Saguaro Astronomy Club

SACnews

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Inside This Issue

Do Dark Skies Really Matter

By Dan Gruber

Occasionally I observe from home with my grab-and-go scope (currently an 8" SCT). I usually take my 18" dob to dark sites, where I enjoy working on the monthly observing lists prepared by AJ Crayon. But on the few occasions when I've tried to observe the objects on AJ's lists at home, I've been frustrated. Many of the objects on the lists—like galaxies—either simply aren't visible in my 8" or are just tiny featureless blobs.

I actually can keep the 18" dob assembled at home and roll it outside. I never did, however, because it seemed like a waste in my light-polluted suburban location. But a few months ago I got curious about what I could see from home using the larger scope, and particularly about whether I could see the objects on one of AJ's typical lists with it. One night of experimentation showed that I indeed could see some pretty faint DSOs from home with the larger scope.

That result led to a second, broader question. We all enjoy observing at dark sites. They're peaceful and quiet, often comfortably cool, and of course dark—so we can see hundreds of stars and the Milky Way instead of dozens of stars and our neighbor's lights. But how much difference do dark skies really make in what we can observe?

To begin to answer this question, I decided to observe the same objects through the same scope and eyepiece under similar conditions (except light pollution) from my home and from a dark site. I chose to observe the seven objects that were on one of AJ's recent UMa observing lists—all galaxies. These observations were done over the weekends in late April and early May, beginning at the end of astronomical twilight and ending about two hours later. There was no moon in the sky during any of the observing sessions.

My home is located near (the equivalent of) Northern and 60th Street in Paradise Valley (33° 33' N, 111° 57' W). This is an area with no street lights and my scope was positioned so that no lights from nearby houses, etc were visible. The Phoenix and Scottsdale light domes are partially blocked by a nearby mountain that blocks between 30 and 45 degrees from the horizon of the southern and western sky. A few miles to the east is an Indian reservation, on which there are few

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This is Peter Argenziano with his 18" dob. Several years ago, Dan Gruber bought this scope from Peter. Dan doesn't have a picture of himself, but Dan and Peter look very much alike—except that Dan is older, grayer, shorter, skinnier, has a beard, wears glasses, and isn't as good-looking. So if you recognize Peter, you'll probably recognize Dan."

NASA Space Place

Ozone, the Greenhouse Gas

We all know that ozone in the stratosphere blocks harmful ultraviolet sunlight, and perhaps some people know that ozone at the Earth's surface is itself harmful, damaging people's lungs and contributing to smog.

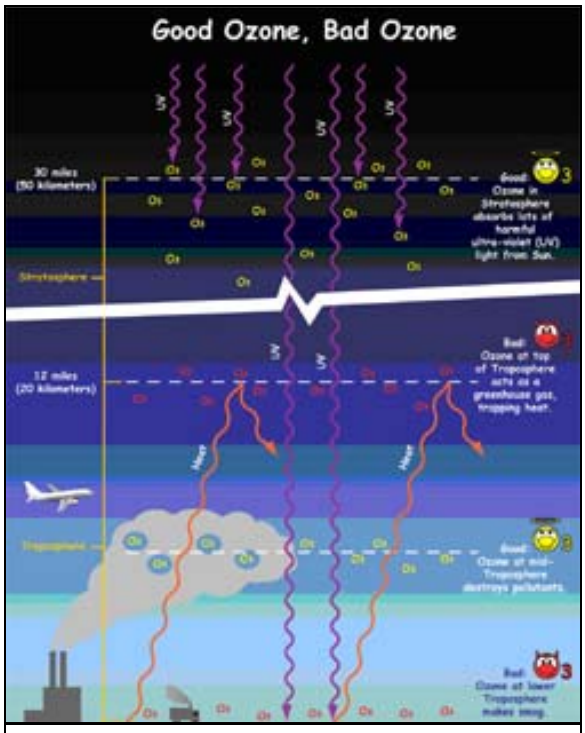
But did you know that ozone also acts as a potent greenhouse gas? At middle altitudes between the ground and the stratosphere, ozone captures heat much as carbon dioxide does.

In fact, pound for pound, ozone is about 3000 times stronger as a greenhouse gas than CO_2. So even though there's much less ozone at middle altitudes than CO_2, it still packs a considerable punch. Ozone traps up to one-third as much heat as the better known culprit in climate change.

Scientists now have an unprecedented view of this mid-altitude ozone thanks to an instrument aboard NASA's Aura satellite called the Tropospheric Emission Spectrometer—"TES" for short.

Most satellites can measure only the total amount of ozone in a vertical column of air. They can't distinguish between helpful ozone in the stratosphere, harmful ozone at the ground, and heat-trapping ozone in between. By looking sideways toward Earth's horizon, a few satellites have managed to probe the vertical distribution of ozone, but only to the bottom of the stratosphere.

