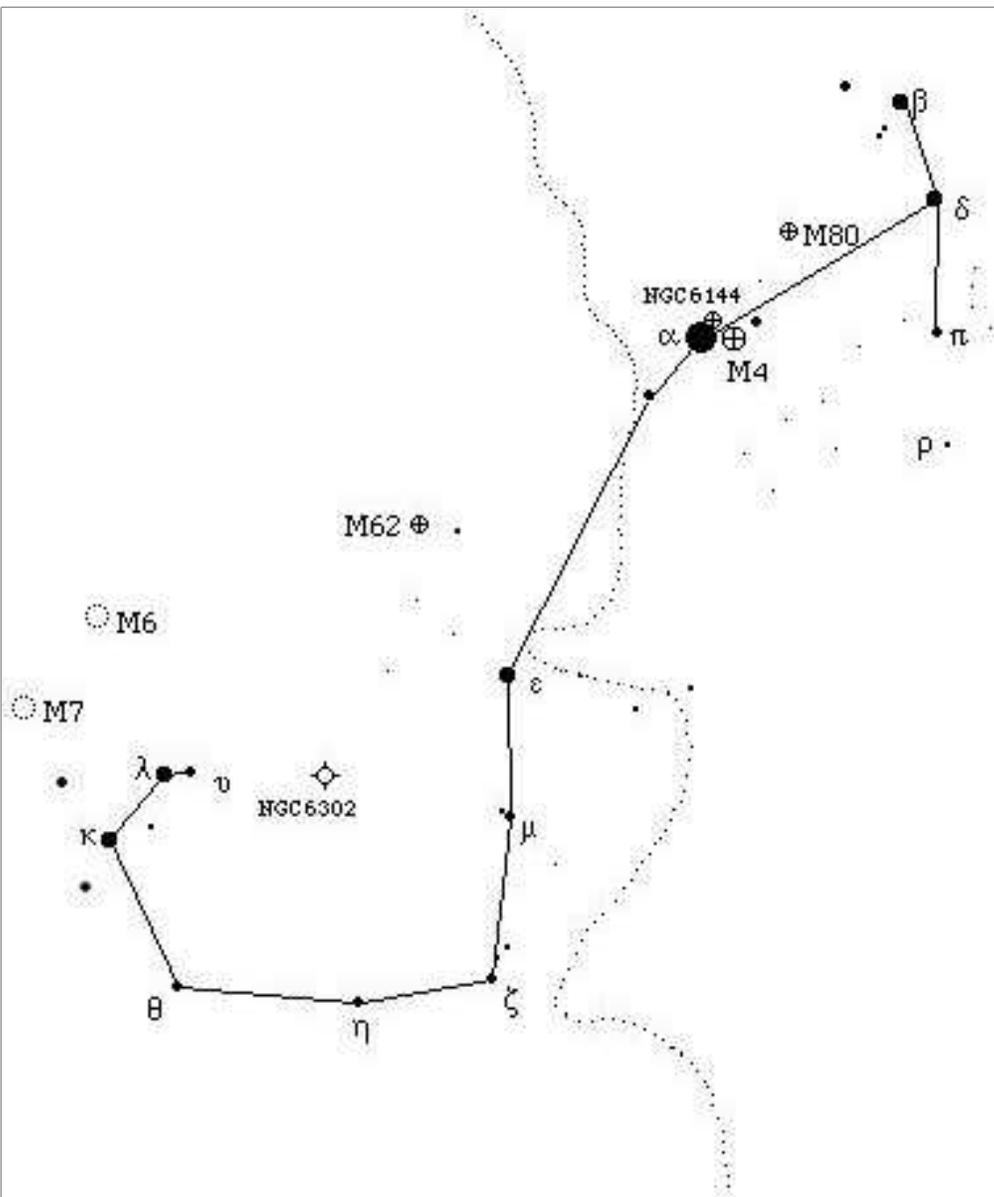
Because much of Scorpius is immersed in the summer Milky Way, the number of galactic deep sky objects it contains compares only with two adjacent constellations, Sagittarius and Ophiuchus. Near Antares (1.3 degrees to the west) is the fantastic globular cluster M4. Shining brightly at magnitude 5.9, this object, spanning 26.3', can be seen easily through a finder scope or binoculars, and is highly resolvable through a telescope. It's one of the best globulars of the summer sky. If you move one degree to the northeast you'll come across NGC6144, which is another globular cluster. Although it suffers a bit from its proximity to the far more spectacular cluster just mentioned, it is a decent globular if judged on its own merits. It is a resolvable cluster measuring 9.3' and shining at magnitude 9.1 only half a degree from Antares.

Another in the list of remarkable globular clusters is situated not quite half way between Antares and Beta Scorpii. Here we see M80, a very rich collection of stars packed in a space of 8.9' and glowing with a magnitude of 7.2. (RA 16h 17m Dec -22d 59.6').

Moving toward the tail of Scorpius is yet another globular cluster, M62. This one practically straddles the boundary separating Ophiuchus from Scorpius, and some debate could be raised about to which constellation it belongs. Since it is in the area, let's go ahead and consider it one of Scorpio's. Although smaller than M4, you might say that this one is the best of the group. At magnitude 6.6, it presents quite a sight in a telescope. Its bright, dense core softens to a speckled glow to round out its 14.1' size. Find M62 4.7 degrees northeast of Epsilon Scorpii, or RA 17h 01.2m Dec -30d 7'.

Between the middle part of the scorpion's tail and the stinger is an interesting planetary nebula called the Bug Nebula, NGC6302. While it glows only at magnitude 13, it is fairly easy to see in medium sized telescopes because it measures only 0.8', so its surface brightness is moderately high. Look 4 degrees west from Lambda Scorpii, or center your scope on RA 17h 13.7m Dec -37d 06'. This does not fit the typical planetary nebula appearance, which is normally oval or round in

Constellation Report by Chris Lancaster (cont.)



shape with perhaps a pair of lobed structures extending out into space. What we are seeing with NGC6302 apparently is a former star which has its rotational axis perpendicular with our line of sight. It has a pronounced pinch in the middle with material fanning out to each side.

To the naked eye, the open clusters M6 and M7 show as fuzzy blobs 4 degrees northeast of Lambda Scorpii. M6, nicknamed the Butterfly Cluster, is a collection of 80 stars of magnitude 7 and dimmer which trace the shape of a butterfly's wings. Take special notice of the two lines of dim stars which form the insect's antennae. M7 is about 4 times larger than M6 and contain stars of similar brightness. Binoculars are all you need to savor this cluster, but a telescope will show you the subtleties of the colors of these stars.

Tucson Amateur Astronomy Association  
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Address Service Requested

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 Las Cienegas

#### 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.

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

##### **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.

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.