Volume 24 Issue 12

December 2010

The Observer

East Valley Astronomy Club

From the Desk of the President

by David Douglass

Congratulations to the newly elected Executive Officers and Board Members for EVAC and Calendar Year 2011. On page 15 of this issue of the Observer thereare details of each position and the name of the person elected to serve in that position.

The November All Arizona Star Party was a huge success at its new location. This year we used an area that is an abandoned air strip, just east of the site known as "Antenna Site", and utilized primarily by the Saguaro Astronomy Club (SAC). This same area will probably be used by SAC for the spring Messier Marathon. There is plenty of room, good ground, and excellent horizons. Although there was a noticeable light dome from the east (Phoenix), the overall views are excellent. EVAC has received excellent reviews of this event on the various forums, and public websites, such as Cloudy Nights. Most commenters included reference to the excellent effort of Claude Haynes with the chili dinner, and evening refreshments.

The annual EVAC Holiday Party will once again be hosted by Tom and Jennifer Polakis. This year, the event will be held on Friday evening, December 17th. As usual, EVAC will supply some meat plates, rolls, and soft drinks. This event is a potluck, so bring your favorite dish to share, and enjoy some good holiday fellowship with fellow EVAC members. Elsewhere in the Observer, there is a map to the Polakis residence. Starting time for the event is the usual 7:00 PM.

EVAC has been the benefactor of several donations of various tele-

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The Backyard Astronomer

A Man and His Sun

by Bill Dellinges

Every day we watch an astronomical event we take for granted - sunset (and sunrise for that matter).

Basically, we're seeing the Sun eclipsed by Earth. While watching the fiery ball as it sinks toward the horizon, consider the significance of what you behold. The Sun is 93 million miles away. Its light, traveling at 186,282 miles per second, takes 8. 3 seconds to reach Earth. Traveling at that velocity, you could circumnavigate Earth seven times in one second. Yet the Sun's gravity still keeps us in its grasp, bathing us in light and heat, providing life a hospitable place to thrive in an otherwise cold and airless universe. It is a star of immense proportions compared to the world we live on. The Sun's diameter is 109 times that of the Earth. Its mass is equal to 333,000 Earths. Its volume is equivalent to 1,300,000 Earths.

Like other stars in the universe, the Sun is basically a big hydrogen gas ball. Nature chose hydrogen to make stars because it was the most abundant element around following the Big Bang. The considerable weight of the Sun pushing

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Upcoming Events:

Deep Sky Observing Night - December 4

Public Star Party - December 10

Holiday Party - December 17

Local Star Party - December 25

Check out all of the upcoming club events in the Calendars on page 8

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The Backyard Astronomer

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toward its center causes temperatures to rise to 30 million degrees F. At this point hydrogen atoms are moving so fast, they fuse into helium atoms with a release of energy which we see as light and heat (along with a family of shorter and higher wavelengths we don't see – infrared, ultraviolet, x-rays, etc).

To account for the energy emitted by the Sun, astronomers calculate 600,000,000 tons of hydrogen must be fused into helium each second. During this process, 4,600,000 tons of hydrogen are converted into energy. So every second the Sun "weighs" less by that amount and has been losing this mass each second for the last 4.6 billion years. Fear not. Our star has enough mass to last another 5 billion years. It is interesting to note that while the Sun provides the heat we need to live, it can also kill us. We do need to take precautions from exposure to the Sun's radiation. One could hardly survive a summer day in a desert without adequate clothing, shelter and water. Skin cancer from ultraviolet rays may lead to one's demise also.