Unlike the others, TES can measure the distribution of ozone all the way down to the heat-trapping middle altitudes. "We see vertical information in ozone that nobody else has measured before from space," says Annmarie Eldering, Deputy Principal Investigator for TES.



Ozone behaves differently at different altitudes in the atmosphere. High in the stratosphere and at mid-troposphere it has positive effects on life at the surface. At the top of the troposphere ozone is a greenhouse gas and at the surface it makes smog.

The global perspective offered by an orbiting satellite is especially important for ozone. Ozone is highly reactive. It is constantly being created and destroyed by photochemical reactions in the atmosphere and by lightning. So its concentration varies from region to region, from season to season, and as the wind blows.

Data from TES show that ozone's heat-trapping effect is greatest in the spring, when intensifying sunlight and warming temperatures fuel the reactions that generate ozone. Most of ozone's contribution to the greenhouse effect occurs within 45 degrees latitude from the equator.

Increasing industrialization, particularly in the developing world, could lead to an increase in mid-altitude ozone, Eldering says. Cars and coal-fired power plants release air pollutants that later react to produce more ozone.

"There's concern that overall background levels are slowly increasing over time," Eldering says. TES will continue to monitor these trends, she says, keeping a careful eye on ozone, the greenhouse gas.

Learn more about TES and the science of ozone at tes.jpl.nasa.gov/. Kids can get a great introduction to good ozone and bad ozone at spaceplace.nasa.gov/en/kids/tes/gases.

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lights. I don't have an SQM, so I estimated the sky darkness based on what stars were visible. On Saturday night, April 26, the skies were about mag 3.4 (I could barely see Megrez in UMa, mag 3.3, and only the two brightest stars in the bowl of the Little Dipper) and the seeing was only about 5/10. Sunday night, April 27, was a little better: probably mag 4.3 skies (I could see 3 stars in the bowl of the Little Dipper) and seeing about 6/10.

On Saturday, May 3, I repeated the observations from the Antennas site at Hovatter Road. I could see all of the Little Dipper stars plus 15 UMi (mag 5.2) and 19 UMi (mag 5.5), so the skies were at least mag 5.5 and possibly darker. Seeing was about 7/10, with periods when it was 8/10.

All observations were done with a 7mm Televue Nagler in my 18" f4.5 dob using a Paracorr, yielding 329X and a 15' FOV. For each of the seven objects my observations at home and at the Antennas site are shown below, as recorded at the time of the observation. The objects were observed in the order shown at both sites. The brightness and size information provided for each object is from the Night Sky Observer's Guide by Kepple and Sanner.

NGC 3610 (m10.8v, SB 13.2, 3.2' X 3.2')

Home: This galaxy has a dim, roughly circular halo about 3' in diameter, brightening to an oval core NW – SE and a stellar nucleus.
Antennas: This galaxy has an oval halo about 3' X 2' oriented NNW – SSE, brightening to an oval core about 30" X 60" with the same orientation and a stellar nucleus. The core appears to have several bright areas with the nucleus being at the southern end of the core.

NGC 3613 (m10.9v, SB 12.8, 3.4' X 1.9')

Home: The dim halo extends about 4' X 2' E – W. The oval core also extends E – W and there is no apparent nucleus.
Antennas: An oval halo about 3' X 1.5' is oriented E – W and brightens gradually to a large oval core about 1.5' X 1' with the same orientation. There is a non-stellar nucleus.

NGC 3619 (m11.5v, SB 13.9, 3.7' X 2.8')

Home: This small galaxy was barely distinguishable from the background at my location. The very faint circular halo is about 2' in diameter, brightening slightly to a faint core. There might be a stellar nucleus.
Antennas: This small galaxy has a roughly circular dim halo about 2' in diameter brightening slightly to a small circular core with a non-stellar nucleus.

NGC 3898 (m10.7v, SB 12.5, 3.3' X 1.9')

Home: This galaxy has a very faint halo extending about 3' X 2' E – W. The large (1') circular core has no apparent nucleus.
Antennas: This is an oval-shaped galaxy about 4' X 2' oriented ESE – WNW with a bright elongated core and a possibly stellar nucleus.

NGC 3982 (m11.0v, SB 12.4, 2.2' X 2.0')

Home: Another galaxy that was barely visible from my location. A very faint halo about 3' in diameter brightens gradually to a large, dim core with a possible nucleus.
Antennas: A galaxy with a dim circular halo about 2' in diameter brightening gradually to a large circular core 30" – 60" in diameter with a possibly stellar nucleus.

NGC 3998 (m10.6v, SB 12.7, 3.0' X 2.6')

Home: This galaxy has a very faint halo about 2' in diameter and a bright core with a non-stellar nucleus.
Antennas: This galaxy has a dim circular halo about 3' in diameter, a fairly bright circular core 30" – 60" in diameter and a possibly stellar nucleus.

