



SACnews

Volume 34 Issue 6

July 2010

SAC Officers

President: Dick Harshaw

480-275-2764

president@saguaroastro.org

Vice President: Tom Polakis

480-967-1658

tpolakis@cox.net

Treasurer: Mitch Prause

623-825-7091

neverblue@cox.net

Secretary: Paul Dickson

602-841-7044

paul@permanentmail.com

Properties: Lynn Blackburn

602-451-4739

lynnrb11@yahoo.com

Public Events:

Jack Jones

623-322-1559

publicevents@saguaroastro.org

Astro-Imaging Sub Group:

Al Stiewing

623-875-3969

amsr@cox.net

SACNEWS Editor:

Rick Tejera, 623-572-0713

saguaroastro@cox.net

Inside This Issue

<i>Grand Canyon SP-NR</i>	1
<i>NASA's Space Place-Solar Flares & Satellites</i>	2
<i>Last Call For Observations - Ursa Major</i>	4
<i>President's Message</i>	6
<i>Calendar of Events</i>	7
<i>An Afternoon Star Party</i>	8
<i>Bits & Pieces- Minutes of the June 25th General Meeting</i>	13
<i>Monthly Trivia Question</i>	13
<i>Top 20 Things: # 17: The Green Flash</i>	14
<i>Member Services</i>	15

Grand Canyon Star Party 2010 – North Rim

By Steve Dodder

Just when you think you have it all figured out, something happens to change it all.

All the reservations were set, the veranda was full for the week, even Kaibab Lodge was ready to go.

Then I got to the campground kiosk.

Even before this, things were strange.

I'd sewn a new cover for the 20" secondary cage to protect it from winds in the back of the truck during the trip up. (As you may or may not know, the ground board, mirror box and secondary cage are all assembled as one unit for transport. This

works well, but leaves the secondary cage slightly above the cab of the truck.) When we made the turn west from Lee's Ferry, I noticed, out the rear view mirror, a bright light flashing on the _inside_ of the cover I'd made. I pulled over to investigate. To my dismay, I discovered the heavy denim I'd used was ripped to shreds at the back, exposing the secondary to the Sun. Also, the spider had come loose from the mounting screws and was wobbling in the wind! After defibrillation, I reattached the spider, removed the

new "cover" and moved the secondary to inside the cab. Well, back to the drawing board for that one...

So, upon arrival at GCNR campers kiosk, I identified myself and was told our reservations were all set-but our sites wouldn't be available until Sunday! Um, How much defib can a person take in one day? I assured the ranger there that I had confirmed our spots in

June, August, November, January, April and May, just to be sure, and that there was some mistake on her part. "Nope", says she, "you're not on my sheet." I resisted saying, "I got your sheet right here", and suggested a call to our ranger Robin Tellis.



The view of veranda at the North Rim

Robin assured her that we were indeed set up for Saturday and to check her computer screen. Lo and Behold! Our reservations were approved. The attendant offered some medication and some salve for my defib burns, and we filled in the names and cards for the camp site assignments.

Well, that was what appeared to be our major glitch for the week. If it got no worse than that, the weather promised to be fairly spectacular for the week. It

(Continued on page 3)



The Sun Can Still Remind Us Who's Boss

By Dr. Tony Phillips

Grab your cell phone and take a good long look. It's indispensable, right? It tells time, surfs the web, keeps track of your appointments and, by the way, also makes phone calls. Modern people can hardly live without one.

One good solar flare could knock it all out.

"In the 21st century, we're increasingly dependent on technology," points out Tom Bogdan, director of NOAA's Space Weather Prediction Center in Boulder, Colorado. "This makes solar activity an important part of our daily lives."

Indeed, bad space weather can knock out power systems, telecommunications, financial and emergency services—basically, anything that needs electronics to work. That's why NOAA is building a new fleet of "space weather stations," the GOES-R satellites.

"GOES-R will bring our existing fleet of weather satellites into the 21st century," says Bogdan. "They're designed to monitor not only Earth weather, but space weather as well."

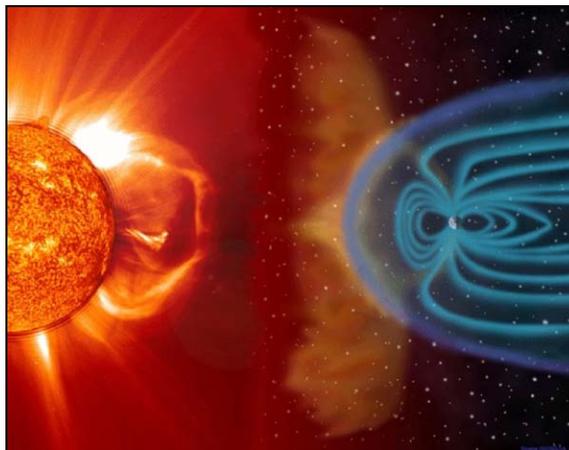
NOAA's existing fleet of Geostationary Operational Environmental Satellites (GOES) already includes some space weather capabilities: solar ultraviolet and X-ray telescopes, a magnetometer and energetic particle sensors. GOES-R will improve upon these instruments and add important new sensors to the mix.

One of Bogdan's favorites is a particle detector named "MPS-Low," which specializes in sensing low-energy (30 eV – 30 keV) particles from the sun.

Who cares about *low-energy* particles? It turns out they can be as troublesome as their high-energy counterparts. Protons and other atomic nuclei accelerated to the highest energies by solar flares can penetrate a satellite's exterior surface, causing all kinds of problems when they reach internal electronics. Low-energy particles, particularly electrons, can't penetrate so deeply. Instead, they do their damage on the outside.

As Bogdan explains, "Low-energy particles can build up on the surfaces of spacecraft, creating a mist of charge. As voltages increase, sparks and arcs can zap electronics—or emit radio pulses that can be misinterpreted by onboard computers as a command."

The Galaxy 15 communications satellite stopped working during a solar wind storm in April 2010, and many researchers believe low-energy particles are to blame. GOES-R will be able to monitor this population of particles and alert operators when it's time to shut down sensitive systems.



In spite of Earth's protective magnetosphere, solar storms can wreak havoc with Earth satellites and other expensive electronics on the ground.

"This is something new GOES-R will do for us," says Bogdan.

The GOES-R magnetometer is also a step ahead. It will sample our planet's magnetic field four times faster than its predecessors, sensing vibrations that previous GOES satellites might have missed. Among other things, this will help forecasters anticipate the buildup of geomagnetic storms.

And then there are the pictures. GOES-R will beam back striking images of the sun at X-ray and extreme UV wavelengths. These are parts of the electromagnetic spectrum where solar flares and other eruptions make themselves

known with bright flashes of high-energy radiation. GOES-R will pinpoint the flashes and identify their sources, allowing forecasters to quickly assess whether or not Earth is in the "line of fire."