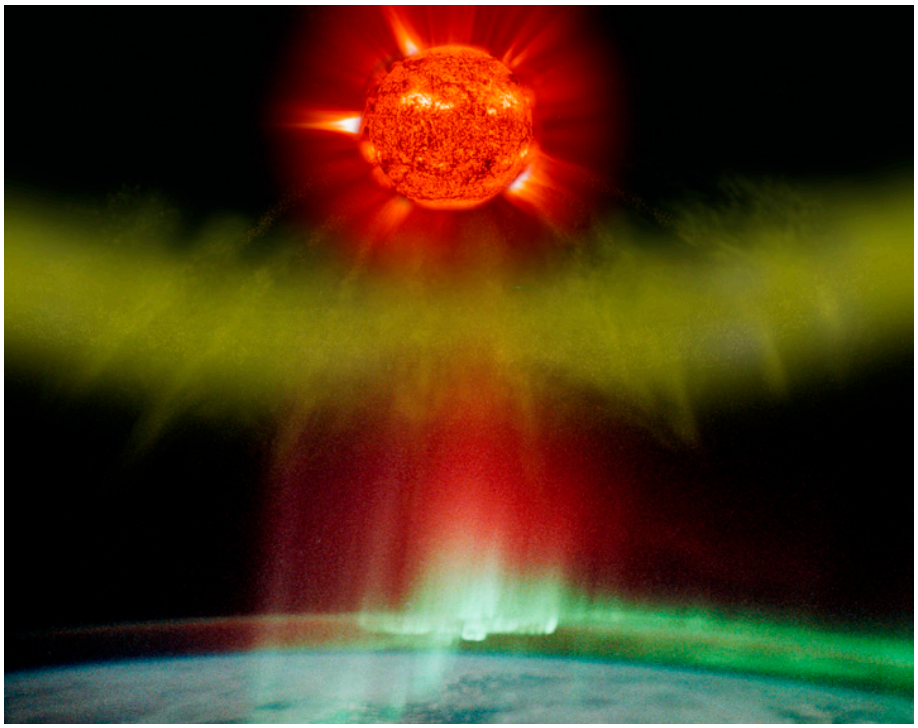


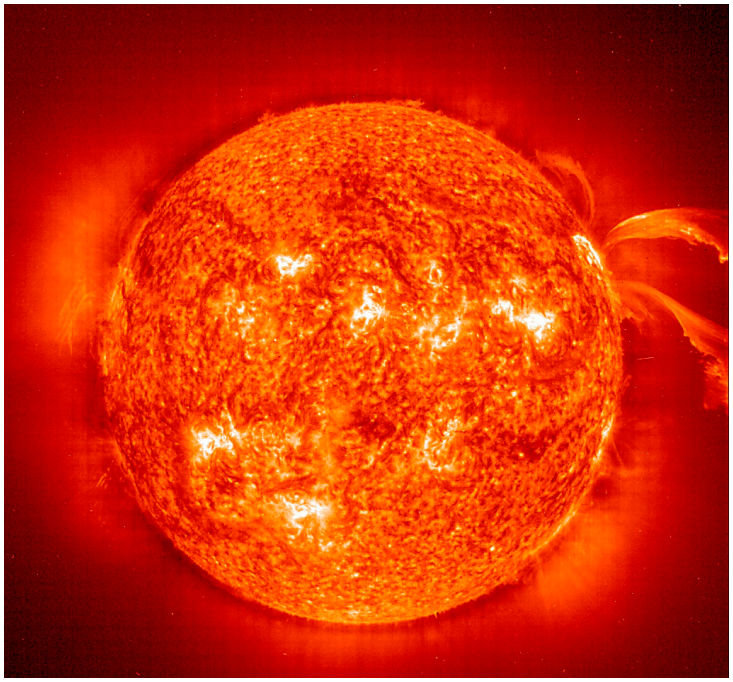
Illustration of a CME particle cloud blasted from the sun impacting Earth and creating aurora (in actual photo of aurora as taken by an astronaut on the space station). Photo courtesy of SOHO.

Worse is in store for us a few billion years down the road as the Sun progresses towards its red giant stage. All stars swell up near the end of their lives due to a core of super hot helium, and later carbon "ash" forcing burning shells of hydrogen and helium upward. The Sun will expand out to about the orbit of earth, boiling away its oceans and frying it to a cinder. The outer envelope of the Sun will continue to expand forming a planetary nebula. A portion of the Sun's mass left behind will collapse into a white dwarf about the size of a small planet (~8,000 miles across). The elder Sun now shines white hot from compression alone – its nuclear reactions having ceased. A teaspoon of its material weighs about 1 ton. The white dwarf will need billions of years to cool off to a black chunk of carbon – a diamond in the sky. Long before that we will have hopefully moved to Mars, or perhaps another planetary system nearby. This assumes we haven't destroyed ourselves beforehand.