NGC 3990 (m12.6v, SB 12.5, 1.4' X 0.8')

Home: This tiny (1') galaxy is about 5' west of NGC 3998. It has no visible halo, just a dim core.
Antennas: This galaxy is located about 6' west of NGC 3998, which is much brighter. This galaxy has a 1.5' X 1' halo elongated NE – SW and a very small, bright elongated core (or possibly nucleus) with the same orientation.

Observations from this experiment

1. I was surprised by how much I can see from my house with the equipment noted. My results reinforced the fact that even in a light-polluted environment you can see more with greater aperture.
2. Observations from the much-darker Antennas site under better observing conditions generally don't differ greatly from the home observations. The most obvious difference is that many of the Antennas observations have more specific details about size and orientation. (It's possible that objects with more structure and detail

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Call For Observations–Ursa Major (Again)

By A.J. Crayon

While there are many galaxies in Ursa Major it was thought prudent to make the second trip in as many months to keep the galaxies reasonably close to each other. The bowl seemed to be a logical choice. So let's see what the SAC observers have to say.

NGC3610

8" f6, Newtonian at 38X; Charlie Whiting: this galaxy was barely detectible. It looked like a fuzzy star. At 60x there was not much of a difference. Maybe a trace of halo was seen. At 150x the view was only marginally better. With averted vision the halo was seen to extend to 40" to 60" in diameter. The nucleus was very much brighter than the halo. There is a faint star about 5' to the south. SAC data: Magnitude: 10.8 Size: 2.5'x2. 5' Object classification: Elliptical

8" f10, SCT at 65X; Dick Harshaw: Small bright and oblong nucleus; not much halo seen.

10" f10, SCT at 125X; Joe Goss: Galaxy- Very small, fairly faint, round, even brightness across the surface.

10" F4.5 Dobsonian, 140X; Ken Reeves: Very, Very bright middle, not too big, averted vision makes faint halo come out somewhat. Dim star to W, bright star to NE, stellar nucleus, round.

20" F5 Dobsonian, 180X; Ken Reeves: Pretty bright, pretty small, faint halo, much brighter middle with bright-extended non-stellar nucleus. Elongated 2:1 NW/SE. Bright star to the NE (mag 7) interferes. Nice asterism just out of field NW.

NGC3613

8" f6, Newtonian at 38X; Charlie Whiting: this galaxy was seen as a fuzzy "star" not quite midway between 2 stars to its north and south. At 60x the object now looked like a galaxy with a stellar core and a faint halo. To the SSE I detected the faint glow of NGC 3619. At **150x**, using direct vision the stellar nucleus is most apparent. With averted vision the halo is more visible. The galaxy appears oblong, about 1 1/2' long by 1' wide, aligned roughly E-W. SAC data: Magnitude: 10.9 Size: 3.6'x2.0' Position angle: 102° Object classification: Elliptical

8" f10, SCT at 65X; Dick Harshaw: Grainy, with an E to W axis.

10" f10, SCT at 125X; Joe Goss: Galaxy- Fairly small, very faint, irregular oval shape, slightly brighter towards the center.

10" F4.5 Dobsonian, 140X; Ken Reeves: Pretty bright, elongated E/W; bright middle elongated E/W, no nucleus seen, and nice pattern of stars around it. A second object suspected to E, but verified that there is no such object.

20" F5 Dobsonian, 180X; Ken Reeves: Pretty bright, somewhat small, faint halo, much brighter middle, stellar nucleus, elongated 3.5:1 E/W. Sits between mag 9 or 10 stars to the NNW and SSE.

NGC3619

8" f6, Newtonian at 150X; Charlie Whiting: the galaxy was a faint smudge. It is almost a star like point in direct vision. With averted vision it extended quite a bit. It looked slightly oblong, maybe 30" x 20", aligned E-W. SAC data: Magnitude: 11.5 Size: 3.5'x2.4' Position angle: 25° Object classification: Sa

30" f4.5, Newtonian at 94X; Dick Harshaw: Small, faint and with a very gradually brighter middle. It seems to be lopped off on one side-- a dust lane? It shares the field with the much larger and brighter galaxy NGC3625.

10" f10, SCT at 125X; Joe Goss: Galaxy- Fairly small, fairly faint, more round than oval, very bright towards the center.

10" F4.5 Dobsonian, 100X; Ken Reeves: Pretty small, not very bright, bright center, possibly stellar nucleus, averted vision makes halo stand out, no elongation. **140X** Getting pretty faint, nucleus is stellar, no elongation.