They might also be able to answer the question, *Is my cell phone about to stop working?*

The first GOES-R satellite is scheduled for launch in 2015. Check www.goes-r.gov for updates. Space weather comes down to Earth in the clear and fun explanation for young people on SciJinks, <http://scijinks.gov/space-weather-and-us>.

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

(Continued from page 1)
didn't disappoint.

This year was something special, speaker-wise. We have some great amateur presenters, Jim Mahon, our own Dick Harshaw and a guest from Las Vegas' club, Geary Kielman. Back in August, I got an email from Jon Webb volunteering his 16" Dob for the party and "assistance in any other way needed". He then mentions that he works "at the Center for Space Nuclear Research with the Idaho National Laboratories in Idaho Falls, ID" on isotope battery packs for NASA's Cassini and New Horizons spacecraft, as well as a 40kW reactor for use at a lunar or Mars base and wants to know if I'd be interested in maybe a talk or two.

Uh, sure, if you like, ("ARE YOU KIDDING ME!?!").

Jon recruited two other speakers besides himself, Mike Hauts and Don Palac, to give talks on mainly power generation in space, as well as nuclear rocket technology. It sounded really great on the surface. The reality was, shall we say, somewhat different. All involved did a wonderful job at their subjects, (although I didn't personally see Jon's talk, being at the Kaibab Lodge that night). Mike Hauts is the quintessential rocket scientist. I would have loved to see his entire talk in a more relaxed situation. I'm afraid he went right over the audience's head. I found it fascinating, and he had thought he'd be able to split his presentation across two consecutive days. I could tell Jon was a bit worried about this, but Mike made a valiant effort. He couldn't make it to the canyon in time for his first part, and trying to cover that much material to a limited knowledge group was pretty much impossible.

Jon's talk was well received from what I heard. Closer to the audience, but still not quite there.

Don, on the other hand, nailed it. His first talk covered the solar system and how our view of it, literally and figuratively, has changed over the years. The second talk was on "Living and working in space" and was amazing. During his first talk, Don showed a video showing the launch of the Solar Dynamics Observatory on February 11, 2010. The atmospheric conditions were just right to show that actual shock wave from the sonic boom as the rocket broke the sound barrier! Absolutely amazing footage, (shot by

an amateur no less.) It's available on YouTube. (Google, Sonic Boom meets Sun Dog).

I'll be working with Jon, NASA and Robin Tellis to fine tune these talks a bit more. We had a lot of confusion too, as a result. Our regular talks are held at 7:00 and run for ½ hour, due to the regular Ranger talks at 8:00. Seeing as how it was NASA this year, and we had them scheduled 5 of the 8 nights, the NPS agreed to give them the 8:00 1 hour time slot, while our amateurs were still in the 7:00 slot. This made things, uh, interesting, as I had to kind of drum up audiences for our guys, and tell folks of the NASA talks when they'd show up at 7. Yeah, my head hurts, too. Along with that, while our guests were great, it's still nice to have a regular amateur describe what's going on in the sky at that moment, or soon after the talks, give an idea of what's to be seen tonight, star party etiquette and so on. So, this is another work in progress at the north rim. Stay tuned.

So, I mentioned Mike had two nights to give his presentation, but missed the first night, Saturday. Put me on the spot. I threw together some pretty pictures and gave the talk off the top of my head. It actually went over pretty well. I called it, "Astronomy Is..." and tried to describe as many aspects of astronomy as possible, being a broad science it covers most things from particle physics to geology to astrophysics. Challenging, but it was fun. I threw in pics of Messier objects they could see that night and described a particular -ology that may use it as a subject.

The star party itself was pretty spectacular for the first 6 nights. The skies were clear, temps mild, no problems from the wind, great visitors and questions. I was set up every night, but I refused to show Saturn in the 20" this year, as it was impossible to move it until late in the evening last year. I'd start with Spica or Algeiba or some other double star to start the star party with an actual star. This worked well, too. I could go to Cor Caroli, Mizar and Alcor, to Albeirio and ease them into observing. I'd switch to the Leo Triplet, or Ngc 4565 or M5. Other targets included M10, M4, M80, Markarian's Chain, M51, a couple Hickson groups in Leo, and several others. The intimacy of the north rim really allows you to be flexible in targets, and the 20" was singing. M51 this

(Continued on page 10)

Call For Observations-Ursa Major

By A.J. Crayon

The constellation selection is a little out of kilter because it didn't match the production schedule. It is hoped that the situation will get better with the next column. Until then enjoy the delights in Ursa Major, get out and observe in Virgo for the next month and do Serpens Cauda for the following.

NGC3675 located about ½ degree northeast of 56 Ursa Majoris, in the southerly part of the constellation. It is elongated, bright and large.

8" f6, Newtonian, at 60X; Charlie Whiting: this galaxy is visible with direct vision as an elongated gray smudge. At **150X** the galaxy is about 6' in the longer axis and about 1/2 that in the shorter axis. It is aligned due north. It has an elongated central condensation that appears more to the east side. The central area is about twice as bright as the halo. There's a 13th mag star at its south end and a small gathering of slightly fainter stars just off the west side.

8" f/6, Newtonian, 71x; Rick Tejera: Seen as large & Bright with a sharp stellar core. Elongated in PA 350 about 2.5-1. Halo gradually fades to the west and is hardly noticeable to the north suggesting it is inclined away from our line of sight.

10" F4.5 Dobsonian, 71X; Dave Hofland: ~6'x3' rather bright oval-shaped patch of light in a N-S alignment with a stellar core and diffuse halo. Averted vision gives a sense of texture to the halo. A couple of very tiny dim stars overlay the very edges of the halo at the south.

16" f4.4 Newtonian, 200x; Rick Rotramel: G - fL, fF, and edge on spiral, brighter in the middle.

18" f4.5, Dob, 209X; Dan Gruber: This galaxy is in a nice field. There's a triangle of mag 11 - 12 stars about 5' west that points to the galaxy. There also are two mag 11 - 12 stars equally spaced about 3' to the east and west of the southern tip. The galaxy has a 6' X 3' halo oriented N - S. There's a 3' X 1' bright core, also N - S, with a stellar nucleus that appears slightly off-center to the north.

Moving to the bowl find **NGC3690**, a double system in collision with a near-by friend. Together they are called NGC3690A, mag 12.0 and NGC3690B, mag 11.7. Based on their magnitudes, from Guide 8.0, it isn't clear which one is which especially since 3690B is brighter. The NGC/IC project doesn't

reference the two components although two are clearly seen in the accompanying images; but carefully note Dan's observation. According to Steve Gottlieb 6 supernovae has been discovered in the past 15 years, as of 2005.

