



Desert Skies

Tucson Amateur Astronomy Association

Volume LVIII, Number 6

June 2012



Antares, M4, and lots of Dark and Bright Nebulosity
Image by Dean Ketelsen

Venus Transit Coverage
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General Meeting June 1st

Steward Observatory Lecture Hall, Room N210

6:30pm

Near-Earth Asteroids: Threat or Resource? — Al Anzaldúa

7:30pm

Near-Earth Asteroid 1999 RQ36 and the OSIRIS-REx Sample Return Mission — Carl Hergenrother

Affiliates



TAAA Meeting Friday, June 1

Steward Observatory Lecture Hall, Room N210, U of A campus



6:30pm Astronomy Essentials Lecture

Title: Near-Earth Asteroids: Threat or Resource?

Speaker: Al Anzaldúa, TAAA & Tucson L5 Space Society

Al Anzaldúa will lecture on both the danger and opportunity that near-Earth asteroids (NEAs) represent. He will discuss past NEA impacts and list a number of future NEA threats. He will review the composition of NEAs, types of NEA orbits, and ways we might deflect those orbits to make them "Earth-safe" while still keeping NEAs accessible for mining. Finally, Al will review daunting problems in the mining of asteroids and potential rewards in terms of natural resources.

Al is coordinator for the TAAA Space Exploration Special Interest Group. A long-time space advocate, he is also president of the Tucson L5 Space Society (TSS), local chapter of the National Space Society. Besides his activities with TAAA and TSS, Al gives lectures and exhibitions on space development throughout the year in connection with organizations such as the Planetary Sciences Institute, Moon Society, Planetary Society, and Mars Society. Most recently, Al has begun developing a community-access space and astronomy TV show called *From Inner to Outer Space*, which taped its first show last month.

7:30pm Members Night

Title: Near-Earth Asteroid 1999 RQ36 and the OSIRIS-REX Sample Return Mission

Speaker: Carl Hergenrother, UA Lunar & Planetary Lab / OSIRIS-REX

OSIRIS-REX, a University of Arizona-led New Frontiers-class NASA mission, is scheduled for launch in 2016. The spacecraft will rendezvous with and collect samples from the near-Earth asteroid called 1999 RQ36. These samples will be returned to Earth in 2023. The OSIRIS-REX name is an acronym made up of the primary scientific goals of the mission; Origins, Spectral Interpretation, Resource Investigation, Security, Regolith Explorer.

Carl Hergenrother, an astronomer at the University of Arizona's Lunar and Planetary Laboratory, will talk about the significance of this particular asteroid which is believed to be similar to the class of objects that brought water and the building blocks for life to the Earth. His lecture will place a special emphasis on how observations can be made now by amateur astronomers to further our understanding of 1999 RQ36 and asteroids like it.

Over the past 20 years, Carl has studied comets and asteroids as part of the Catalina Sky Survey, the Minor Planet Center and the OSIRIS-REX mission. He is the discoverer of 4 comets and dozens of near-Earth asteroids. As a member of the OSIRIS-REX science team, Carl is leading the effort to characterize the target asteroid 1999 RQ36 and other analogous asteroids. In addition to his professional work, he is an avid visual amateur astronomer and routinely observes comets, meteor showers and novae.

Editor's Message

There's a special event this month. The long awaited Venus Transit of 2012! The last Venus Transit occurred in 2004, but wasn't visible from the western US. The next one won't happen until 2117! I'm fascinated by the periodic pattern of Venus transits. For more about Venus transits, look for Loretta McKibben's article on page 7. Rik Hill's Skyways article on page 9 also discusses some lesser known information about Venus.

There will be several locations for seeing this event in Tucson, but the primary location the TAAA is supporting will be the University of Arizona in front of Flandrau Science Center. Find information about how you can support this outreach opportunity on page 7. Whether you volunteer for a public event or not, make sure you see this event!

Do you like books? Obviously, you're interested in astronomy. How about an Astronomy Book Club? TAAA

Construction Alert!

The construction project for Sun Link, Tucson's modern streetcar, is wreaking havoc on the UA campus, especially around Steward Observatory. **To avoid the issue, it is suggested that you park SOUTH of Steward Observatory, perhaps in the Cherry Avenue parking garage.** After 5pm parking is free but observe 24-hour enforced restrictions. Much of 2nd St is closed to vehicular traffic including the intersection of Cherry and 2nd St. If you park north of Steward Observatory, there is no guarantee you'll be able to easily walk across 2nd Street. Construction crews will attempt to maintain pedestrian access across 2nd St but be aware that you may need to walk east or west a couple blocks to cross.



member Irene Kitzman has proposed just that on page 5. Read her article and make sure to let her know if you're interested.

Can't get enough observing at our Chiricahua Astronomy Complex? John Kalas, CAC Director, will open the CAC site on Friday nights prior to the Saturday CAC star parties. Find out the details on page 3.

Terrí Lappin

Cover

This beautiful image by Dean Ketelsen includes Antares (near the bottom), globular cluster M4 (to the right of Antares), and lots of nebulosity—both dark and bright. The 30 minutes of exposure were taken with a Canon 80-200 zoom lens at ISO 1600 at F/3.2, focal length of 140mm. This was taken during last month's Kitt Peak Star-B-Que.

<i>This Month in Brief</i>			
<i>Event Contact Person</i>	<i>Date Location</i>	<i>Time</i>	<i>See Page</i>
Monthly Meeting Keith Schlottman	Jun 01 (Fri) Steward Observatory Rm N210 933 N Cherry Ave	6:30 PM	2
Astro Imaging SIG Meeting Larry Phillips	Jun 04 (Mon) Coco's Restaurant 6095 E Broadway	6:00 PM (for dinner)	4
Community Events Venus Transit Al Anzaldua & Terri Lappin	Jun 05 (Tue) Multiple sites around Tucson Check specific times & locations		7
Star Party at TIMPA Ben Bailey	Jun 09 (Sat) TIMPA 3250 N. Reservation Rd	6:45PM	6
Board Meeting Keith Schlottman	Jun 13 (Wed) Steward Observatory N305 933 N Cherry Ave	6:30 PM	13
AFSIG Meeting Benjamin Bailey	Jun 14 (Thu) USGS Building Room 253 520 N Park Ave	6:30 PM	5
Friday Nite @ TIMPA Ben Bailey	Jun 15 (Fri) TIMPA 3250 N Reservation Rd	6:45PM	5
CAC Star Party John Kalas	Jun 15 & 16 (Fri & Sat) Chiricahua Astronomy Complex		6
Grand Canyon Star Party Jim O'Connor	Jun 16—23 Grand Canyon National Park		-
Astro Imaging SIG Meeting Larry Phillips	Jul 02 (Mon) Coco's Restaurant 6095 E Broadway	6:00 PM (for dinner)	4

<i>Future Dates</i>	
July 2	Astro-Imaging SIG Meeting
July 6	TAAA General Meeting
July 11	Board of Directors Meeting
July 12	Astronomy Fundamentals SIG Meeting
July 13	Friday Nite @ TIMPA Star Party
July 21	TIMPA and CAC Star Party (CAC also on 6/20)

Unless otherwise noted, contact information for individuals mentioned throughout this newsletter can be found on page 15—"How to Contact Us".

<i>Upcoming Lectures</i>		
Jul 6	Astronomy Essentials	Eclipse and Transit Reports
	Invited	OPEN
Aug 3	Astronomy Essentials	Mary Turner Seasonal Objects
	Invited	Veronica Bray Impact Craters
Sept 7	Meeting Begins at 6:30pm	TAAA - Meet Yourself

Lectures are arranged by Terri Lappin. Give her your speaker suggestions (see page 15).

At the September meeting we are giving members the opportunity to learn about TAAA programs in an informal setting. Each Special Interest Group as well as program leaders will be available for informal interaction with members. Members will have the freedom of learning about what is of interest to them. This format is in lieu of our traditional "Status of the TAAA" presentations we have been having in September each year. The board thinks members will prefer this format to sitting through a meeting of status reports.

Monthly CAC Star Party Expands to 2-Days

As a way to improve attendance at the monthly Chiricahua Astronomy Complex (CAC) Star Party and offer some flexibility to members, a decision has been made to add Friday night observing.

This change has several benefits. First and most obvious is it offers members an alternate day each month for observing. Secondly, a two-day event offers an alternate "rain date" in case the weather is not cooperative on one day or the other. And thirdly, for those avid observers, it offers the chance to observe both days.