The main elements produced during the sun's life such as helium, carbon, and oxygen, will end up in the interstellar medium as the Sun sloughs off its outer envelope during its red giant phase. There they will join similar elements jettisoned from other Sun-like stars and also heavier elements like iron, sodium, magnesium, silicon, lead, gold, silver and uranium (to name a few) that larger stars produced and ejected into space via supernova explosions. These elements will contaminate extant hydrogen in space and will be incorporated in the formation of future stars – and their planets.

This recycling process explains the presence of trace amounts of heavy elements found in the Sun and the heavy metal content of the planets. Every aluminum atom in a soda can, iron in steel, sodium in salt, gold in your wedding ring, oxygen you breathe, titanium in a jet engine, calcium in your bones, uranium in an atomic bomb, came from stars that lived and died before the Sun came along. Ditto for the elements and compounds found in your daily vitamin. They have followed a long journey from a cosmic pharmacy to that bottle.

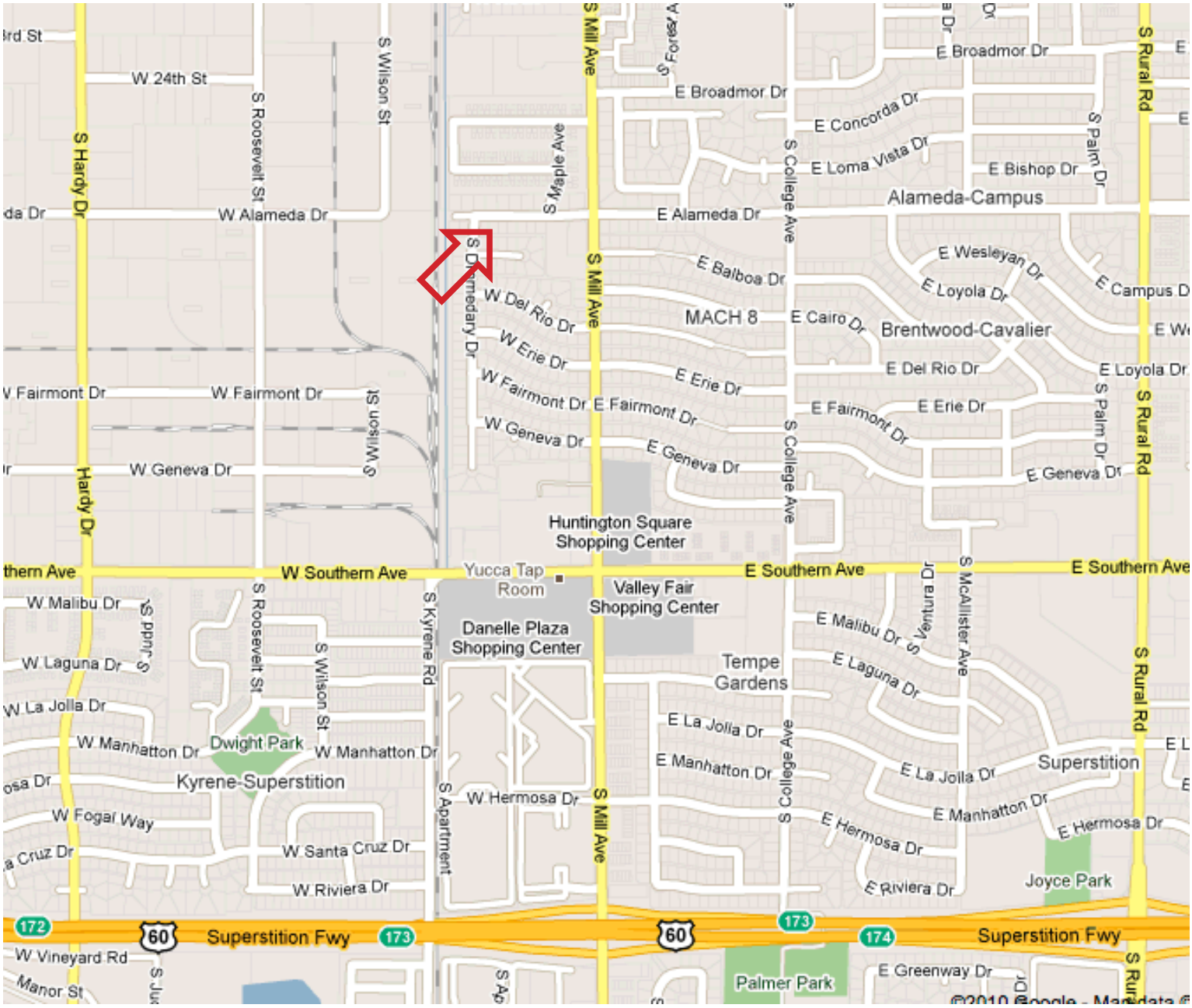
We are truly made of star stuff.