8" f6, Newtonian, at 60X; Charlie Whiting: this galaxy was visible with direct vision as a small non-stellar smudge. At **150X** this object is supposed to be two overlapping galaxies, NGC 3690 A and B, but I was unable to perceive its duality. It looked irregularly round. Observing it with both direct and averted vision it seemed to grow a little larger and more ghostly, and then shrink back in size to become a little more solid. When it grew it became a little oblong aligned approximately east-west. It gets gradually brighter towards its middle. Occasionally I saw a flash of a pinprick of light; perhaps a small stellar nucleus shining through. It is fairly small, about 1' or 2' in diameter.

16" F4.5 Dobsonian, 261X; Dave Hofland: a faint spot of glow ~1 deg SE of bright 11th mag galaxy NGC3642, 7mm 261x. With IC 694 involved this is the brighter of two interacting galaxies, appears as one object ~1'x30" with a stellar core offset in the halo to the SW, increased size of halo on the NE side, PA more or less to the NE-SW, gradually brighter middle, edges unclear, an 11th mag star ~3' S.

18" f4.5, Dob, 329X; Dan Gruber: This galaxy is near the center of mass of a nice 15' equilateral triangle of mag 10 - 11 stars. A faint halo brightens gradually to a 3' X 2' E - W oriented core. There appear to be two stellar nuclei at opposite ends of the core, with the western one brighter than the eastern one.

Moving just below the bowl is a recent personal favorite - **NGC3718**, an elongated barred spiral with central dust lane. It is difficult to see the bar but, in my 14" Dob, its brighter middle was bifurcated owing to the dust lane. In the field to east of northeast is companion NGC3729. What makes this a favorite is the fuzzy spot about 7' to the south? It is the compact galaxy group Hickson 56 that I observed in February this year. How many galaxies in this group can you see? Dan reports seeing 3 of the 5 galaxies in Hick 56 and Rick

(Continued on page 5)

(Continued from page 4)

Tejera saw something.

8" f6, Newtonian, at 60X; Charlie Whiting: this galaxy is just barely visible with direct vision. It is better with averted vision, but still just a ghostly smear, but fairly large. At **150X** this was a very interesting object to observe. It took a fair amount of time staring at it to get a good mind's eye picture. The galaxy is fairly large. It spans from a double star at its south end to about 3/4 of the way to a single star near its north end. That makes it about 8' along its long axis. It is oblong and its crosswise size appeared to be about 4'. Its brightness is almost even over its extent, but there are moments when there is a brightening of a line along the central part of its long axis. In other moments it takes on a mottled look. From the SAC description I presume that the line is a dust lane and the mottling is spiral arms.

8" f/6, Newtonian, 60x; Rick Tejera: Seen in same field as NGC3729. Much larger and brighter, but low surface brightness makes it stand out better with averted vision. There are two 12th mag stars embedded within the halo of the galaxy. Bumped up the power to **133x** and could make out a smudge where H56 should be. Could not resolve any individual galaxies though.

16" F4.5 Dobsonian, 114X; Dave Hofland: a large moderately bright 10'x4' ghostly glow gradually brighter centrally and fading gradually to a fairly well defined edge. ~10' WSW of NGC3729

18" f4.5, Dob, 154X; Dan Gruber: I started by observing these two galaxies together in the field. NGC3718 is near the "top" (west) of a pine tree-shaped asterism made of six mag 10 - 12 stars and is the larger of the two galaxies. NGC3729 lies about 15' east. Also, there appear to be at least two very small galaxies lying close together about 8' south of 3718, with at least one other possible small, faint galaxy lying about 12' SE of 3718. No detail was visible in these small galaxies even at higher magnification. At **329X**, NGC3718 is 4' X 3' oriented N - S with a faint halo gradually brightening to a core and a possible stellar nucleus. NGC3729 is about 2' X 2' with a faint halo gradually brightening to a diffuse core with no nucleus.

Going in a southerly direction from the bowl find **NGC3726** a bright, large spiral that is reported to have a well defined spiral pattern.

8" f/6, Newtonian, 60x; Rick Tejera: Very bright and

large, slightly brighter to the middle. Could make out a hint of one spiral arm to the South.

8" f6, Newtonian, at 150X; Charlie Whiting: this galaxy is fairly large and slightly elongated, about 5' by 4' and aligned due north. It is a fairly bright galaxy. Using averted vision I can see that its nebulosity has many slightly brighter patches, although, generally its brightness is fairly even, with no central condensation.

16" F4.5 Dobsonian, 261X; Dave Hofland: ~6'x4' large diffuse halo with only a slight central increase in brightness, elongated just a tad ~N-S, halo extends over a 12th mag star to the N, comes up about 2' short of a 12th mag star to the SSW.

16" f4.4 Newtonian, Rick Rotramel: G - fL, pF, oval, low surface brightness, and stellar nucleus.

18" f4.5, Dob, 329X; Dan Gruber: A large, 7' X 5' galaxy oriented N - S. It has a diffuse, almost uniform halo that extends faintly to the S. There is no core but there is an obvious stellar nucleus.

Staying in and around the bowl bottom is next **NGC3729** a peculiar barred spiral. It isn't so bright or large but is in same field with NGC3718.

8" f/6, Newtonian, 60x; Rick Tejera: Seen as Small and bright and round with a sudden brightening to the center. In same field as NGC3718 & Hickson 56, Could see 3718, but not H56, even with averted vision.

8" f6, Newtonian, at 150X; Charlie Whiting: NGC3729 is in the same field of view as NGC3718. So it was an easy hop to 3729. There is a 12th mag star superposed on the south end of this galaxy. In spite of the brightness of the star, the galaxy is not difficult to view using averted vision. It is slightly oblong about 2' or 3' in the longer axis and a little less than 2' in the shorter axis. It is evenly bright overall with no distinguishing details seen.

16" F4.5 Dobsonian, 114X; Dave Hofland: ~10' ENE of larger galaxy NGC3718, with av ~2' glow very much brighter centrally, the halo overlies an 11th mag star on the SW edge.

16" f4.4 Newtonian, Rick Rotramel: G - fL, pF, oval, odd shaped arms and mottling, same field as NGC 3718.

18" f4.5, Dob, 154X; Dan Gruber: see NGC3718 for combined observation.

Finally find **NGC3813**, down in the southerly part again. This spiral isn't so large or bright. Any other

(Continued on page 11)

President's Corner

By Dick Harshaw



ON THE BORDER: It's More Than a Restaurant Chain

Recent developments have stirred up cloudy waters regarding SAC's privileges to use our precious dark sky sites on land administered by the BLM (Bureau of Land Management, an arm of the federal government).