CAC Director John Kalas will open the site for the two-day observing events. Reservations are required for either day. Your reservation will only be good for the day that you request. If you make a reservation for one day and due to a change in plans or weather conditions you decide to switch to the other day, simply let John know about the change.

Keep in mind that the CAC Site is available for member use at other times. Should you want to do some independent observing, let John know. The gates are kept locked, so you will need to get the current information for accessing the site from John.

Newsletter Deadline

The deadline for the July issue is Wed, Jun 18. Desert Skies is published one week before the General Meeting. See the publishing guidelines on page 15 for details.

Astro-Imaging Special Interest Group (AISIG)

Meeting: Jun 4 (Mon)

7:00 PM

Coco's Restaurant (Broadway between Wilmot & Craycroft)

Contact: Larry Phillips



The Astro-Imaging SIG meets at 7pm usually on the first Monday of the month. Come early, anytime after 6 PM and enjoy dinner before the meeting. We will meet in the banquet room which is to the far left after you enter the restaurant proper. Our program consists of members sharing their images, setups, problems, or suggestions. Meetings end no later than 9 PM.

Our July meeting will be on July 2nd.

Solar Observing Group

The Solar Observing group will not be meeting for group solar observing until further notice. Please ignore the June 16th Solar Observing date that appears on the 2012 TAAA wall calendar. Solar observers are encouraged to use the TAAA Forum to post their solar observations.

Unless otherwise noted, all contact information can be found in the section called "How to Contact Us", found on page 15 of this issue of *Desert Skies*.

Starry Messengers Special Interest Group (SMSIG)

Contact: Terri Lappin

Starry Messengers are TAAA members who are interested in astronomy outreach. The TAAA's primary outreach activities are school star parties supported by several TAAA members. This program connects teachers with a group of astronomers and their telescopes for a night of observing, usually held on school grounds. Typically, that means bright skies and a limited number of objects to view. Let's face it – we may be wowed by some faint fuzzy patch but most kids aren't. Upon my first observation of M74 I wrote, "If I could see only a thousand objects in the sky, this would not be one of them." It's no surprise that it's also called "The Phantom Galaxy" by amateurs. I'd never even think about showing M74 to a group of kids. (M74 has about the lowest surface brightness of all objects in the Messier Catalog.) When we have the public looking through our telescopes, we need to stick to brighter, more easily visible objects.

The Starry Messengers are assembling a list of objects that are well suited for school or public observing. We hope to put descriptions and facts about these objects on the TAAA website. We'll be able to direct visitors to the TAAA website to learn more about the objects they see in our scopes. Jim Knoll is heading up the initial project design. He'll be asking star party supporters for suggested objects for this project. If you have favorite objects that bring about a good reaction from the public, start making a list.

The next Starry Messengers meeting will be announced in the July newsletter.



Starry Messengers SIG -
Opening Minds to the Universe

The Starry Messengers SIG is open to any TAAA member who has an interest in outreach and informal education. If family members or co-workers come to you asking about astronomy topics, then you're doing outreach. There are no fees involved to participate – unless you want to eat dinner during our meetings. Your input at our meetings will always be welcomed.



*A National Conference on
Science Education & Public Outreach*

*The challenges of communicating
our understanding of the universe and science*

August 4–8, 2012 @ Doubletree Inn, Tucson

All formal and informal educators are invited

<http://www.astrosociety.org/events/meeting.html>

Galileo Workshop for 3rd – 12th grade teachers
(Scholarships available, deadline June 1st)

The Russians Are Coming!

Contributed by Dean Ketelsen, email: [ketelsen\[at\]as.arizona.edu](mailto:ketelsen[at]as.arizona.edu)

Some of you old-timers in the club might remember a group of Russian amateur astronomers that paid a visit about 15 years ago. I took them around to some of the local sights and they had a great time. One of the youngsters gave a presentation at a TAAA meeting and wowed everyone. That time there was just the one 12-year old and 3 adults. They are planning another trip this fall in the mid to late September time frame. This time there are about a dozen coming, one adult and 11 from age 12–16. Sergey and I have been working on local sightseeing activities, which will include a trip to Meteor Crater and the

Grand Canyon on their way back to Los Angeles. Since they will no longer all fit in my van, I'd love some help with transport, and if anyone is interested in hosting some kids overnight, we'd be glad to entertain offers!

They've been working with a native English speaker, so all should be able to communicate somewhat. I don't believe their visit this time will overlap a TAAA meeting, but we'll likely plan some sort of activity to meet a subset of the club. If you are willing to help out with transportation or housing, please let me know. We still have a few months to plan, so any help you can offer would be great!

Astronomy Fundamentals SIG (AFSIG)

AFSIG Monthly Meeting

Jun 14 (Thu)

6:30 PM

U.S.G.S. Building, Room 253 (520 North Park Avenue)

Contact: Ben Bailey

On Thursday, June 14 we will hold our regular monthly meeting. Edward Eastburn will present the basics of using a Celestron GoTo Telescope. AFSIG is dedicated to building astronomy knowledge and practical skills among our members. Please come out and help us succeed.

The USGS Building is on the northeast corner of Park and 6th Street. Free parking is available nearby after 5pm. Please join us.

AFSIG Observing Clubs

AFSIG Observing Clubs are open to all members of TAAA at no charge. They are guided programs which means that at the scheduled observing sessions, there is someone there to guide you in finding the objects or features needed for successful completion of the program. You can join the programs at any time and can either attend the guided sessions or work on your own. A certificate is awarded at the completion of all the requirements. All observing programs are patterned after those of the Astronomical League, so you can continue on to complete the additional requirements and get your AL certificate.

Solar Observing Club helps those interested in observing solar activity — like sunspots, solar flares and other interesting features — and recording those observations. The beauty of this observing program is that our Sun offers great flexibility in observing and recording the different features — you don't have to be concerned about light pollution, night vision, or traveling great distances to find dark skies. The Solar Observing Club is taking a temporary hiatus from their regular observing schedule. Watch the newsletter for future observing dates. If you are interested in solar observing, please email Ben Bailey to be added to the solar observing email list.

Lunar Observing Club meets sporadically depending on schedule compatibility and the moon cycle. The purpose of

this club is to identify and log 30 specified lunar features — some of which are easy while others are more difficult. This is a great club in which to participate as it is ideal for observing from your back yard or patio. Dark skies are not really necessary and some features are even visible through light clouds. If you are interested in participating in the Lunar Observing Club or if you just want to be added to our email list to keep posted about our activities, email Robert Gilroy at bobgilroy[at]tucsonastronomy.org.



Constellation Observing Club meets monthly on our regularly scheduled TIMPA night. The purpose of this club is to identify and log 20 constellations, their brightest stars and deep sky objects. This is a great way to learn your way around the night sky. If you are interested in participating in the Constellation Observing Club or if you just want to be added to our email list to keep posted about our activities, email Paul and Cathy Anderson at paulanderson[at]tucsonastronomy.org.

Solar System Observing Club meets monthly on our regularly scheduled TIMPA night. The purpose of this club is to observe and log the different features and actions of the planets and their moons and other interesting solar system objects. If you are interested in participating in the Solar System Observing Club or if you just want to be added to our email list to keep posted about our activities, email Brian O'Connell at boc7[at]inbox.com.

Double Star Observing Club meets monthly on our regularly scheduled TIMPA night. The dark night sky is filled with millions and millions of stars. Some are close by (relatively speaking) but most are far away. Some are single stars (like our sun) but others are multiple star systems. Of these multiple star systems, we can detect and split many double stars with our equipment. The purpose of this club is to observe and log the different types and colors of double stars. If you are interested in participating in the Double Star Observing Club or if you just want to be added to our email list to keep posted about our activities, email Tom Watson at watson1987[at]cox.net.

TAAA Astronomy Book Club

Contributed by Irene Kitzman; email: [ikitzman\[at\]yahoo.com](mailto:ikitzman[at]yahoo.com)

I have always enjoyed reading non-professional books about astronomy, and these books have increased my knowledge and excitement about both past and current exploration and scientific inquiry. The idea of having a TAAA-sponsored Astronomy Book Club would be for us to read and discuss books that are aimed at the non-professional but whose objective is to inform the general public about astronomy and astronomy-related topics. As but one example: Brian Green has just written a very interesting book — "The Hidden Reality" which might be exciting to discuss together. There are many other well-written books that we could enjoy discussing such as "Coming of Age in the Milky Way," by Timothy Ferris. And I am sure all of you have some favorites of your own.