You are cordially invited to the 2010 EVAC Holiday Party

This year's Holiday party will be held at the home of Jennifer & Tom Polakis. The affair will be an old-fashioned potluck, so please bring your favorite appetizer, salad, side-dish, drink or dessert! The club will provide cold cut platters, rolls and soft drinks, Come on out and mingle with your fellow astronomers at an event where you can actually see what they look like!

Friday, December 17th 7:00 PM
The Polakis residence in Tempe



To get to Casa Polakis exit US60 at Mill Avenue and head north a mile to Alameda Drive. Turn left, heading west, and it's the sixth house on the left (south) side of the street. As a point of reference, Riazzi's restaurant is on the southwest corner of Alameda and Mill. The address is 121 W. Alameda and phone number is 480-967-1658.

International Year of Astronomy 2009 Reached Hundreds of Millions of People: Final Report Released

We have to go back more than 40 years, to the Apollo Moon programme, to find another science event that has engaged the public as much as the International Year of Astronomy 2009 (IYA2009). At its peak in 1969, Neil Armstrong and Buzz Aldrin's first steps on the Moon reached an audience of more than a billion [1]. Forty years later, IYA2009 has brought space back to a mass audience once again.

The report is a compilation of the achievements of the 216 IYA2009 stakeholders — 148 countries, 40 international organisations and 28 global projects. The report shows the excitement, engagement and community involvement engendered by IYA2009. The report is intended to stand as a record of the legacy of this astonishing international celebration of astronomy.

In the report, about half of the stakeholder organisations discuss the number of people reached by the events they organised, as well as the budgets they had available to implement their activities. Funds equivalent to at least 18 million euros were devoted to IYA2009 activities — and this financial investment was complemented by enormous in-kind contributions from the amateur and professional astronomers, educators and organisers who helped to run the events.

Reports from the IYA2009 network show that at least 815 million people worldwide were reached by IYA2009 activities. Star parties, public talks, exhibits, school programmes, books, citizen-scientist programmes, science-arts events, IYA2009 documentaries and parades honouring astronomy and its achievements made IYA2009 the largest science event so far in this century.

The highest participation figures came from India, where over 700 million people were reported as being reached by IYA2009 events. This was mainly due to Indian astronomers proudly showcasing their work at the Republic Day parade in Delhi. With 30 000 people watching in person and an estimated 700 million watching on television, this was by far the biggest single event in the IYA2009 programme.

In Brazil, a budget equivalent to 2 million euros helped the organisers to reach 2.2 million people, with more than 16 600 events around the country, from national Olympiads of astronomy and astronautics to exhibitions and regional meetings on astronomy teaching. There was a big focus on education, with educational astronomy kits being produced, and 55 000 astronomy books and 20 000 Galileoscopes being distributed to state schools.

South Korea was one of the most active countries in IYA2009, with more than 500 activities reaching some 11 million people. A partial solar eclipse on 22 July was the highlight of the year, with viewing events widely held across the nation in 45 locations with over 400 000 people reached, from kindergarten children to the President of the Republic of Korea.