20" F5 Dobsonian, 180X; Ken Reeves: Somewhat bright, pretty small, round, brighter middle with a much brighter stellar nucleus. There is possible mottling in the halo, but uncertain. To the E is NGC3625. Pretty faint, pretty small, slightly brighter middle, no nucleus, elongated 3:1 NNW/SSE

NGC3898

8" f6, Newtonian at 60X; Charlie Whiting: small, dim smudge with a bright spot in the middle. The galaxy is at a right angle to 3 stars to the west. At **150X** using direct vision it was difficult to see this object. The stellar core dims and brightens with the involuntary movement of my eye. Using averted vision the extent of the halo became apparent. But, not all at once. Different parts of the halo were seen as I moved my eye around the galaxy. The integrated mag is 11.6 and surface brightness is 12.1 mag/sq'. It appeared to be oblong, aligned roughly E-W. I estimate it at about 2' long by 1 1/2' wide. SAC data lists it as 3.8'x2.6'.

8" f10, SCT at 65X; Dick Harshaw: Looks like a fuzzy star, with an E to W axis. It lies 35 min NE of the ruddy carbon star SAO 28142 (5.3m). This is a Seyfert galaxy.

10" f10, SCT at 125X; Joe Goss: Galaxy- Fairly small,

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fairly faint, irregular oval shape, suddenly brighter towards center.

10" F4.5 Dobsonian, 100X; Ken Reeves: (with NGC 3888) both in field of view. String of 3 stars bisecting the galaxies, W of NGC3888 is some more stars, and these all make a nice star pattern. NGC3898 Pretty bright, somewhat large, pretty large extended halo, much brighter in the middle, non-stellar nucleus, perhaps elongated E/W, occasional star seen to W of nucleus. Star to E just out of halo. Averted vision helps somewhat. 3888 Pretty faint, somewhat small, little brighter in the middle, no nucleus seen. Averted vision shows some elongation E/W. Star just out of middle to W. To the N is another star, out of the galaxy.

20" F5 Dobsonian, 180X; Ken Reeves: Pretty bright, somewhat large, slightly brighter middle, very bright stellar nucleus, elongated about 2.5:1 NW/SE. Suspect some sort of mottling or structure, but unsure. To the W is 3888. Pretty faint, somewhat small, slightly brighter middle with a stellar nucleus elongated 2:1 NW/SE. There are, possibly, 2 other hazy spots seen with averted vision but unsure (these are confirmed as NGC3889 and PGC 36819).

NGC3982

8" f6, Newtonian at 150X; Charlie Whiting: this galaxy was fairly easy to detect. It stands out well from the background. It can be seen with direct vision, but averted vision is needed to study its characteristics. It is very gradually brighter towards the middle. It is mostly roundish, about 1' to 1 1/2' in diameter. It is listed as 11.9mag and 13.6m/sq' surface brightness, and as 2.3'x2.0'.

8" f10, SCT at 104X; Dick Harshaw: Small and bright, it takes high power well, but reveals no details. It is 6 min SE of a faint star. NGC 3982 was discovered by William Herschel on April 14, 1789, and misclassified as planetary nebula, as can be seen from his catalog entry in his fourth object group and his numbering H IV.62.

It is a member of the Ursa Major Cloud or Cluster of Galaxies.

10" F4.5 Dobsonian, 70X; Ken Reeves: 2nd brightest of three (3972, 3982, 3998). It is somewhat bright, pretty round, brighter middle, 2 stars to S. At **100X** there is a possible elongation E/W.

20" F5 Dobsonian, 180X; Ken Reeves: Pretty bright, somewhat small, round, slightly brighter middle, occasional stellar nucleus, no structure seen. To the NW is 3972, somewhat faint, somewhat large, elongated 3:1 (N/S?) very slightly brighter middle. Further NE is 3977, somewhat faint, somewhat small, round, slightly brighter middle.

NGC3998

8" f6, Newtonian at 150X; Charlie Whiting: about 20' NNE of NGC 3982. 3998 is the largest and brightest of 3 galaxies, which include NGC 3998, NGC 3990 and MCG +09-20-046. NGC3998 was easily detected with direct vision. It has a fairly bright stellar nucleus and a halo that is round and extends about 2' in diameter. It is listed as 11.6mag and 10.9m/sq' surface brightness. No wonder it was easier to see than NGC 3898 and NGC 3982.

8" f10, SCT at 104X; Dick Harshaw: Very bright and large, with a roundish shape and even light; perhaps slightly brighter at the center. At 200x, the core is much sharper and the galaxy appears slightly mottled. This is a Seyfert galaxy and exhibits evidence for a nuclear black hole.

10" f10, SCT at 125X; Joe Goss: Galaxy- Small, fairly bright, irregularly round, much brighter to the center.

10" F4.5 Dobsonian, 70X; Ken Reeves: Brightest of three (3972, 3982, 3998) Forms a trapezoid shape along with 3 other stars, a fourth star forms a Cassiopeia shape. Pretty bright, pretty small, definitely round, very bright middle, halo's not too bright, averted vision doesn't do that much. Middle is very bright, takes magnification pretty well. Central star is actually 3990.