If you are interested in forming such a book club please contact me and if we get more than 5 interested people I presume we could start selecting texts and setting meeting dates to begin soon. Thanks for your interest!



Find us on Facebook!
Search for "Tucson Amateur
Astronomy Association"

Members' Star Parties



TAAA Star Party at TIMPA

Jun 9 (Sat)

Gate opens at 6:45m

Jun 15 (Fri)

Gate opens at 6:45pm

Contact Person: Ben Bailey

The AFSIG is hosting two star parties this month at TIMPA. On both nights an AFSIG representative will open the gates for an evening of viewing. The Gila Monster Observatory will be open for your viewing pleasure. The TIMPA site features a large parking area, and full restroom facilities. Be prepared for cool temperatures after sunset. Guests are welcome, accompanied by a TAAA member. We hope to see you there!

The Gila Monster Observatory houses a Meade 14" telescope donated to the TAAA by David Levy's Sharing the Sky Foundation. All members are encouraged to complete the training program to learn to operate this telescope.

TIMPA Site Notice

A gate card is required for TIMPA access. Please *DO NOT* ask the caretakers for entry to the TIMPA SITE. On scheduled TIMPA star party nights, a designated TAAA representative will provide access to the site. At other times, a gate card is available from the TIMPA Gate Card Controller.

Directions to TIMPA Site

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

The TIMPA site is about 25 minutes from Speedway & I-10, about 7 miles west of the Arizona-Sonora Desert Museum.

From the North:

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

From the East:

1. Take Speedway Blvd west. It turns into Gates Pass Rd.
2. Go over Gates Pass and continue west to Kinney Rd.
3. Turn north (right) onto Kinney Rd and continue past the Arizona-Sonora Desert Museum.
4. At the entrance to Saguaro National Park West, go towards the left onto Mile Wide Rd. (This is easy to miss so watch for the park entrance sign.)
5. Take Mile Wide Rd west about five miles to Reservation Rd. Mile Wide Rd ends at Reservation Rd and you must turn north (right) onto Reservation Rd.
6. Take Reservation Rd (a dirt road) north about one mile. The entrance to TIMPA will be on the right.

CAC goes to 2 Days!



Star Party at Chiricahua Astronomy Complex

Jun 15 & 16 (Fri & Sat)

Contact Person/RSVP to: John Kalas

The Chiricahua Astronomy Complex (CAC) is the club's dark 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 cooler temperatures. Try to arrive before sunset. Unlike the TIMPA site, members are required to make reservations for both monthly club star parties and private member use. We are restricted to 60 persons and 30 vehicles maximum at any time. If you would like to attend, you must contact CAC Director John Kalas. Reservations will be on a first come - first serve basis. You need to reserve for both nights if observing both nights. Depending on the number of members interested in attending, guests may not be allowed.

CAC Site Notice

Reservations are required at all times including scheduled star parties. On scheduled CAC star party nights, a TAAA designated representative will unlock the gate. At other times, access can be granted by the CAC Director.

Directions to Chiricahua Astronomy Complex Site

GPS coordinates: 31 deg 52.07' N, 109 deg 30.9' W

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

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

Community and Educational Events

Members are asked to support our outreach events. TAAA either sponsors or co-sponsors these events. This is a great opportunity for beginners as you can remain on a single object if you like. You can even contribute without a telescope. Sign up sheets will be at the meeting. You can also contact the star party leader or the volunteer coordinator, see the section "How to Contact Us" on page 15 of this issue. Details and maps can be obtained from the TAAA website calendar.



Venus Transit 2012



**Venus Transit
June 05 (Tues)**

Set-up: about 2:00pm

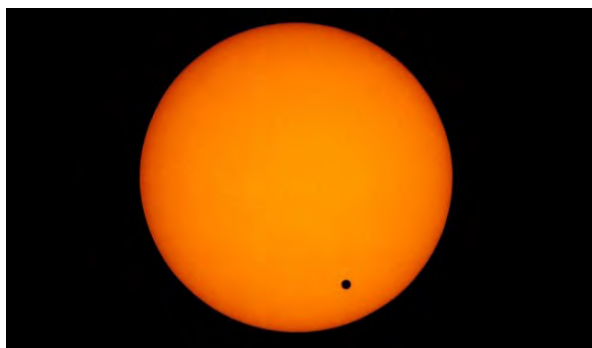
University of Arizona Mall (near Flandrau Science Center)
Leaders: Al Anzaldua and Terri Lappin

June 5th marks a very special event. Venus will cross the disk of the sun. More rare than a total solar eclipse, the next Venus transit won't occur until 2117. This event will be well publicized so we need lots of scopes out on the mall.

The TAAA is also supporting other events across Tucson by providing speakers or a small number of scopes. The primary location is the event on the UA mall. Please consider bringing your scope to the UA mall. RSVP to Al Anzaldua if you're bringing a scope. We'll also have hands-on activities about the sun and transits. If you want to help with the hands-on activities RSVP to Terri Lappin. (See page 15 for contact info for both Al and Terri. As of this writing, there are no plans to observe after dark.

The Transit of Venus

Contributed by Loretta McKibben: email: [tucsonastronomer\[at\]gmail.com](mailto:tucsonastronomer[at]gmail.com)



Transit of Venus
Credit: Australian Space Alliance and
www.universetoday.com

My Okie friends Margie and Chuck will be parked at a lake in Nevada on June 5, as part of their annual vacation. Camping in a rugged undeveloped area may not be everyone's idea of a good time, but I am a bit envious, because the spot they have chosen is one of the prime viewing areas for the upcoming transit of Venus on June 5-6, 2012.

When Venus passes directly between our Earth and the Sun and conditions are just right, we see the distant planet as a small dot gliding slowly across the face of our star. This is called a "transit of Venus." Near sunset on the evening of June 5 in North America, the last transit of Venus to occur in our lifetimes will be visible to us. Like most things astronomical, these transits occur periodically, and the next transit of Venus won't occur until 2117, in 105 years. This time, much of the world will be able to view at least part of the 2012 transit of Venus. Here in Tucson, we'll get to see about half of it.

The Rare Alignment In History

Venus orbits the Sun once every 228 days. Venus' orbital plane is tilted ~3.5 degrees compared to the

Earth's orbital plane. A transit of Venus occurs when Venus is between the Earth and the Sun (said to be at inferior conjunction) AND when Venus crosses the Earth's orbital plane.

Historically, this rare alignment is how astronomers measured the size of our solar system. Edmund Halley, the brilliant English scientist and mathematician, proposed to the Royal Astronomical Society in 1716 that the transit of Venus or Mercury could be used to measure the Sun's distance from the Earth, because the parallax effect makes the position of Venus look different to observers at locations far apart on Earth. Put simply, the parallax is a displacement or difference in the apparent (observed) position of an object viewed along two different lines of sight, and is measured by the angle or semi-angle of inclination between those two lines. Knowing the angle and some high school trigonometry, the distance can be calculated. This principle is used to measure the distances to nearby stars by making observations separated by several months time. This effect is also the basis for stereo vision in humans and predators, due to our eyes being a short distance apart, which enables us to gauge distances.

Want to learn more about the parallax effect and participate in taking data like astronomers did in the 18th and 19th century? You can find a partner and repeat these historic measurements! Check out:

<http://transitofvenus.nl/wp/getting-involved/measure-the-suns-distance/>

(Continued on next page)

Contact Points for Tucson (GMT - 7 hours)

Ingress exterior:	3:06:06 PM	Venus just touching the Sun
Ingress, interior:	3:23:34 PM	Venus now on the solar disk
Transit center:	6:27:00 PM	Midpoint of the transit
Egress, interior:	9:29:58 PM	Venus at the edge of solar disk
Egress, exterior:	9:47:55 PM	Venus now off the solar disk

The Transit of Venus (Continued from page 7)

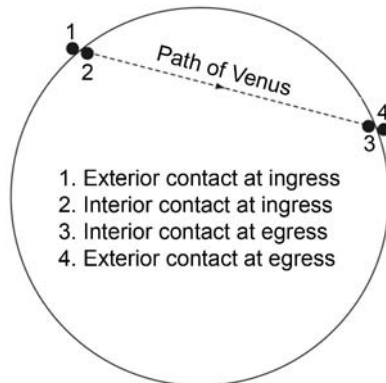
Viewing the Transit

Equipment preparation is paramount since we cannot look directly at the Sun. If you work with K-12 classes or youth groups, you can create a pinhole solar viewer with a group of kids a few days in advance and teach them how to use it and look for sunspots first. Eclipse glasses are also available for purchase, but of course the best views will be with telescopes equipped with solar filters, since the disk of Venus will be about 1/30th the size of the solar disk.