In the United Kingdom, the organisers used a budget of more than 1 million euros to reach over one million people: 300 000 at local star-parties, 300 000 at IYA2009 planetarium shows and the 400 000 people who attended the global exhibition project, From Earth to the Universe.

Catherine Cesarsky, chair of the IYA2009 Working Group, and the IAU's President for most of IYA2009, says: "As this report clearly shows, IYA2009 was an immense success. We can see that the variety and quality of projects around the world touched the lives of literally millions of people. It's the first time that such a huge network has been put together to promote a single science communication project, so IYA2009 was also a learning process for everyone involved. This report, and the lessons we have drawn from IYA2009, will be a big help to anyone organising in a similar project in future."

The global IYA2009 projects have also been more successful than anyone initially dared to imagine. Two worldwide star parties were held in 2009: 100 Hours of Astronomy in April, and Galilean Nights in October. In total more than three million people were involved, with many members of the public seeing night-sky objects such as the planets and the Moon through a telescope for the very first time — a life-changing experience for many.

The IYA2009 Cornerstone project, From Earth to the Universe, is a worldwide exhibition that brought the striking beauty and intriguing science of astronomy images to the public. It was staged in unexpected and accessible locations such as parks, metro stations, shopping malls, hospitals, libraries and even prisons. From Earth to the Universe has been exhibited in about 1000 locations in about 70 countries and 40 languages throughout the world in 2009 and has been viewed by at least 10 million people. The exhibition continues in venues around the world to this day.

Several IYA2009-affiliated movies were released during IYA2009, and received critical acclaim. More than 450 000 DVDs of Eyes on the Skies, a film documenting the history of the telescope, were distributed worldwide in 33 languages. The film received a MEDEA 2009 Jury Award. Another IYA2009 film, 400 Years of the Telescope, a 1.8 million euro production, has been seen by over ten million individuals. The film has garnered four peer-reviewed Telly awards, for animations, writing, cinematography and production. The astronomy Indiana Jones-style movie BLAST!, a 385 000 euro production, has been seen by 1.2 million people and has recently been broadcast on BBC World News, reaching over a million households around the world.

In the framework of the IYA2009 Cornerstone project, Developing Astronomy Globally, more than five thousand telescopes have been distributed to over 30 developing countries, to help promote astronomy education and outreach there. As part of the IYA2009 legacy, the IAU has initiated and is now implementing Astronomy for the Developing World, a pioneering ten-year plan to exploit astronomy in the service of education and capacity building in the developing world. The IAU has recently chosen the South African Astronomical Observatory as the location for its Office for Astronomy Development (OAD). The OAD will coordinate a wide range of activities designed to stimulate astronomy throughout the world.

The examples above are just a few of the many IYA2009 highlights that during 2009 helped the citizens of the world to rediscover their place in the Universe and to engage in a personal sense of wonder and discovery.

Robert Williams, the current IAU President, concludes: "Looking back at the activities and events and the popular reaction, we are able to truly gauge how often and how deeply IYA2009's motto, The Universe, Yours to Discover, was fulfilled during the Year."