It all started when the Pinal County sheriff's office advised the East Valley Astronomy Club to no longer use their Vekol Road site or Farnsworth Ranch due to recent violence in those areas. This was especially hard on EVAC since Vekol is to them what Antennas is to us, and Farnsworth, of course, is the home of the All-Arizona Star Party and the All-Arizona Messier Marathon. EVAC sponsors the AASP while SAC, of course, sponsors the AAMM.

That prompted an exchange of emails between EVAC president David Douglass and me, and a phone call or two, to see if EVAC could use our Antenna site for this fall's AASP. I checked with the board on line and no one had an issue with that, so I told Mr. Douglass to proceed with whatever plans he needed to make. (One drawback may be that the sizable Tucson contingent to the AASP may not want to drive the additional 2 or 2-1/2 hours to get to Antennas.)

David next contacted the BLM to see if a permit was needed to use Antennas for the AASP and that's when the defecation hit the air circulator. A permit was required for a group that large. In fact, a permit was required for BLM land use any time the group numbered 2 or more. Suddenly that meant that all of SAC's BLM observing sites would be subject to use by permit.

But it gets juicier. The permit is \$95 per year. And apparently a permit must be obtained for each site used. (I am still trying to get a clarification from the BLM on that point, and they have not yet replied.) On top of that, at least one person in the group must have a copy of the permit with them in case a BLM official stops by and asks for their permit. And as if that were not enough, the using group must be insured (SAC is

and the insurance policy must name the federal government as one of the covered entities and a copy of the policy must be on file with the BLM. I don't yet know whether or not the BLM requires the using members to carry club ID (like a membership card valid for the current year—that's one of the questions I asked). However, this does NOT affect our use of Fredericksen Meadow (aka File Mile Meadow) as that site is in the Coconino National Forest.

This is a complete sea change for how SAC has used our precious (and vanishing) dark sky sites. Never before have we had to have a permit or pay any fee to use BLM land. We are excellent stewards of the land, as the BLM well knows. But the local satrap who Mr. Douglass spoke with said this has always been the law, and that it just has not been enforced up to now. Don't get me started on why they want to enforce THIS law now when they cannot enforce border security.

At any rate, as soon as I learn anything from the BLM, I'll pass it along on the SAC-Announce egroup. I have also spoken with David Douglass about the two of us visiting the local BLM office in person and discussing our cases with someone who has some authority beyond the agent we have been working with. I have also written a letter to Senator McCain. You may want to write to your congressional representatives or senators too.

In the meantime, feel free to use our sites as you have in the past. If you are going to a site down south, I suggest you check in with the county sheriff to get advice on the security of the area and to let them know you'll be there for a night or two. If you don't feel comfortable going to a site because of possible violence, don't go. Use a different site. And my advice is NEVER go out and observe alone. Unless you are armed like Rambo, and even then I would not advise solitary observing at some locations.

By time you read this, the board will have met and discussed this issue in depth. A full report will be provided to you via the SAC-Announce group and the next issue of this newsletter.

Meanwhile, if you have questions, please feel free to contact me (rharsaw2@cox.net or 480-227-7231). Don't fear the night, but use it with wisdom and prudence!

August 2010

SUN	MON	TUE	WED	THU	FRI	SAT
1	2 ☾	3	4	5	6	7 SAC Star Party at Cherry II
8	9 ●	10	11	12	13	14 DOTM Star Party @ Cherry II
15	16 ☽	17 ATM Meeting 1930, Paul Lind's House	18	19	20 SAC Meeting, GCU 1930	21
22	23	24 ○	25	26	27	28
29	30	31				

Schedule of Events for August 2010

Aug. 2nd	Moon at last Quarter at 2159mst
Aug. 7th	SAC Star Party at Cherry II, Sunset 1954, Ast. Twilight Ends 2059, Moonrise 2340, 6:58 Hours of Dark Time
Aug. 9th	Moon at last Quarter at 2008mst
Aug. 14th	DOTM Star Party at Cherry II, Sunset 1829, Ast. Twilight Ends 2049, Moonset 2200 Ast. Twilight Begins 0417, 6:17 Hours of Dark Time
Aug. 16th	Moon at First Quarter at 1114mst.
Aug 20th	SAC General meeting at Grand Canyon University at 1930: Speaker: Astro-imager Bob Birket
Aug, 24th	Moon is full at 1004mst

Future Planning

Nov. 5th—6th	All Arizona Star Party Location to be determined. Goto: www.eastvalleyastronomy.org for more details.
--------------	--

An Afternoon Star Party

By Chris Hanrahan

By now you have all heard countless stories about magnificent skies many Saguaro Astronomy Club members enjoy when they visit the Grand Canyon's north rim. Without question the annual Grand Canyon Star Party boasts some of Arizona's least light-polluted skies. I find it ironic that one of my most memorable public observing sessions at the 2010 event occurred not at night, but during the day under clear blue skies.

Unlike most star parties, the Grand Canyon Star Party is all about amateur astronomers sharing their telescopes and knowledge with park visitors. Solar observing has proven a great way to interact with visitors during the day, educate them about our nearest star and inform them of the star party later that evening.

After another late night (actually a very early morning) of libations on the veranda gawking naked-eye at the summer Milky Way, I awoke Thursday around 9:30am to beautiful azure skies. For the past four days I had been so focused on evening observing, socializing and catching up on sleep that I had ignored my Corono® Personal Solar Telescope, or PST for short.

While chatting with Al Stewig and Steve Dodder I commented that I was going to set up my solar observing equipment. Maybe a few park visitors would like to view the sun's chromosphere in all its splendidly violent glory.

For those not familiar with this instrument, the PST is a 40mm f/10 dedicated hydrogen-alpha solar telescope with a bandpass around one angstrom. This highly-portable instrument excels at showing solar prominences, as they contrast well against the black background of space, making them fairly easy for the general public to view. On my way to the Lodge I kept my fingers crossed there would actually be a few prominences to view.

By the time I arrived at the veranda Al was already set up with his Orion® 100mm ED f/9 refractor and Corono® SolarMax 60. I wanted to catch a sneak peak

prior to setting up my own equipment so I waited, impatiently, for my turn at the eyepiece. In years past solar activity was so low that often times there were no prominences or active regions to show park visitors. Finally it was my turn to look and a nice prominence showed clearly. Yes! Relieved, I quickly set up the PST.

After making some minor adjustments I aligned the scope to show the largest and brightest prominences visible. On this day I focused on four prominences of varying sizes located along approximately one-third of the sun's circumference. I studied the view and waited for unsuspecting park visitors to pass by.



GCSP volunteers share views of the sun's chromosphere on the North Rim Lodge veranda.

"Hi, would you like to take a look at the sun?" This gets people almost every time. They usually stop, smile and look at you like you have just escaped from a mental institution. Then they try to look directly at the sun. "With this telescope, it's safe. I promise," I tell them. They begin to walk my way. Hook, line and sinker – time to blow their minds.