Use only high quality solar filters and extreme caution with your telescope. When I was in college, one of the grad students used his expensive Questar telescope to try and focus an image of the Sun on a white background to view sunspots, and he cooked his optics!

What To Look For

There are four important phases during the 2012 transit of Venus, as shown on the diagram to the right. At ingress, the disk of Venus first touches the disk of the Sun, then moves onto the solar disk to interior contact at egress, the second stage. Venus moves across the Sun for the next six hours, until it reaches the third stage, interior contact at egress. Finally exterior contact at egress, it is moving off of the disk in the fourth stage.



Sunset on June 5 will be 7:28 p.m., so we should be able to see it travel through ingress, then through the transit center. At egress, when Venus moves off the solar disk, it will be long after sunset.

At ingress and egress, there are two important phenomena that some people observe: the black drop effect and the aureole effect. The black drop effect occurs when it appears that the disk of Venus is distorted as it moves onto or off of the solar disk. Researchers have found that this effect is dependent on the Earth's atmospheric conditions at the time and its interactions with solar limb darkening, and telescopic diffraction. So whether an observer sees it or not depends on the atmosphere and the lack of quality of the telescope used! The aureole is a bright arc around the disk of Venus, which conversely requires a very good telescope to detect it. For more discussion, see the web sites listed below.

Public Events

One of the best ways that amateur astronomers give to the community is through public star parties and viewing events. If you're helping out at a public event or school, it is helpful to have photos to help illustrate the transit, the orbits of Earth and Venus, and have a person dedicated to explaining the transit. The web site list below

has links to sites that have images you can print to help with explanations. Do not assume that the general public knows where Venus is, or how large the planet is, its distance from the Sun, etc. Explain the basics and make the following points:

- Teach the public to NEVER look at the Sun with unprotected eyes!
- Venus is the brilliant planet, inaccurately called the "morning star" and "evening star," brighter than any star (besides the Sun) or other planet in the night sky.
- Venus is closer to the Sun than the Earth. Because of this, we see it in phases.
- Explain simply what inferior conjunction is, when Venus is between the Earth and Sun. Use styrofoam balls of different sizes to demonstrate.
- Explain that the orbital plane of Venus is tilted 3.5 degrees from the Earth's.
- The transits of Venus occur rarely, when Venus is at inferior conjunction AND is crossing the Earth's orbital plane. Point out that the next one will be in 2117.
- Ask kids, "What will the Earth be like in 100 years, at the next transit of Venus?" They love to think about the future and use their imaginations.
- Explain what sunspots are. Suggest that kids and adults viewing the transit compare the disk of Venus with visible sunspots (through a telescope with solar filter, of course). Ask them: are the two different? (Venus will be a sharp disk. Sunspots have diffuse and irregular edges. Ask kids, what could these differences tell us?)
- Most of all, whether you're parked in the Nevada desert somewhere or participating in a public event, have fun!

Some Other June Events:

The Summer Solstice for the northern hemisphere occurs on Wednesday, June 20, at 4:08PM, Tucson time. This is the Winter Solstice for the southern hemisphere.

Useful Transit of Venus Web Sites

- * This web site has useful printable graphics that explain the transit, including the inferior conjunction of Venus, its phases, and the angle between Earth's and Venus's orbital planes:
<http://astrobob.areavoices.com/2010/10/28/allow-me-to-introduce-you-to-venus-dark-side/>
- * Discussion of black drop effect:
<http://www.transitofvenus.nl/blackdrop.html>
- * Discussion of aureole effect:
<http://transitofvenus.nl/wp/observing/aureole/>
- * Where to be, when, and how to safely see the transit. Even has a smart phone application!
<http://www.transitofvenus.org>
- * Chart of the transit, showing where it is visible on the Earth's surface, and approximately when.
<http://eclipse.gsfc.nasa.gov/OH/tran/TOV2012-Fig01.pdf>
- * Look up (calculate) when these four points will be reached at your location.
<http://transitofvenus.nl/wp/where-when/local-transit-times/>

Rik Hill's Website Trips on the Internet Super-Skyway

Venus....the goddess of love and beauty

A place where if you stood on the surface the air would be nearly as thick as water, 900C temperatures and if that weren't bad enough, it then rains sulfuric acid. This is the place named after the Roman goddess of love and beauty! The current evening apparition is beginning to wind down and this planet will quickly be leaving our evening skies and reappearing in the morning sky, but not before putting on a once in a lifetime show.

If this gets out quick enough for you to catch Venus in the evening twilight sky, try imaging the dark side of Venus. When the phase is a slender crescent you can actually image the unilluminated portion. Frank Melillo of the Association of Lunar and Planetary Observers has imaged this phenomena in 2009 and 2012. This is NOT the Ashen Light which is a visible light phenomenon, but an infrared manifestation.

First, to find out more about the Ashen Light I recommend these articles:

<http://www.universetoday.com/94848/the-mystery-of-venus-ashen-light-2/>

and

<http://www-ssc.igpp.ucla.edu/personnel/russell/papers/ashen/>

To observe the aforementioned phenomenon takes some special filters (Infrared, about 1 micron) and you have to overexpose the planet to get the dim glow. This is Frank's 2009 effort:

<http://alpo-j.asahikawa-med.ac.jp/kk09/v090304z.htm>

In a recent email he describes the process as follows:

Venus' crescent is thin enough to capture the night side of Venus.

<http://www.alpo.arksky.org/alpoimg/Ven174338EC.jpg>

"The image was taken May 12, 2012 at 0:40 UT (about 40 minutes after sunset when the sky was decently dark). I have stacked 15 images at 3-seconds exposure each. The image was taken through the ten-inch MEADE prime focus f/10 and a 1-micron (1000nm) filter. I boost up the contrast, strong unsharp masking and 'clarify' file to adjust the light around Venus and you can see an outline of the dark limb. At this resolution, the details on the night side are too difficult to make out. It was at 17% illumination but I am hoping for a better image as Venus' crescent is getting thinner."

If you miss this current evening sky apparition, catch Venus at its heliacal rising in the morning sky after conjunction and be the first ever to record this in the morning sky.

Oh yes, about that "conjunction", on June 5th you have one more chance for what is now a truly a once in a lifetime event. If you missed the one in Europe in 2004, this time it's in our own back yard. This kind of transit is rare. They happen in a sequence that recurs every 243 years where

pairs of transits happen 8 years apart and these pairs of transits happen again in 121.5 and 105.5 years. So it is possible to see two if you are willing to travel but also easy to miss them altogether!

The best information for transit path and times can be found on NASA's Venus Transit webpage, managed by Fred Espenak, at:

<http://eclipse.gsfc.nasa.gov/OH/transit12.html>

As a little side interest, in 1883 the composer John Philip Sousa was commissioned to write a march commemorating the 1882 transit of Venus. For a long time there was a popular myth that there were no surviving copies of the music but in 2003, just in time for the 2004 transit, copies surfaced and now you can listen to it at:

<http://lcweb2.loc.gov/natl/lib/ih/as/service/transit/200002625/0001.mp3>

and an excellent piano version at the Wikipedia page:

http://en.wikipedia.org/wiki/Transit_of_Venus_March

or you can see it performed by the Penn High School Orchestra:

<http://www.youtube.com/watch?v=-rNQFUqt49Q>

There is also a play called Transit of Venus which was "transformed" into an opera that you can read about at:

<http://www.manitobaopera.mb.ca/operas/transitofvenus.html>

So now you have something you can listen to as you observe this most unusual of conjunctions!

As always, if you have some feedback (other than rude comments about my droll humor), a topic you'd like explored or have some interesting URLs you've turned up, please feel free to drop me a line at: [rhill\[at\]lpl.arizona.edu](mailto:rhill[at]lpl.arizona.edu).