New EVAC Members Since August

Bunny Oshinsky - Gilbert

James W. Kuschel - Gilbert

Charles D. Koenig - Queen Creek

James VanHof - Tempe

D.J. Willard - Fountain Hills

Carol Sabo - San Tan Valley

Mike Luciano - Gilbert

Jeffrey Shields - Chandler

Dan Matlaga - Tempe

Muhammad Siddigui - Gilbert

○ New Moon on December 5 at 10:36

◐ First Quarter Moon on December 13 at 06:59

● Full Moon on December 21 at 01:14

◑ Last Quarter Moon on December 27 at 21:20

Upcoming Meetings

December 17 (Party)
January 21
February 18
March 18
April 15
May 20

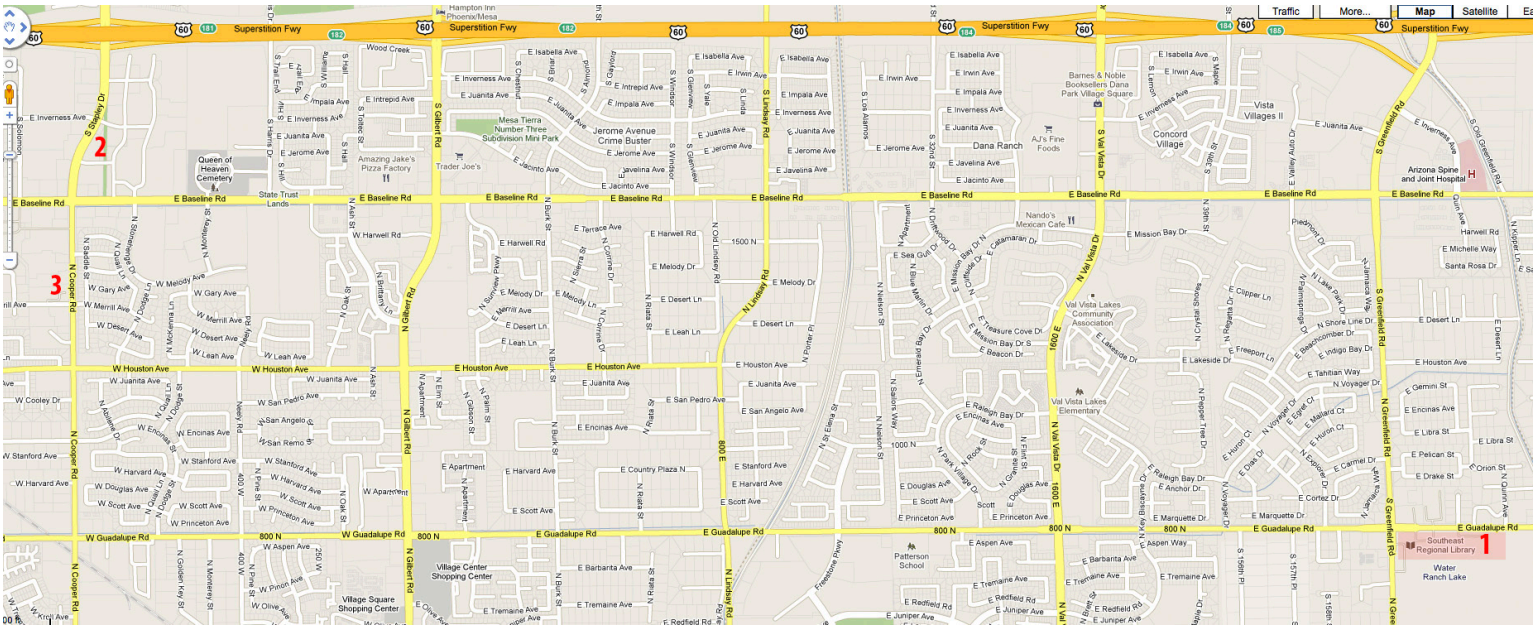
The monthly general meeting is your chance to find out what other club members are up to, learn about upcoming club events and listen to presentations by professional and well-known amateur astronomers.

Our meetings are held on the third Friday of each month at the Southeast Regional Library in Gilbert. The library is located at 775 N. Greenfield Road; on the southeast corner of Greenfield and Guadalupe Roads. Meetings begin at 7:30 pm.

All are welcome to attend the pre-meeting dinner at 5:30 pm. We meet at Old Country Buffet, located at 1855 S. Stapley Drive in Mesa. The restaurant is in the plaza on the northeast corner of Stapley and Baseline Roads, just south of US60.

Likewise, all are invited to meet for coffee and more astro talk after the meeting at Denny's on Cooper (Stapley), between Baseline and Guadalupe Roads.

Visitors are always welcome!



2 **Old Country Buffet**
1855 S. Stapley Drive
Mesa, Az. 85204

1 **Southeast Regional Library**
775 N. Greenfield Road
Gilbert, Az. 85234

3 **Denny's**
1368 N. Cooper
Gilbert, Az. 85233

December 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

December 3 - Mesquite Elementary School Star Party

December 4 - Deep Sky Observing Night. Head out to your favorite dark sky site and observe!