When people take a look in a hydrogen-alpha filtered telescope for the first time their

responses are somewhat varied. On this particular day I heard everything from "Wow" or "That's incredible" to "All I see is a big red ball" or "I can't see anything." With a little coaching most people end up seeing the prominences. Some even notice subtle details and call attention to them. As visitors look in the eyepiece I like to explain simply what they are seeing, how far away the sun is and how large the prominences are. On this day, many prominences extended 3 or more Earth diameters off the sun. My favorite response came from a middle-aged gentleman who exclaimed, rather loudly, "Holy crap!" I smiled wide and was once again reminded why I love this star party.

Around noon cirrus clouds began to slowly move in. The views began to deteriorate so I decided to pack up my equipment. It was a short outing but great fun. Hungry and thirsty, I could not resist when a few friends

(Continued on page 9)

(Continued from page 8)

asked me to join them for lunch in the Lodge. On our way inside we passed Jim Mahon preparing to set up his solar observing equipment. Jim works for Griffith Observatory in Los Angeles and has recently completed telescope operator training for the 100-inch Hooker Telescope on Mount Wilson. There are few better than Jim when it comes to working with the public. We pointed out the clouds and wished him luck.

After enjoying a tasty meal, great conversation and amazing canyon views from the Lodge dining room, I was about ready to head back to the campground and check my eyelids for holes. Then we thought of Jim and decided to see how he was doing.

Walking through the sunroom doors to the veranda we were shocked to see a group of 15 to 20 park visitors surrounding two solar telescopes. Linton Rohr and his brother Mike had joined Jim under the now crystal clear skies. Jim's set-up knocked my socks off: a Televue Genesis SDF with a Coronado® SolarMax 60 and Denkmeier binoviewers. I checked my chin for drool. Linton's Lunt Solar Systems® LS60THa double-stacked 60mm was equally impressive. At this point, my plans for a cat-nap blew away in the afternoon breeze.

For the second time in less than three hours I hastily set up the PST and joined in the fun. Park visitors meandered from telescope to telescope, asking questions and enjoying the views. From time to time other star party volunteers, including first-timers Jon Webb and Jay Turnbull, would jump in to give telescope operators a much needed break. A steady stream of visitors continued to cycle through.



Jay Turnbull explains solar prominences to Park Ranger Jessica Pope.

Every once in a while I would glance over my shoulder and take in Grand Canyon, amazed. Not only was I standing at arguably one of the most beautiful places on Earth, but I was sharing views of a nearby star's chromosphere with park visitors. For me, this was pure bliss.

Occasionally there were brief breaks in the action. These breaks proved perfect opportunities to sample views through the other telescopes. Linton's LS60THa was tuned to provide views of surface detail and did so exceptionally well. The strong contrast of this telescope's images made the "orange peel" affect obvious. A small filament and one active region, AR1079, were also easily seen. Next I slipped over to Jim's Genesis with the binoviewers. The sun looked alive, nearly three-dimensional. Contrast was exceptional. Both surface detail and prominences were very sharp. Views of a double-loop prominence through this setup are still fresh in my mind.

Shadows lengthened and I soon realized it was 5:00pm. We were all dumbfounded at how quickly the afternoon had passed. A hot shower, a quick meal and it would be time to head back to the veranda for another evening of entertaining park visitors. As I finished packing up the PST I took a look at my hand-held tally counter. One hundred people had looked through my telescope over the course of the afternoon. Another successful "star" party. Driving back to the campground I was exhausted. I knew another long night lay ahead. And yet, I hoped the next day would bring crystal clear skies so I could do it all over again.



Linton Rohr, center, chats with park visitors as they look through Jim Mahon's solar setup

(Continued from page 3)

year, though I don't usually show it, was simply amazing on Saturday and Tuesday in particular. The seeing was at least an 8.5, maybe 9 on Saturday and even better on Tuesday. I couldn't believe it. You didn't have to *try* to see spiral structure, or the bridge, or the new star forming regions in M51. It was *there*. Markarian's chain is actually a regular of mine. I place M84 and M86 in the upper right of the fov and describe the locations, one at a time, of the other 7 galaxies that are easily visible. Most of those viewing this remarkable sight could see all 9, with only two or three older folks missing one. Tuesday was the best night I think I've seen at either rim, except maybe that once at the SRim, after the wind front came through and the temps dropped to 22°. Seeing was amazing, and probably tied with Tuesday.

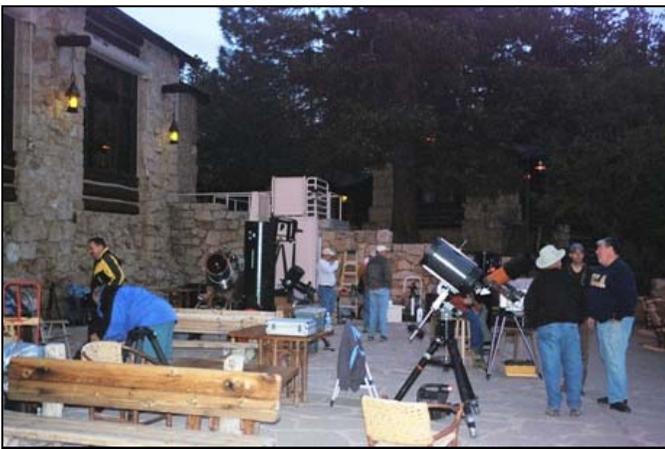
Though it was windy for a couple nights, Wednesday and Thursday, the veranda offers a large measure of wind break. I believe the wind hits the canyon wall and is driven up and over us more often than not. You can hear and see it in the trees, but the actual veranda is mostly calm, with only intermittent bursts.

Wednesday we spent at Kaibab Lodge. I'd manage to wrangle someone to be there each night for the entire week. Scott Saari from EVAC took Saturday night, Tom and Jenn Polakis stayed Sunday through Tuesday, Rosie and I set up Wednesday, along with Rob Lambert from Las Vegas Astronomical Society and a gentleman that called me on Saturday, June 5th, Richard Ryan. He said he'd gotten reservations

at DeMotte campground and wanted to join in. I told him the veranda was full, but he could set up at Kaibab. He and Rob stayed the rest of the week. Reports from Scott, Tom and Jenn were encouraging. We had much better attendance than last year, due mostly to the advertising done by Betsy Hagar who runs the gas station/store across the street. She had my fliers posted everywhere and even put us on her website. Ellen Winchester runs the lodge itself and had posters everywhere as well, even on the mirrors in the rest rooms! Nice job, both of you.