TAAA Loaner Telescope Program

Don't own a telescope?

Our Telescope Loaner Program is your answer!

Meade 10" LX200 GPS (training required)

Meade 10" f/4.5 on equatorial mount

Coulter Odyssey8 8" f/4.5 Dobson

Meade 90mm ETX

Unitron 62mm f/14.5 on equatorial mount

Sears 60mm f/15 on equatorial mount

Members only.

Details available from the Equipment Loan Coordinator or any club officer.

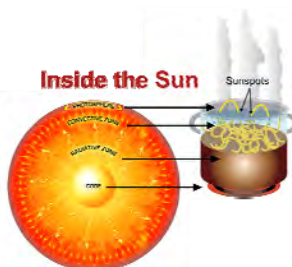


Night Sky Network Outreach Toolkits

We received the newest Night Sky Network Toolkit, called Our Magnetic Sun, just in time for the solar eclipse last month. It was used at Pueblo Gardens K-8 School. This toolkit includes powerful magnets which the kids found fun to play with as they learned how solar magnetic storms affect the Earth, our communications, and our power grids. This toolkit will be at the June 1st meeting to give TAAA members a chance to try out the projects. Then, it will be at the UA Mall Venus Transit event on June 5th where we hope a few TAAA members will help the public understand the sun as a dynamic star.

Each Night Sky Network Toolkit was developed by the Astronomical Society of the Pacific for use at astronomy outreach events to augment telescope viewing. Each themed toolkit contains several projects and nearly all the materials needed for any particular project. Using the Our Magnetic Sun Toolkit, you'll be able to explain the sun's magnetic field, sun safety (both observing and sunbathing), and how the sun is the ultimate energy source for nearly all processes on Earth. There's a total of 5 projects, one PowerPoint presentation with a script, and 9 pages of background information for the presenter's use.

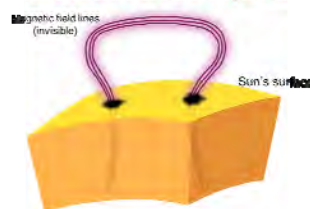
The Starry Messenger SIG wants to train more TAAA members in the use of our toolkits. This will help us meet the demand for having these toolkits at star parties. A toolkit will be brought to the monthly TAAA Meeting where members can see the materials and perform the demonstrations. One-on-one training is also available. Toolkits can be checked out for a month at a time and brought to star parties. Star parties doomed by bad weather have been saved by toolkits. Toolkits can also be used at scout meeting or even a family birthday party. Contact Terri Lappin who coordinates the Night Sky Network toolkit program to check out a toolkit.



The sun compared to a pot of boiling spaghetti noodles.

Noodles represent the magnetic field that get's twisted around within the sun.

What Makes Sunspots?



Dark Skies for June 2012

Data provided by Erich Karkoschka

No twilight, No moonlight for Tucson in 24-hour MST
 18hrs=6pm, 20hrs=8pm
 22hrs=10pm, 0hrs=midnight

Day	Date	Dark Time		
Th/Fr	31/1	2:47	-	3:40
Fr/Sa	1/2	3:34	-	3:39
Sa/Su	2/3	-	-	-
Su/Mo	3/4	-	-	-
Mo/Tu	4/5	LUNAR ECLIPSE		
Tu/We	5/6	VENUS TRANSIT		
We/Th	6/7	21:08	-	21:48
Th/Fr	7/8	21:09	-	22:31
Fr/Sa	8/9	21:10	-	23:09
Sa/Su	9/10	21:10	-	23:43
Su/Mo	10/11	21:11	-	0:15
Mo/Tu	11/12	21:11	-	0:46
Tu/We	12/13	21:12	-	1:18
We/Th	13/14	21:12	-	1:51
Th/Fr	14/15	21:13	-	2:26
Fr/Sa	15/16	21:13	-	3:04
Sa/Su	16/17	21:13	-	3:37
Su/Mo	17/18	21:14	-	3:37
Mo/Tu	18/19	21:14	-	3:37
Tu/We	19/20	21:14	-	3:37
We/Th	20/21	21:14	-	3:37
Th/Fr	21/22	21:15	-	3:38
Fr/Sa	22/23	21:45	-	3:38
Sa/Su	23/24	22:20	-	3:38
Su/Mo	24/25	22:54	-	3:38
Mo/Tu	25/26	23:29	-	3:39
Tu/We	26/27	0:04	-	3:39
We/Th	27/28	0:43	-	3:40
Th/Fr	28/29	1:26	-	3:40
Fr/Sa	29/30	2:14	-	3:41
Sa/Su	30/1	3:09	-	3:41

Outreach Toolkits Available for Borrowing

- Our Magnetic Sun:* sun model, solar magnetic storms and their impact on Earth, sun protection
- Life in the Universe—Are We Alone?:* origin of and search for life
- Space Rocks - Asteroids, Comets, and Meteorites:* meteorite samples, asteroid detection
- Exploring the Solar System:* scale model of solar system
- Our Galaxy, Our Universe:* scale model of the Milky Way galaxy and the Universe
- Shadows and Silhouettes:* lunar phases, eclipses, and transits
- Black Hole Survival Kit:* gravity concepts
- Supernova!:* life cycle of massive stars, earth's protective atmosphere
- Mirrors and Glass:* how telescopes work
- Telescopes - Eyes on the Universe:* basic principles of optics, the human eye, and observing
- PlanetQuest:* demonstrate planet detection techniques

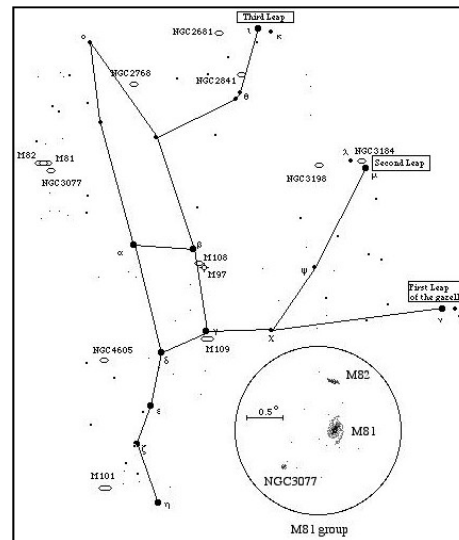
Chris Lancaster's Constellation of the Month

Ursa Major—The Great Bear

Just about everyone is familiar with this constellation from the asterism of bright stars that outline the famous dipper shape. Show someone the night sky for the first time and usually he will ask, "Where's the Big Dipper?" Van Gogh has painted it, Shakespeare and Tennyson have mentioned it in their literature, and, it should be safe to say, every civilization has taken note of it throughout history and prehistory. But the Big Dipper is only part of the complete constellation called Ursa Major. The most popular form which these stars have assumed in the eyes of observers is a bear. The Greeks called it Arktos, the origin of our word "arctic"—an appropriate derivation for a constellation that circles over the extreme northern latitudes. Greek legends explain that Callisto, who was a maiden that caught Zeus's eye, was turned into a bear by Zeus's jealous wife, Hera. Zeus gave the bear an honorary spot in the sky, but Hera had the last word by moving it near the pole so the bear would never enjoy rest, but endlessly circle the celestial pole.

Ursa Major is rich in objects to view. You can start with your naked eye by looking at the 2.3 magnitude star in the handle of the Big Dipper where the handle bends (this is Zeta Ursae Majoris, also called Mizar). Those with sharp eyes can spot, even without optical aid, a companion to Mizar of magnitude 4 about 12 arc minutes away called Alcor. Through a telescope Mizar becomes a double itself with a 4th magnitude companion 14" away. Not only was this the first double star to be discovered (in 1650), but it was also the first double to be photographed (1857). There is little or no color contrast between these stars. They all appear a pure white. Squeezing this trio of stars in your eyepiece makes for a truly striking sight. Another naked eye sight is found in three pairs of stars which, to the Arabs, represented the footprints of a leaping gazelle. As part of the bear, the stars form the toes of two of his hind feet and one front foot. Nu and Xi form the first leap, Mu and Lambda the second leap, and Iota and Kappa the third.