20" F5 Dobsonian, 180X; Ken Reeves: Pretty bright, somewhat small, round, much brighter middle, stellar nucleus. Averted vision doubles the halo.

NGC3990

8" f6, Newtonian at 150X; Charlie Whiting: this galaxy was seen as having a dim stellar nucleus and a barely detectible tiny halo less than 1' in diameter. It is listed as 1.4'x 0.8', 13.5mag and 11.2m/sq' surface brightness.

8" f10, SCT at 104X; Dick Harshaw: It is bright and uniform, but reveals no details, even at 200x. It forms a pair with NGC 3998, even though the radial velocities differ by about 300 km/s. The two are 55,000 light years apart.

10" f10, SCT at 125X; Joe Goss: Galaxy- Small, faint, irregular oval shape, much brighter towards center.

20" F5 Dobsonian, 180X; Ken Reeves: To the W of 3998 is 3990, pretty small, pretty faint, round, much brighter middle, no nucleus. A faint star separates the galaxies.

Call for Observations

There are about 40 objects in Coma Berenices that are in the Messier, 110 Best NGC, Herschel 400 or the Caldwell lists. To this add one large naked eye asterism. That is enough for many appearances of this constellation and this is the first one. To begin with

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President's Corner

By Steve Dodder

First off, thanks to everyone that participated in the annual Thunderbird Star Party for the public, held May 10th. Approximately 25 astronomers were set up to show the sky's wonders to 250 people. Scopes from refractors to big Dob mounted Newtonians, and even some electronic imaging setups were incorporated. Feedback from the public was enthusiastic, and despite a kink or two actually getting into the park, a good time was had by all.

Myself, I was unable to attend. I had a prior commitment to a new potential member. Having missed our annual Stone Haven Observatory pot luck/Star Party, he'd asked if I could help him figure out his telescope setup and how to begin locating objects on the sky. I was more than happy to oblige.

To me, these two events are very much what I expect from an astronomy club. Both are people helping other people get involved in this wonderful hobby we share. Whenever asked for advice on what telescope to buy or what filters to add, the first thing I suggest is to look up and visit a local astronomy club. The people there are most always very willing to let the uninitiated look through their equipment, grill the owner on all manner of subjects concerning that equipment and answer any questions before a huge outlay of cash is spent. This ensures a positive experience, contrary to the $50 625X wobbly telescopes of the past.

I can picture the scene from Thunderbird Park- a line of telescopes with people lined up to look at what is offered, waiting their turn and listening to the "Ooh's and Aah's" from those previous. Anticipation builds as their turn gets closer. I'm reminded of a nice couple at Grand Canyon two years ago. The Moon was up early, washing out the faint fuzzies. I put in a high power eyepiece in the C8, centered the southern highlands of Luna, and in turn "flew" each visitor along the terminator, giving a general description of the terrain as I went. It was something simple, like, "We start in the southern highlands. Look at all the craters overlapping each other. As we move north, you see the landscape fall away to large, smooth basins. Hitting the central basins, you can see the newer craters on the floor, giving way to mountain chains acting as a divider between flat plains. Moving north still, we begin to see the land getting higher, until it reaches the northern mountains, again marked by old, overlapping craters." I didn't name a single feature, just gave a general description, yet the faces of those that took that tour were filled with wonder and joy. As his wife watched the landscape flow by, he asked her, "Do you really see all that stuff in there?" She grinned and said emphatically, "Yes!!" He was enthralled, and hadn't yet seen the view!

This kind of involvement takes very little from the volunteer. But it gives so much in return. When my guest left Saturday night, I asked Rosie what she thought. She said, "Did you see his face? He couldn't stop smiling!"

That's why I do it. How about you?

June 2008

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

Schedule of Events for May 2008

June 3rd	Moon is new at 1222mst.
June 10th	Moon at First Quarter at 0803mst.
June 10th	ATM Sub group meeting at Paul Lind's house
June 13th	SAC Meeting at Grand Canyon University at 1930, Speaker TBA
June 18th	Moon is full at 1230mst.
June 20th	Summer Solstice at 1659mst
June 21st-28th	Grand Canyon Star Party, South Rim: http://www.tucsonastronomy.org/gcsp.html; North Rim: http://www.saguaroastro.org/content/2008GrandCanyonStarPartyNorthRim.htm
June 26th	Moon at Last Quarter at 0510mst.
June 28th	SAC Star Party at Cherry II; Sunset: 1945, Ast Twilight: 2130, Moonrise: 0142

Future Planning

Oct 25th, 2008	All Arizona Star Party.