After we set up and it got dark, I finally got to see what I wanted from that location-the Milky Way rising over the meadow. Absolutely stunning it was! The Great Rift plain as day, the teapot seemed swamped by the core of our galaxy, and so many naked eye M's you couldn't count them. There was only one problem. Rob had brought his Las Vegas show with him to observe. He had 3 telescopes, a camera, and was showing "the sky" through his 10"(?) monitor. Two other monitors, (in night mode), controlled the scopes. This caught me totally off guard, I'd never expected it. The light from the monitors was casting my shadow on my truck 10 feet away. Folks coming from his setup to mine would consistently stumble across my table, or bump into the step stool or were completely unable to see anything until they got dark adapted. Don't get me wrong. I think that type of setup is a remarkable tool-from downtown Las Vegas or Phoenix or Los Angeles you can show people what the deep sky wonders look like. You might then suggest they travel out of town to look through

(Continued on page 12)



Waiting on the veranda for the stars.



Jimmy Ray living on the edge!

(Continued from page 5)

distinguishing features you care to discuss? From Charlie's observation it is clear he had spectacular observing conditions.

8" f/6, Newtonian, 60x; Rick Tejera: Seen as small and bright, elongated about 3-1 E-W. Otherwise pretty unremarkable.

8" f6, Newtonian, at 150X; Charlie Whiting: this galaxy appeared to me to be very elongated, about 3' by 0.5'. It had a similarly elongated middle that was a little brighter than the rest of the halo. There were extremely faint stars near its east and west ends with a few more in the field to its south. The two end stars are 14.3 mag. I find that to be amazing for an 8" telescope! I rated the sky to be better than average for Hovatter; probably the best conditions I have ever seen.

16" F4.5 Dobsonian, 114X; Dave Hofland: pretty faint and small, ~2"x<1' elongated streak of glow PA ~ 90, slightly brighter centrally but no distinct core seen.

16" f4.4 Newtonian, Rick Rotramel: G - pS, fB, pretty elongated, a little bit brighter in the middle.

18" f4.5, Dob, 329X; Dan Gruber: This 3' X 2' galaxy is oriented E - W and has faint (mag 12 - 13) stars near each end. There is a bright halo, a large bright core, but no nucleus. It appears slightly wedge-shaped with the tip toward the west.

Call for Observations

It is rather surprising to me that Virgo has only been done once in this series of observing sessions. This means, naturally, time for a second pass. Because of the rather late time of year for this constellation, our selections will remain in the easterly region. We begin in the east or northeast part of the constellation with **NGC5566** a barred galaxy with ring. The dimensions indicate an elongated galaxy, but the NGC description doesn't follow up on this. What do you see here? Note there are two other galaxies in the field, but they are fainter than 12th mag. Going a little further east and about one-degree south is the elliptical galaxy **NGC5576**. Its E2 class would indicate very little elongation. In addition to this note there are two other galaxies in the field, but like out last object, there are fainter than 12th mag. Our next object will be somewhat of a surprise. Our slew takes us on a more southerly route to **NGC5634** a globular cluster! What sort of resolution do you see? Moving more to the

northeast is barred galaxy **NGC5746**. It is located just 20' west of northwest from 109 Virginis. Although it is elongated can you detect central condensation or brightening. Also in the field of view is NGC5740, another galaxy listed as mag 11.9. Inching more eastward, near the Serpens Caput border, is **NGC5846**. This is another elliptical galaxy that should appear round to you eye. Is it? Beware here, our last object **NGC5850** is in the same field of view and it is up to you to identify which is which. Making this a more challenging project is the fact that there are other galaxies in the same field and near-by. You will not find a count of the galaxies here, it is up to you to determine the count and what you see in your telescope. Report your observations giving angle and distance of all from either of the two last ones on this list. Another note about which the reader and observer should be aware. All but the last are on the Herschel 400 list. Even if you have already observed these, go out and do so again and don't compare notes until after you have re-observed. What do you find of interest? After completing these observations, take a few minutes and look towards the east. What do you see? Now for the following month we have a new comer – Serpens also called Serpens Cauda, which I sometimes call Serpens to the east as in east of Ophiuchus. After that brief introduction we will look for numerous stellar collections and will start with **Ru 135** located at 17 58.0 -11 39. It doesn't have a magnitude but is listed as 11' with 20 stars of similar brightness. Second is **NGC6535** a class XI globular cluster and its 9.3 mag and 1.3' should be easy to spot. Swinging much farther south is 6th mag NGC6605 with stars from 10th to 12th mag. Did you find it? Now we move on to the choice of choices objects for this month – **M16!** Need more be said about this? Yes, describe the stars and nebulosity in your field of view and try some filters to see the results. Now we will try a dark nebula - **LDN 564**. While dark nebula don't have magnitudes its size is listed as 45'X15'. Have a look and see what you think. Coming down to the final two is **IC4756** an open cluster. It has about 80 stars from mag 8.7 on down in 39'. Our final one, another open cluster, comes from our good friend in Flagstaff - **Archinal 1**, located at 18 54.7 +05 33. It is about 4° west of IC4756, is 1.5' and has 24 stars from mag 13.4. It won't be very easy to spot. Can't you just see Brent grinning from ear to ear?

(Continued from page 10)

a real scope and maybe launch into a light pollution rap. But from the spectacularly dark, unrestricted horizons of Kaibab Lodge, it seemed somehow lacking. Rob and I got together later to discuss it, and what I have in mind for this location, and he agreed. There will be language, similar to AJ's Marathon language, directing volunteers to show things through the eyepiece at Kaibab Lodge.

We got back to the veranda around 11:00 or so and found it mostly deserted. Just Dick, Darrel and Jimmy were there. Apparently, the wind had taken its toll. Funny, I didn't notice it at Kaibab...? ;-) Anyway, the public was gone too, so no big deal. The temps were starting to drop with the front coming in, and I was told, "you just missed them". Yeah. Right.

Thursday was much cooler, and weather reports didn't look good. It was clear for us, for a while, but we could see lightning flashes at the SRim, and eastward. The seeing was a bit soft, but the public didn't care until the clouds rolled in for real at 11:00. We stayed and watched the show from the veranda for a bit and then went to bed.

Friday dawned with scattered clouds and temps around 40°. It was chilly and windy, but didn't look too bad if it held. In fact, it held right up to the end of Don Palac's first talk. By the time that was over, we had total cloud cover-not a star to be seen. I told the crowd there would probably be no stargazing, but our volunteers would be available to answer questions about telescopes, astronomy in general or whatever they'd like until 10:30. A few stuck around for an hour or so. We retreated to the sun room to watch the storm roll across the canyon in the dark. Lightning and rain began hitting us around 10:00, so we left at 10:30.