Ursa Major lies far from the galactic equator, which means that it is packed with galaxies. A pair of outstanding ones, M81 and M82, are in the northern part of the constellation centered near RA 9h 56m Dec +69d 28'. Upon first sight this duo becomes a favorite of many observer. They are separated by only 37 arc minutes so both can be seen in a low power field. They have quite distinct personalities. M82 glows at magnitude 9.2 with a size of 11.3'x 4.3'. Small telescopes will show a thin oval with perhaps a hint of dusty mottling toward the center. Large instruments will capture the inner calamities of this tortured galaxy. Whatever is happening in M82, it is a source of loud radio noise as well as the cause of a tremendous explosion of material rushing out from its nucleus resulting in streamers and filaments similar to the those which contribute to the appearance of M1, the supernova remnant in Taurus. M81, on the other hand, is a handsome spiral of magnitude 7.9. It is much larger than M82, covering 26'x 14'. Most will see a uniform oval since only very large scopes will be capable of bringing out its spiral arms. An easy way to find this pair is to start at Gamma Ursae Majoris (the lower left star of the Dipper's bowl),



move diagonally across the bowl to Alpha, and then double that distance in a straight line to arrive at your target.

While we are in the neighborhood, you may want to move 46 arc minutes east to galaxy NGC3077, a decently bright galaxy (mag. 10.8) 5.3'x 4.4' in size. Being a dwarf elliptical, this galaxy shows a fat oval structure that is quite bright in the center, and then fades out to its boundaries.

Another pair of objects can be seen along the bottom surface of the Dipper's bowl. One and a half degrees ESE of Beta Ursae Majoris is M108. This galaxy is very similar to M82 from the fact that it is oriented edge-on, measures 8.3'x 2.5, and has a dispersal of dusty lanes across its entire disk. M108 shines brightly at 10.1 and is located at RA 11h 11.5m Dec +55d 40'. Move only 48 arc minutes virtually in the same direction and you will see M97. A dark sky and at least a medium sized telescope will reveal why this planetary nebula is given the popular name of the Owl Nebula. You will see two dark circles forming the eyes of the bird within the round face of the nebula with the 12th magnitude central star exactly in the middle. Unfortunately, the Owl glows at only magnitude 11.5 from a disk 3 arc minutes in diameter, so it can be elusive depending on seeing conditions.

Move toward Gamma Ursae Majoris to find another easy galaxy—number 109 in Messier's catalog (RA 11h 57.6m Dec +53d 23'). It is 38 arc minutes from the magnitude 2.4 star marking the lower left corner of the Dipper. This is a bright magnitude 9.8 barred spiral galaxy covering 7.6'x 4.9', so it is an easy target in any telescope. But 8 to 10 inches is necessary to attempt seeing details of the bar and spiral arms.

Forming a slightly flattened equilateral triangle with Zeta and Eta Ursae Majoris is the huge galaxy M101. It spans nearly half a degree across its face. Even though this galaxy shines strongly at magnitude 7.7, it has such a low surface brightness that little detail can be observed. I've spotted it in a telescope as small as 60mm, but I had to look twice to make sure it was there. Larger scopes, of course, make it an easier target, but most views will still only show a soft glow with a slightly brighter middle. M101 sits at RA 14h 3.2m Dec +54d 21'.

(Continued on page 12)

Constellation of the Month (Continued from page 11)

Several other bright galaxies populate Ursa Major, as well as many dozen additional faint ones. Here's a partial list of some of the remaining brighter ones:

NGC #	RA/Dec	Mag.	Size
2681	8h 53.5m/+51d 19'	10.9	3.6'x 3.4'
2841	9h 22m/+50d 59'	10.1	8.1'x 3.5'
2768	9h 11.5m/+60d 2'	10.8	8.1'x 4.33'
3198	10h 19.8m/+45d 33'	10.8	8.6'x 3.3'
3184	10h 18.3m/+41d 25.5'	10.4	7.4'x 7.0'
4605	12h 40m/+61d 36.5'	10.9	5.7'x 2.1'

Let's end with an interesting double star, Xi Ursae. The two stars average 26 AU of actual separation, but they are

close enough to Earth that even small telescopes can split them. Currently, they are separated by 1.8" which will increase to its maximum of 3.1" by the year 2035. The total period is only 60 years, which helped M. Savary in 1828 to be the first to compute the orbit of a binary star. Due to its relatively fast orbit, it is possible to see a distinct change in PA in a short time. It is now in a prime spot so that during the next thirteen years you will be able to see their PA turn by about 90 degrees.

So many more binary stars, variable stars, and galaxies that cannot be covered in a short article await you in Ursa Major. The only limitations are time and aperture.

Christian Weis' Planetary Nebulae of the Month

NGC 6058 and DdDm 1

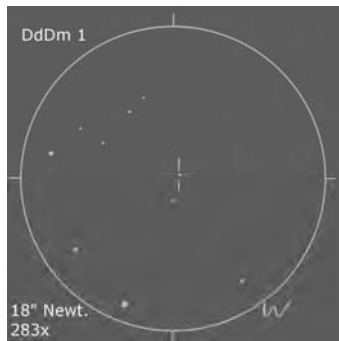
Planetary nebulae (PN) are fascinating objects that come in numerous forms of appearances. Besides the well known grand four Messiers (M27, M57, M76 and M97), there are hundreds more to explore. This article suggests two PNs, a pretty bright and easy-to-observe one and a harder one for the more ambitious observer who is equipped with a bigger scope.

When you hear "Hercules", you will probably think of M13, the great globular cluster, and maybe also remember that M92, another nice globular, is also located in that constellation. But there is more to observe.

NGC 6058 is a rather small PN in the western part of Hercules. It was discovered by William Herschel in 1787. With a brightness of 13m it can be seen in telescopes as small as 5", depending on sky conditions. I observed NGC 6058 in February 2011 with an 18" Dobsonian having superb conditions in the Austrian Alps. My notes read: Small disk, central star easy, no structures but somehow mottled, UHC and [OIII]-filters improve the sight sparsely; fst 7m2 (UMa), 452x



NGC 6058
 RA: 16h 4.4min
 Dec: 40° 25'
 Constellation: Hercules
 Brightness: 13m
 Central star: 13m7
 Size: 24 x 21 arcsec
 Distance: 8500 ly



DdDm 1
 RA: 16h 40.3min
 Dec: 38° 25'
 Constellation: Hercules
 Brightness: 13m
 Size: stellar
 Distance: 33.000 ly

DdDm1 (Dolidze-Dzhimshelshvili 1) is an unknown PN that was discovered in the 1960s. Located at a distance of 33.000 lightyears, it is one of the few PN in the galactic halo. Since the preceding star was a population II star, the PN lacks of heavy elements (data by the German observer Uwe Glahn). DdDm 1 is relatively bright but one will need a good finder chart to locate it. Do not expect to see any extent - you will need a filter to unequivocally identify this PN. Having very good sky conditions and using an 18" Dobsonian I noted in April 2011: Stellar, bright, easily visible at 94x, needs filter for identification, fst 7m0 (UMa), 283x

The Visible Planets this Month

Data provided by Erich Karkoschka

Weekend	Sun		Mercury		Venus		Mars		Jupiter		Saturn		Visibility (Vi)	
	Sa/Su	Set	Rise	Set	Vi	Set	Vi	Set	Vi	Rise	Vi	Set	Vi	Code
2/3		19:24	5:15	20:05	8	19:45	9	1:02	1	4:24	5	2:49	1	-3 brilliant
9/10		19:28	5:15	20:42	4	Rise	8	0:42	1	4:02	3	2:21	1	0 conspicuous
16/17		19:30	5:15	21:04	3	4:14	2	0:22	1	3:40	1	1:53	1	3 moderate
22/24		19:32	5:17	21:12	3	3:44	-1	0:03	1	3:18	0	1:25	1	6 naked eye limit
30/1		19:32	5:19	21:08	4	3:20	-2	23:44	1	2:56	-1	0:57	1	9 binoculars limit

TAAA Board of Directors Meeting—9 May 2012

Attending Board members present (5): Keith Schlottman, Bill Lofquist, John Croft, Al Anzaldua, Vern Dunlap.

Members present (5): Tim Van Devender, Bob Gilroy, Chuck Hendricks, Paul Anderson, Terri Lappin.

Call to Order: The Vice-President called the meeting to order at 6:32 pm.

Minutes: The Board unanimously approved the minutes from the Consent Agenda.

Treasurer's Reports: John Croft reported that \$28,881 is in the bank, and that \$16,766 of it is non-restricted. Disbursements were \$728.39, and the RV fund has \$4552.