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there are some good selections here for any size telescope from a dark site, their magnitudes range from 9.4 to 10.4 as all are, at least, on the 110 Best NGC list and near the Coma Star Cluster to boot. Most are barred spirals, save two, so look for as much detail as possible not only within the middle but in the arms. Try to work on estimating the size and magnitude of each and then compare your results with published values. Keep at this long enough and you will get a feeling about these dimensions and get better and better at estimating. First one to review is **NGC4274** and its Saturn-like structure. Up near the Canes Venatici border is **NGC4414**, a late spiral but what kind of detail can you observe in its middle? Next is **NGC4494**, the sole elliptical. Continuing to move westward is the very elongated **NGC4559**. Next, just to the east of the cluster is one of my all time favorites, the spiral **NGC4565** and an even more elongated galaxy. Can you detect the central dark lane? Lastly, and moving away from the cluster is **NGC4725**. Can you detect other galaxies in the field? With that we will have many more enjoyable sessions to come.

The middle section of the Serpent, Hydra mostly made up of galaxies. The first entry is 1.5° to the southeast of 5th magnitude SAO155588 and is the elliptical **NGC3091**. Second is the almost round, barred spiral **NGC3313**, and at magnitude 11.4 is the faintest of the selections. Next is the almost edge-on spiral **NGC3717**, is about 60' north of 5th magnitude SAO202553. Continuing the eastward march is **NGC3904** at magnitude 10.9. Then a scant 35' northeast is **NGC3923**, which is the brightest of the selections at 9.8. Both of these galaxies are elliptical. The final selection is the interacting pair **NGC4105** and **NGC4106**.

Keeping with an extra month ahead because of monsoon the next selection will be Draco. There is quite a bit here to choose from, especially since it crosses many lines of Right Ascension. Here we'll keep to the region around the head of the dragon and find them all, save one, galaxies. The magnitude range for the galaxies is 9.9 to 12th. The first selection is **NGC6140** a nice elongated barred spiral. Next jump is to **NGC6340** a nearly face-on early type spiral. There are other galaxies in the field. Can you count and identify them? The **Draco Dwarf**, UGC10822 and a member of the Local Group of Galaxies, is next and its magnitude is listed as 9.9. Beware this can be misleading because its size is 33.5'X18. 9'and that gives it a low surface brightness. You might try to ferret out some detail with averted vision while waiting for a moment of good seeing. Continuing on our way finds **NGC6412** a barred spiral with some detail. Again, try to get as much out of this one as you can. Our last galaxy is **NGC6654**, at 12th mag. Not clear, to me, if it has some faint stars involved or bright HII regions. What do you think? Finally comes an asterism named after Fr. Lucian Kemble called **Kemble 2** and located at RA 18h35.0m Dec +72° 23'. It is 7th mag, 30' and forms a "Mini-Cassiopeia" like asterism. Mag 3.5 chi Draconis is in the field. Perhaps why it has a 7th mag rating?

Monthly Trivia Question

When Flight Controller John Aaron told Apollo 12 to try "SCE to AUX" after being struck by lightning, What did "S.C.E" Stand for?

Last Months Answer: Who was the first female to walk in space? While on the Salyut 7 space station on July 25, 1984, the second woman in space (some 19 years after Valentina Tereshkova) cosmonaut Svetlana Savitskaya became the first woman ever to perform a space walk. She was outside the space station for 3 hours 35 minutes.

Upon returning to Earth, Savitskaya was assigned as commander of an all-female Soyuz crew to Salyut 7 in commemoration of the International Women's Day, a mission that was later canceled.

She was twice awarded the Hero of the Soviet Union medal.

She is also a test and sports pilot - starting from 1974 she set 18 international world records on MiG aircraft and three records in team parachute jumping. She also won the first place in the 6th FAI World Aerobatic Championship in 1970.

Savitskaya retired from her active cosmonaut's duty in 1993.

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would have exhibited greater differences between the two sites.)

3. Observational differences between the sites are greater when describing dim objects (in terms of either visual magnitude or surface brightness). Several objects that were barely visible or very dim from my home were clearly visible from the dark site.
4. Although not included in the observations, my notes indicate that there were more obvious differences in the background between the two sites. At home, generally few stars were visible in the fields around the observed objects. At Antennas, there often were many stars in the field. In fact, in some cases the difference in the field detail (e.g. number of stars and other galaxies) between the sites was greater than the observed difference in the objects themselves.

Additional steps

I intend to duplicate this comparison in the future using objects from the Urban List. These objects generally are brighter, larger, and have more structure and detail than, for example, the UMa galaxies observed this time. This may help make differences in observing results between my home and a dark site more obvious and specific. Based on a suggestion by AJ, I also will document more explicitly field details like nearby stars.