Saturday morning, I woke to thunder. Then rain. Then more thunder. Then sleet and hail. Around noonish, it started to snow. Yes, snow. Big, honkin' flakes. It was worse at Kaibab Lodge, and Rob came down to say he was leaving. I didn't blame him. I was somewhat distraught because I had been in contact with a woman from Washington, D.C. that arranged a flight to the NRim to show her 7 year old son Damien the night sky. She was fired up in her emails and wouldn't let me discourage her. This was something she really wanted to give her son. When she saw the forecast, she emailed with a

gloomy tone. I assured her it would be fine. Well, Saturday, with the snow and all, I felt pretty bad. She showed up at the talk, just as Don began. The clouds were still pretty thick, and it kinda broke my heart.

We met outside after the talk and there was a small clearing to the south! Hooray! The hole got bigger and bigger, but not until after I'd taken my mirror box out to the truck. I scrambled around a bit, and found that Jim Mahon's "18" was still set up. Asked if I could use it, he said sure. So, I got to show her, her son and about a dozen others around the sky for a couple hours before the clouds moved in again. It's hard to describe how this impacted me, her, her son and those standing around. (One of which was Don Palac, who was suitably impressed with M13, M57 and a couple others.) The seeing wasn't great, but it didn't matter. This is one of those highlights of the GCSP that stays with you over the years.

It was pretty much over after that. A couple other views, but it was time to wrap things up. Packing up on Sunday is always kind of bittersweet, but the party this year was just fantastic. Even with the snow. Please watch the web site for some minor tweaks and a reorganization of the information there. Hopefully, it will make a little more sense and be easier to follow.

Thanks to the National Park Service for letting us do this year after year. Thanks to the volunteers for all their help and enthusiasm. I couldn't possibly do this without each and every one of you. And thanks especially to the visitors that attend and simply enjoy what we're showing them.

The star party at Kaibab Lodge is definitely on for 2011. We have the cabin reserved, promises of more promotion and wonderful dark skies there. The view of the sky from there is simply amazing and the new location for setup is farther from the lodge lights. The only real source of light is the gas station across the street, and I'm sure I can get some help with that, and maybe a couple from RV's in the campground. So, the guidelines for volunteering for Kaibab are the same as "self lodgers" at the rim. Reserve some space for a couple days or three starting in August.

See you next year!

Bits & Pisces, Minutes of the June 25th General Meeting Recorded by Paul Dickson



The meeting was started at 1934 by Tom Polakis, as acting president and with his voice in bad shape. He stated "If Dick misses a third meeting, I'll be President". I'm sure we will be happy to elect Tom as president for next year.

Upcoming events have the regular and dark of the moon star parties now being held at the Cherry Rd site. We also have the ATM meetings on the Tuesday preceding the regular meeting. Contact Paul Lind for more info.

Tom also listed speakers through October, with the July meeting being a Show-'n'-Tell meeting for club members. A Power-Point presentation or slide-show of images is not necessary.

Steve Dodder then reminded us about the 50/50 raffle. He then did a wrap-up on the Grand Canyon Star Party at the North Rim. Of the 8 nights, 6 were amazing, and two those were even better. The last Saturday had rain, hail, sleet and snow in June!

Next year, the Grand Canyon Star Party will be June 18-25.

Steve also reminded us about the Novice Group session he holds south of Maricopa. The sessions are driven by the new telescope user's needs. They should contact Steve to setup a session.

Tom Polakis let us know that the Mt Graham trip has been can-

celed due to the loss of Forest Service permits. Those who have paid should contact Jennifer Polakis about getting your payment back.

Rick Tejera reported that due to computer issues, the May and June issue have been combined and was now available.

Gene Lucas reported on a notice he receive from MAG (Maricopa Association of Governments) about input for dark-sky ordinance. The meeting was July 6, in the afternoon.

Tom Polakis the showed a series of images, including Comet McNaught from June 8, 9, and 10, the current state of the Discovery Telescope, Grand Canyon Star Party an from the Kaibab meadow.

The meeting took a break at 20:30 to go out and watch the fly-over of the International Space Station, which passed overhead. About 20 people watched the flyby.

The meeting restarted at 20:49 with Tom introducing Emilio Falco from Whipple Observatory. His presentation was about the MEarth (pronounced like mirth) project, whose aim is to discover exoplanets around M dwarf stars using eight robotically controlled 16-inch telescopes. More information about the project may be found at <http://www.cfa.harvard.edu/~zberta/mearth>. M-type stars were chosen as the planets would have shorter orbital periods to look for possible transits. Some of issues they face included ringtails that like walking on the mirrors leaving paw prints and ladybugs blocking openings from time to time.

Monthly Trivia Question

This Month's Question: The most important piece of information when navigating in space is the State Vector. What exactly is the State vector?

Last Month's Answer: Little Known Fact: One of the Iconic Images of Apollo was the call by Shorty Powers (The Public Affairs Officer) about 15 seconds before Lift-off of "Guidance is Internal!" What did this refer to?

The Call "guidance is internal referred to the release of the Inertial Guidance Platform. The platform was essentially a big gyroscope that was mounted in a way that once spun up it would maintain it's orientation in relation to space. At launch it was aligned to provide proper attitude indication at the moment of launch.

Since the Earth was rotating once it was aligned it would begin to drift in relation to earth. If you could watch it over time it would seem to rotate at a rate equal to the

speed of Earth's rotation. Since it was aligned quite a few hours prior to launch, once aligned it would be locked in place, so it could not drift, maintaining it's alignment.

At 15 seconds prior to launch (Not 215 as my fat fingers typed in last month's issue). The lock would be released and it would be free to rotate (or more properly, the spacecraft would be free to rotate around it.) This is what "guidance is internal" meant. If the launch was delayed a significant amount of time after Guidance Release. The platform would have to be re aligned. This was done on the ground by using a set of theodolites near the pad aimed at a window in the instrument unit. The CSM's platform, would be synched to this alignment.

The only time this had to be done was on Apollo 17.

Top Twenty Things every Astronomer Should See

#17: The Green Flash

By Dr. Helen Mahoney

The green flash is next on my list because it doesn't take any special equipment, long-term planning, or distant travel. But, like seeing a rainbow, it takes being in the right place at the right time. And, like a rainbow, the phenomenon is due to the refraction--or bending--of different wavelengths of light.

The right place is anywhere you can see a fairly flat horizon without clouds. A view over the ocean is great, but distant mountains, like the western view from Anza, will also suffice. The right time is sunrise or sunset--but it is extremely hard to catch it at sunrise, so sunset is when most people see it.

While a rainbow's light is bent as it passes through rain droplets, at sunset it is the thickened layer of atmosphere that the sun's rays are passing through that causes the different wavelengths of light (i.e. colors) to separate. The shorter green and blue rays are bent more than the longer red rays. In those last few minutes before we see the sun set below the horizon, there actually is a green rim around the top limb of the sun, and a red rim around the bottom. The green flash is the last few rays, and actually is seen when the disk of the sun disappears. The blue light is mostly scattered by the atmosphere, so it is harder to see. I have actually seen a blue flash following the green flash on few occasions when the conditions were perfect.