SIG Status Reports

Starry Messengers SIG (SMSIG) Report: Terri Lappin reported that SMSIG will begin meeting every-other-month. Terri will begin bringing tool kits to TAAA general meetings instead of scheduling workshops with them.

Astronomy Fundamentals SIG (AFSIG) Report: Bob Gilroy reported the following: During AFSIG's last astronomy fundamentals meeting the leadership received a range of suggestions on possible AFSIG activities. AFSIG will hold a new astronomy fundamentals class in the fall. AFSIG will hold a solar filter workshop in fall also, and Mike Turner has seven kits available for that workshop. AFSIG purchased a first aid kit for TIMPA. AFSIG members will upgrade the doors on the Gila Monster observatory at TIMPA. AFSIG's recent star party for the Boy Scouts went well.

Space Exploration SIG (SESIG) Report: Al Anzaldua reported that SESIG will have a planning meeting on May 17 at 7:00 pm at Al Anzaldua's home.

Star Party Coordinator Report: Bill Lofquist reported that we are still getting a good number of volunteers for our star parties.

Chiricahua Astronomy Complex: Bill Lofquist reported that Phase 2b of the electrical work is now being completed and grading for the RV spaces will soon begin.

Web Director/E-Services Report: Tim Van Devender gave a progress report of his work on the website.

Star Party Policies vis-à-vis Youths: Bill Lofquist, Bob Gilroy, Chuck Hendricks, Ben Bailey, and other TAAA members will be meeting soon with Pima Prevention Partnership Director Harry Kressler, teachers, and parents to discuss protocols for working with kids.

Upcoming Meetings: Terri Lappin reported that Al Anzaldua will give the Astronomy Essentials lecture and

Carl Hergenrother the Invited Lecture at the next general TAAA meeting on June 1. Veronica Bray will give the Invited Lecture in August, but we still need an Invited Lecture speakers for July, October, and November, as well as Essentials speakers for November and December. TAAA members will do reports on the Venus Transit and Annular Eclipse for Astronomy Essentials in July, and Mary Turner will do the Astronomy Essentials lecture in August. In September TAAA will hold a "TAAA Meet Yourself" meeting, wherein members will be able to talk to various SIG and Board members in an informal setting.

New Board Elected: The following members were elected by the membership at the May 4 General Meeting to hold the following offices from June 1, 2012 until May 31, 2013:

Members-at-Large: Chuck Hendricks, Vern Dunlap, Bill Lofquist.

Secretary: Al Anzaldua

Treasurer: John Croft

Vice President: Robert Gilroy

President: Keith Schlottman

Fundraising: Bill Lofquist suggested we fundraise by selling bricks engraved with the names of members, companies, and institutions. The Board members generally approved of the idea, and Bill agreed to provide more information about the steps involved, including the permitting and timing of such steps.

Other Matters: Bob Gilroy reported that on May 18 he will undergo an operation at Northwest Hospital.

John Croft volunteered to take in the money from members purchasing new name tags.

Respectfully submitted,

Al Anzaldua, TAAA Secretary

Next Board of Director's Meeting

June 13 (Wed)

6:30 PM

Steward Observatory Conference, Room N305



Contact the president to have your topic added to the agenda. There may not be time for topics that are not on the agenda. The front doors at Steward Observatory will be locked. Be there by 6:30pm or call the cell phone number of someone you know is attending the meeting and they can let you in.

Support Our
Sponsors



Invitation from a Parallel Universe

Contributed by Rich Watson, Astronomy Coordinator (volunteer)

Most of you have visited the public telescope at Flandrau and the reason I refer to it as a "parallel universe". Our 16" public telescope (across the street from Steward) is staffed by volunteers who are almost exclusively members of TAAA. Thus, the parallel.

Our dome is open to the public Wednesday – Saturday, 7–10 PM. This article is an invitation for you to join us. On a typical night, we engage between 30 and 80 visitors and our operators share the night sky through the telescope, our CCD camera and/or demonstrations on a computer.

Operators complete a three day "basic" training session covering details relating to the scope and presentations. They then shadow other experienced operators until they are fully oriented and comfortable. Our scheduling is unique because we use a virtual "sign up" sheet where operators choose nights that are convenient for service.

Some of our steadfast volunteers (like George Barber) have found other work, retired, or moved to other cities recently. Our group consists of students, amateurs, professionals and retirees. Your assistance in filling the gap would be greatly appreciated. Please call me if you are interested in becoming an operator and would like more information.

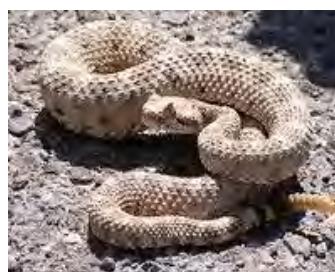
Thanks!

Contact Rich at [aztucwatson\[at\]gmail.com](mailto:aztucwatson[at]gmail.com); 520-981-1480

Desert Dwellers

Be alert for rattlesnakes, especially at night! 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 wherever they want. These residents can leave holes and other potential tripping hazards. Be careful when walking, especially at night.



<i>TAAA Classifieds</i>	
For Trade	12.5" full thickness mirror blanks (two of them) to trade for a PST Solar telescope, or an older Ha filter capable of adapting to a high F/ratio Newtonian. Also lots of books and other stuff to horse trade with. This is needed for the annular eclipse and the Venus transit. Already have white light filters but I need a bit more "wow factor for either my 8 or 10 inch F/8 Newts. James Lehr Miller starman1000[at]msn.com or 520 751-4961 First Offered March 2012
For Sale	10' x 12' motorized roll-off roof observatory in a great rural neighborhood. Situated on a 1-acre lot with southwestern style home. About 35 miles southwest of Tucson, close to Kitt Peak. Excellent night skies with desert climate giving many clear evenings. Home is 1900-square foot sturdy slot-block with tiled and newly carpeted floors, carport, new paint, and desert landscaping. 15940 Ridgemoor, Tucson, listed with Long Realty (http://www.longrealty.com), MLS#21123526. Current price is \$74995! First Offered March 2012
For Sale Prices Reduced!	①Classic C11 OTA. In storage for nearly 10 years but worked great back in the day. Should still be fine. Been tested on the sky and achieved resolution limit for an 11" aperture on double stars. Some minor scuffs and scratches. Asking \$700 OBO ②C11 fork and base was purchased separately from the OTA and while the drive works it has never carried the OTA. No photos available. Asking \$400 OBO ③Classic Star Liner German Equatorial Mount that carried the C11 OTA for many years. It has homemade tangent arm Dec. drive and tracks very well. This thing is massive. Asking \$500 OBO. All items are Tucson pick up only. Photos at: http://www.lpl.arizona.edu/~rhill/instr.html Email Rik Hill at rhill[at]lpl.arizona.edu First Offered November 2011
For Sale	1989 10in. Meade Schmidt-Cassegrain telescope. Includes tripod, 12 eyepieces, dual axis controller, 2 spotting scopes and original manuals. Asking \$800 OBO. Call Robert at 520-266-9940. First Offered May 2012
For Sale	Celestron 11-inch SCT, three years old, observing chair, micro-touch focuser, auto-focuser Hyperstar and many additions including eyepieces, filters, registered copy of Maxim DL, Deep Sky, Sky Tools, \$3950. Contact Kenny Broste at hooemeye[at]hotmail.com or 520-471-5291 First Offered June 2012
For Sale	14 1/2" Dobsonian telescope. Great optics. Portable. Includes: Telrad finder, NGC "Mini-Max" digital setting circle computer, Crayford focuser, dust cover. Older model Sky Designs unit that still works great. \$1000 obo Contact Warren at 520-826-0177 or warrennaz[at]yahoo.com . First Offered June 2012

For Sale ads run for 4 consecutive months. Upon request, the ad will run an additional 2 months but only if the asking price is reduced. All other ads will run for 4 months. Beyond these limits, an ad can be resubmitted provided 30 days have passed since the previous ad ran. For additions or changes to this list, call or e-mail the newsletter editor.

New Policy

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 qualified 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)

Astronomical League (AL) fee..... \$7.50
 Sky & Telescope Magazine 1 year (12 issues, group rate)..... \$32.95
 Astronomy Magazine 1 year (12 issues, group rate)..... \$34.00
 2 years (24 issues, group rate)
 \$60.00
 Postage for New Member Pack \$4.95

Donations are accepted for the following funds: SA-IDA/Light Pollution,
 TIMPA, Education, Chiricahua Astronomy Complex, and General/
 Undesignated.