My plan (or at least hope) is to do this additional comparison not only with the 18" but also with my smaller scope, since the Urban List has the kinds of objects that I usually observe from home with the 8". I'm interested in seeing whether the differences in observing results between my home and a dark site are greater, less, the same, or just different for the 8" scope versus the 18" scope. My hypothesis is that the smaller scope, with its inherently greater limitations, will benefit more from the dark site than the 18" —but that remains to be seen.

I can't transport both scopes to dark sites or set both up at my house simultaneously, so these variations will have to be done sequentially. With the monsoon approaching, there's no telling when conditions will permit continuation of this experiment (and I want to continue working on AJ's new lists in addition to doing this). But I'll write up and submit future installments as they get done.

SIMULATIONS OF INFRARED VERY LONG BASELINE INTERFEROMETRY OF THE EXOPLANETS GLIESE 581C AND GLIESE 581D

A few of you met my Godson, Scott Johnson, last November at Sentinel. He's currently finishing his undergraduate work at Florida Inst. Of technology in Melbourne Fl.

The following abstract is from a paper recently published on which he was a research assistant. Needless to say I'm pretty darn proud of him. You can get the full paper at: http://www.jsara.org/volume02-080501/ms0211-Pederson.pdf

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SIMULATIONS OF INFRARED VERY LONG BASELINE INTERFEROMETRY OF THE EXOPLANETS GLIESE 581C AND GLIESE 581D

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ABSTRACT

There are several potential advantages to the use of interferometry for direct detection of extrasolar planetary emission. Destructive interference can be used to strongly suppress emission from the much brighter primary star. High angular resolution, which can be significantly better that the diffraction limit of the individual telescopes, will help to separate the emission from an extrasolar planet and its primary star as well as from sources of background emission. This paper presents research and calculations pertaining to the development of a preliminary model of an interferometer designed to detect mid-IR emissions from Gl 581c and GL 581d (Bloh et al. 2007). The instrument model is used to analyze emissions from Gl 581d based on a simple model atmosphere and radiative transfer calculation. The atmosphere is assumed to be a pure CO_2 blackbody with a single temperature, the effective temperature, and the surface a blackbody 100 *K* warmer. The surface is broken up into 32 subsections of equal latitude and longitude intervals and a disk averaged spectrum is calculated.

Bits and Pisces, Minutes of the April General Meeting

By A.J. Crayon

Immediately after calling the meeting to order, President Steve Dodder asked for visitors and new members to identify and introduce themselves. Four folks did so. There were 46 in attendance. The treasurer's report, given by Charlie Whiting, indicated we had $896.00 from membership and $95.00 other income. There was $4772.00 in the back and $44.00 cash-on-hand.

Jack Jones discussed upcoming events that included the Thunderbird Star Gaze on May 10th. For the Messier Marathon, 2 port-a-johns were ordered but only 1 was delivered, resulting in a savings of $75.00. The SAC Star Party for April 26th is a pot-luck get together at Stone Haven Observatory, Steve & Rosie Dodder proprietors. Bring something to eat and drink, arrive by 4:00pm and be prepared to gorge your tummy, watch a presentation by Joe Orman and observe to the wee hours of the night. For directions to the site go to their web site at http://www.stargazing.net/Astroman/index.html and click on the rotating observatory on the right side, towards the bottom. The Grand Canyon Star Party is from June 21st to 28th for both the North and South Rims. Steve Dodder discussed the North Rim, the more remote of the two. There are spots still open and you should contact Steve for more information. Jack Jones discussed the South Rim, where camp ground sites are still available. That Sunday is the SAC pizza party, a well attended and talked about event.

Steve Coe started Show-n-Tell with a presentation of his travails at the Antenna site. It included a discussion of his middle finger injury and David Fredericksen's new exercise routing – his 32" telescope and the 12' ladder to get to the eyepiece. Rick Rotramel showed his video of the just completed All Arizona Messier Marathon. Lastly, Tom Polakis wowed us with video images of the International Space Station and the Space Shuttle take from the Phoenix area as it transited the Moon and Sun – on different days of course! Tom used the URL http://www.calsky.com/ to determine where to setup and discovered it is very accurate.

After the break Vice President Jennifer Polakis introduced our speaker for the evening, Patrick Woida. The title of the talk was *Art of Applied Science, Crafting A Mission to Mars*.

Afterwards, and following a long-standing SAC tradition, we reconvened to JB's Restaurant for more discussion.