All wavelengths of light from the sun at sunset are bent by the atmosphere. So much, in fact, that we actually see the sunlight for more than 2 minutes after it has set! Put that together with the fact that it took the sunlight 8 minutes to travel to the earth, and we are really seeing something that isn't there!

I had heard people talk about the green flash for years, but the first time I actually saw it was in the early 90's. It was St. Patrick's Day, so I thought that was appropriate! I had an office on the 5th floor of a building in Long Beach, with a west facing window. Being a few days before the equinox, the sun was almost due west, and I had a good horizon. Call it the luck of the Irish.



Green flash on the ocean horizon in Santa Cruz, California:

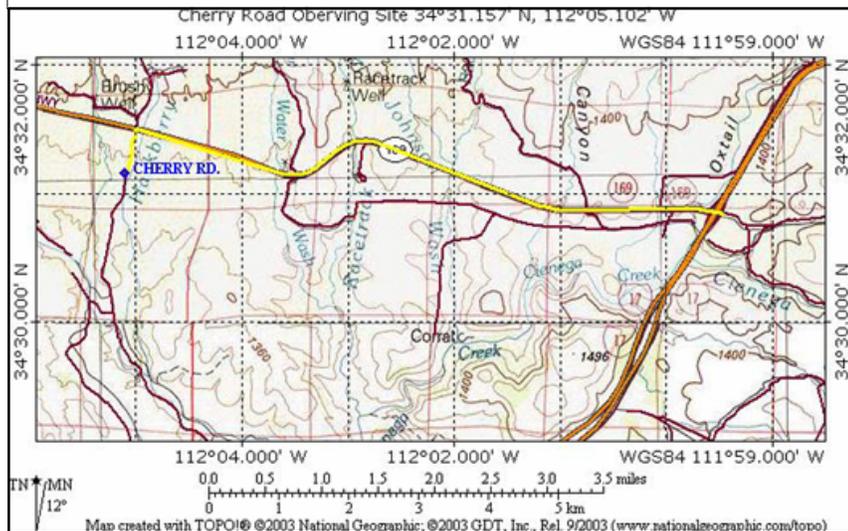
Detailed view of green flash stages. This series was approx 2 seconds long:

When out on a star party at Anza, many people gather on the west side of the observatory at sunset to look for the green flash over the distant Santa Ana Mountains. I have seen it many times from there. Probably the best time was when I watched the sunset from the lower pads at the foot of the observatory stairs. I saw the green flash, then ran up to the top of the stairs where the sun had not yet set--and saw it again!

This article first appeared in the May 2010 issue of "Sirius Astronomer", the Information publication of the Orange County Astronomers and appears with their permission and the permission of the author. Visit them at: www.ocastronomers.org

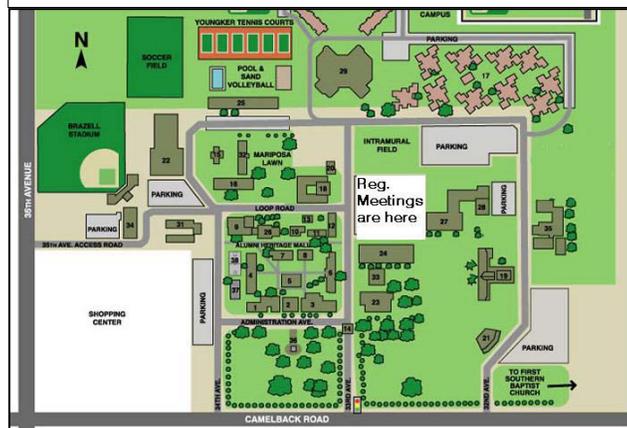
SAC Member Services

Cherry Rd. Star Parties



Take I-17 north to the Cherry Rd exit. Turn west (left) and continue on Cherry Rd for about 5 miles. Turn Left on the dirt road just past the sign that says Cherry 6. Note you turn in the direction Opposite the arrow on the sign. The site is 3/4 down the road on the left.

General Meetings



7:30 p.m. at Grand Canyon University, Fleming Building, Room 105: 1 mile west of I-17 on Camelback Rd., North on 33rd Ave., Second building on the right.

Dark of the Moon Star Parties-2010

Date	Sunset	Moonset	Eve. Twi.	Morn. Twi./Sun Rise	Location
February 13th	1817	-	1941	TW: 0556	Antennas
March 13h (Messier Marathon)	1833	-	1955	MR: 0548	Arizona City
April 10th	1902	-	2028	MR: 0424	Antennas
May 15th	1924	2134	2102	TW: 0347	Cherry II
July 10th	1943	-	2127	TW: 0341	Cherry II
August 14th	1829	2200	2049	TW: 0417	Cherry II
September 11th	1841	2036	2006	TW: 0444	Cherry II
October 9th	1808	1920	1930	TW: 0513	Antennas
November 6th	1738	1756	1902	TW: 0534	Antennas
December 4th	1726	-	1854	TW: 0556	Antennas

SAGUARO ASTRONOMY CLUB

July 2010

5643 W. Pontiac Dr
Glendale, AZ 85308-9117

Phone: 623-572-0713

Email: newsletter@saguaroastr.org



Videmus Stellae



SAC Schedule of Events 2010

SAC Meetings

January 29, 2010	July 23rd, 2010
February 26, 2010	August 20th, 2010
March 26th, 2010	September 24th, 2010
April 30th, 2010	October 22nd, 2010
May 28th, 2010	November 19th, 2010
June 25th, 2010	2010 Holiday Party, TBA

SAC Star Parties

Date	Sunset	Astronomical Twilight Ends	Moonrise	Site
Jan. 9th, 2010	1742	1910	0351	S
Feb. 6th, 2010	1809	1933	0244	S
Mar. 6th, 2010	1833	1955	0131	S
Apr. 3rd, 2010	1854	2019	0014	S
May 8th, 2010	1919	2054	0245	C
Jun. 5th, 2010	1939	2123	0140	C
Jul. 3rd, 2010	1945	2130	2340	C
Aug 7th, 2010	1924	2059	0357	C
Sep. 4th, 2010	1850	2017	0246	C
Oct. 2nd, 2010	1811	1934	0138	C
Oct. 30th, 2010	1742	1906	0040	S
Nov. 27th, 2010	1725	1852	2339	S

Future Planning

April 17th, 2010	Thunderbird Starwatch
June 5th-12th, 2010	Grand Canyon Star Party
June 11th-12th, 2010	5 Mile Meadow Star Party

S= Saddle Mountain; C= Cherry Road; A=Antennas