Renewal Information

You'll get an email reminder when it's time to renew.
 TAAA members may join the Astronomical League (AL) 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 any time. Allow 3

months for processing. New subscriptions must be sent through the
 TAAA treasurer. Renewals can be paid online through magazine websites.
 To change an individual subscription to the group rate, pay the group rate
 to the TAAA treasurer. Include your magazine renewal notice.
 Include a note about what you're paying for. Credit cards are not
 accepted. Write one check or money order for dues 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

Mail changes to address above, email them to the treasurer, or make
 them yourself online through Night Sky Network login account at <http://nightsky.jpl.nasa.gov/login.cfm>.

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.

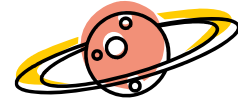
Desert Skies Publishing Guidelines

Send submissions to taaa-newsletter@tucsonastronomy.org 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 Word compatible files sent by e-mail or
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 permission, all rights reserved. We will not publish slanderous or libelous
 material!

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	Irene Kitzman		
Grand Canyon Star Party Coordinator	Jim O'Connor	520-546-2961	gensp@tucsonastronomy.org
General Information	Keith Schlottman	520-250-1560	taaa-info@tucsonastronomy.org



NASA's Space Place

A fun website with games and resources for kids to learn about astronomy and space sciences.

<http://spaceplace.nasa.gov>

Star Child

Information about all things spacey. A service of NASA/Goddard Space Flight Center. Has links to other websites.

<http://starchild.gsfc.nasa.gov>

Imagine the Universe

For older kids, age 14 and up.

<http://imagine.gsfc.nasa.gov/>



Space Place Partners' Column

May 2012

Thank Goodness for Magnetism

By Dr Tony Phillips

Only 93 million miles from Earth, a certain G-type star is beginning to act up.

Every 11 years or so, the solar cycle brings a period of high solar activity. Giant islands of magnetism—"sunspots"—break through the stellar surface in increasing numbers. Sometimes they erupt like a billion atomic bombs going off at once, producing intense flares of X-rays and UV radiation, and hurling massive clouds of plasma toward Earth.

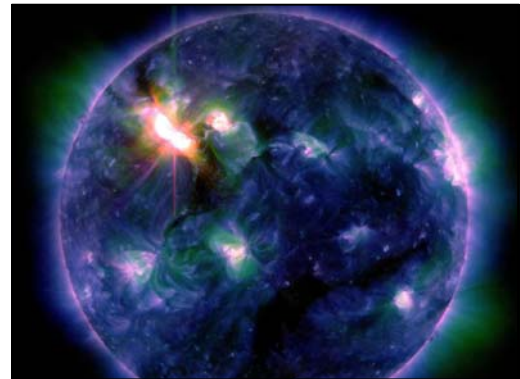
This is happening right now. Only a few years ago the Sun was in a state of deep quiet, but as 2012 unfolds, the pendulum is swinging. Strong flares are becoming commonplace as sunspots once again pepper the solar disk. Fortunately, Earth is defended from solar storms by a strong, global magnetic field.

In March 2012, those defenses were tested.

At the very beginning of the month, a remarkable sunspot appeared on the Sun's eastern limb. AR1429, as experts called it, was an angry-looking region almost as wide as the planet Jupiter. Almost as soon as it appeared, it began to erupt. During the period March 2nd to 15th, it rotated across the solar disk and fired off more than 50 flares. Three of those eruptions were X-class flares, the most powerful kind.

As the eruptions continued almost non-stop, Earth's magnetic field was buffeted by coronal mass ejections or "CMEs." One of those clouds hit Earth's magnetosphere so hard, our planet's magnetic field was sharply compressed, leaving geosynchronous satellites on the outside looking in. For a while, the spacecraft were directly exposed to solar wind plasma.

Charged particles propelled by the blasts swirled around Earth, producing the strongest radiation storm in almost 10 years. When those particles rained down on the upper atmosphere, they dumped enough energy in three days alone (March 7-10) to power every residence in New York City for two years. Bright auroras circled both poles, and Northern Lights spilled across the Canadian border into the



Multiple-wavelength view of X5.4 solar flare on March 6, captured by the Solar Dynamics Observatory (SDO) in multiple wavelengths (94, 193, 335 angstroms). Credit: NASA/SDO/AIA

lower 48 states. Luminous sheets of red and green were sighted as far south as Nebraska.

When all was said and done, the defenses held—no harm done.

This wasn't the strongest solar storm in recorded history—not by a long shot. That distinction goes to the Carrington Event of September 1859 when geomagnetic activity set telegraph offices on fire and sparked auroras over Mexico, Florida, and Tahiti. Even with that in mind, however, March 2012 was remarkable

It makes you wonder, what if? What if Earth didn't have a magnetic field to fend off CMEs and deflect the most energetic particles from the Sun.

The answer might lie on Mars. The red planet has no global magnetic field and as a result its atmosphere has been stripped away over time by CMEs and other gusts of solar wind. At least that's what many researchers believe. Today, Mars is a desiccated and apparently lifeless wasteland.

Only 93 million miles from Earth, a G-type star is acting up. Thank goodness for magnetism.

With your inner and outer children, read, watch, and listen in to "Super Star Meets the Plucky Planet," a rhyming and animated conversation between the Sun and Earth, at <http://spaceplace.nasa.gov/story-superstar>.

Where is M13? — A Three Dimensional Galactic Atlas!

It adds a new dimension to your observing

Contributed by Ralph Jensen

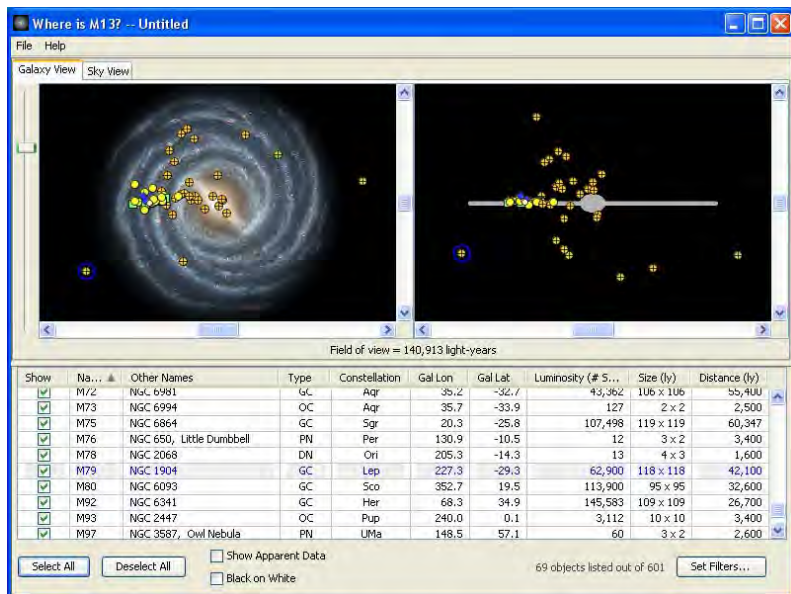
We all have our favorite deep sky objects that we've looked at hundreds and hundreds of times. We know where to find them in the night sky, but most of us have little idea where they lie in the three-dimensional space around our Galaxy. Isn't that just a bit strange?

Where is M13? is a unique application that helps you visualize the locations and physical properties of deep sky objects in and around our Galaxy

Using paired face-on and edge-on views, the Galaxy View shows you where that cluster or nebula is actually located relative to the center and plane of the Galaxy, providing a unique 3-D perspective.

Where is M13? may be downloaded from <http://www.thinkastronomy.com/M13/index.html>

Compatible with Windows XP, 2000 and NT, Mac OS X, Linux and other Unix platforms.



Join the TAAA Forum

General astronomy discussions
~75messages/month posted by TAAA members

Hosted by Yahoo Groups
Go to <http://tinyurl.com/hwoau>
Click on "Join this Group"

International Dark-Sky Association
Southern Arizona Section

Meets the 2nd Wednesday 5:30 – 7PM

3225 N First Ave
www.sa-ida.org

To preserve and protect the nighttime environment and
our heritage of dark skies through quality outdoor
lighting.

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