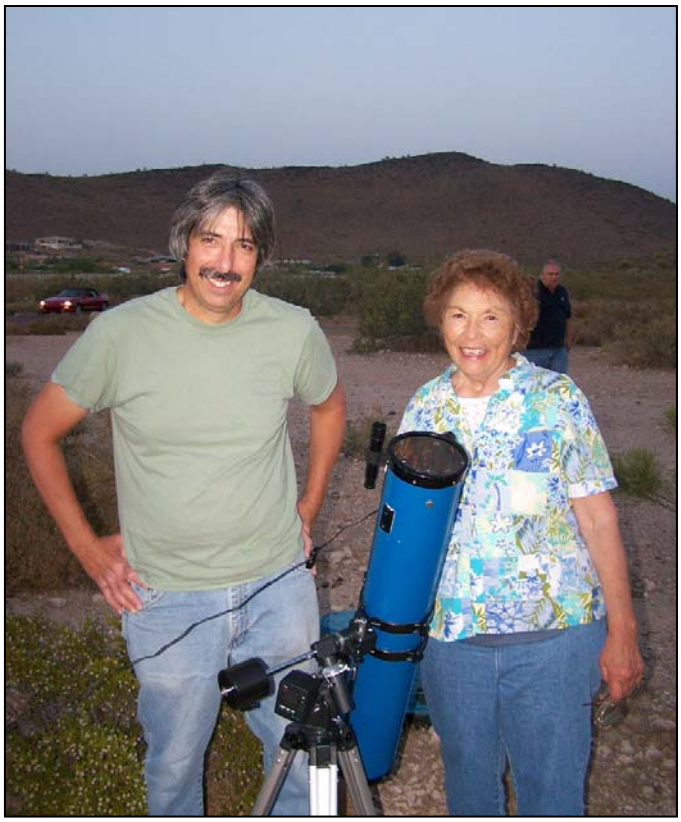
Dark of the Moon Star Parties-2008

Date	Sunset	Moonset	Twilight	Location
January 5th	1737	-	1905	Antennas
February 9th	1813	2113	1937	Antennas
March 8th	1835	2001	1957	Antennas
May 3rd	1915	-	2049	Cherry II
July 5th	1944	2157	2129	Cherry II
August 2nd	1927	2022	2103	Cherry II
August 30th	1857	-	2024	Cherry II
October 4th	1814	2125	1937	Antennas
November 1st	1742	2010	1906	Antennas
December 27th	1734	1748	1903	Antennas

Thunderbird Starwatch

Well, after some confusion at the onset, the 2008 Thunderbird Starwatch was again a success.

Upon arrival, we found that the gate to the observing field was locked. Several of went around and enter the park from the 67th Ave. entrance and waited hoping the rangers would appear to open the gate. We were about tho pack up and head back around and deal with setting up near the entrance when Jack Jones, Public Events coordinator, Arrived and sorted things out. Turns out, in an ironic twist, The rangers in charge had to actually break the lock to the gate in their own park. Once all that was sorted out about 250 people came by to look at the stars with us. The Moon and Saturn were obvious favorites along with some ncie Double stars (Castor, Mizar & Alcor and Al-Geiba among them) and a few DSO's as well. We had lines at the scopes until it was time to pack up. Afterwards, as has become custom, several of us met at the T.G.I.Friday's at 59th & Bell for a bite to eat and astronomy talk. (OK, Tom & I talked hockey as well).



Clockwise from Left: Steve Perry & his Mom Barbabra, who was visiting from California. Steve set up "Lunar TV, The Wide Screen Version". Next to him To Polakis had set up "Lunar TV, The Directors Cut".

Wes Edens and his son Nick and the 8" Intelliscope.

Jeff Hopkins & Old Yeller, the Dob, A Thunderbird favorite.

Rick Tejera and his two assistants, daughter Lindsay on the left & her BFF Molly on right

SAGUARO ASTRONOMY CLUB

May 2008

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SAC Schedule of Events 2008

SAC Meetings

January 18th, 2008	July 11th, 2008*
February 22nd, 2008	August 15th, 2008
March 21st, 2008	September 12th, 2008
April 11th, 2008*	October 10th, 2008*
May 16th, 2008*	November 14th, 2008
June 13th, 2008*	Holiday Party, TBA

** Rescheduled Meeting Date*

Future Planning

April 5th, 2008	All Arizona Messier Marathon
May 30th-June 1st, 2008	5 Mile Meadow Star Party
November 28th-30th, 2007	Autumn Stargaze

SAC Star Parties

Date	Sunset	Astronomical Twilight Ends	Moonrise	Site
Jan 5th, 2008	1737	1905	0608	A
Feb 2nd, 2008	1824	1929	0507	S
Mar 1st, 2008	1829	1952	0346	S
Apr 26th, 2008	1911	2042	0100	S
May 3rd, 2008	1915	2049	0401	C
Jun 28th, 2008	1945	2130	0142	C
Jul 26th, 2008	1935	2113	0021	C
Aug 23rd, 2008	1903	2033	2303	C
Sep 27th, 2008	1815	1938	0455	S
Oct 25th, 2008	1747	1910	0432	S
Nov 22nd, 2008	1726	1853	0331	S
Dec 120th, 2008	1730	1859	0128	S

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