December 10 - Public Star Party & SkyWatch at Riparian Preserve

December 11 - Chandler Environmental Center Star Party

December 17 - EVAC Holiday Party

December 25 - Local Star Party at Boyce Thompson Arboretum

January 2011

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

January 1 - Deep Sky Observing Night. Head out to your favorite dark sky site and observe!

January 7 - Mountainside Middle School Star Party

January 11 - Centennial Middle School Star Party

January 14 - Public Star Party & SkyWatch at Riparian Preserve

January 18 - Salvation Army Star Party

January 20 - CTA Independence Campus Star Party

January 21 - General Meeting at SE Library

January 29 - Local Star Party at Boyce Thompson

January 27 - Navarrett Elementary School Star Party

East Valley Astronomy Club -- 2011 Membership Form

Please complete this form and return it to the club Treasurer at the next meeting or mail it to EVAC, PO Box 2202, Mesa, Az, 85214-2202. Please include a check or money order made payable to EVAC for the appropriate amount.

IMPORTANT: All memberships expire on December 31 of each year.

Select one of the following:

☐ New Member ☐ Renewal ☐ Change of Address

New Member Dues (dues are prorated, select according to the month you are joining the club):

☐ **$30.00 Individual** January through March

☐ **$35.00 Family** January through March

☐ **$15.00 Individual** July through September

☐ **$17.50 Family** July through September

☐ **$22.50 Individual** April through June

☐ **$26.25 Family** April through June

☐ **$37.50 Individual** October through December

☐ **$43.75 Family** October through December

Includes dues for the following year

Renewal (current members only):

☐ **$30.00 Individual** ☐ **$35.00 Family**

Magazine Subscriptions (include renewal notices):

☐ **$34.00** Astronomy ☐ **$33.00** Sky & Telescope

Name Badges:

☐ **$10.00** Each (including postage) Quantity: _____

Name to imprint: _____

Total amount enclosed: _____

Please make check or money order payable to EVAC

☐ Payment was remitted separately using PayPal ☐ Payment was remitted separately using my financial institution's online bill payment feature

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Name: _____ Phone: _____

Address: _____ Email: _____

☐ Publish email address on website

City, State, Zip: _____ URL: _____

How would you like to receive your monthly newsletter? (choose one option):

☐ Electronic delivery (PDF) *Included with membership* ☐ US Mail **Please add $10 to the total payment**

Areas of Interest (check all that apply):

☐ General Observing ☐ Cosmology

☐ Lunar Observing ☐ Telescope Making

☐ Planetary Observing ☐ Astrophotography

☐ Deep Sky Observing ☐ Other

Please describe your astronomy equipment:

Would you be interested in attending a beginner's workshop? ☐ Yes ☐ No

How did you discover East Valley Astronomy Club? _____

PO Box 2202
Mesa, AZ 85214-2202
www.evaconline.org

All members are required to have a liability release form (waiver) on file. Please complete one and forward to the Treasurer with your membership application or renewal.

Liability Release Form

In consideration of attending any publicized Star Party hosted by the East Valley Astronomy Club (hereinafter referred to as "EVAC") I hereby affirm that I and my family agree to hold EVAC harmless from any claims, liabilities, losses, demands, causes of action, suits and expenses (including attorney fees), which may directly or indirectly be connected to EVAC and/or my presence on the premises of any EVAC Star Party and related areas.

I further agree to indemnify any party indicated above should such party suffer any claims, liabilities, losses, demands, causes of action, suits and expenses (including attorney fees), caused directly or indirectly by my negligent or intentional acts, or failure to act, or if such acts or failures to act are directly or indirectly caused by any person in my family or associates while participating in an EVAC Star Party.

My signature upon this form also indicates agreement and acceptance on behalf of all minor children (under 18 years of age) under my care in attendance.

EVAC only recognizes those who are members or invitees and who also have a signed Liability Release Form on file as participants at an EVAC Star Party.

Please print name here ***Date***

Please sign name here

PO Box 2202
Mesa, AZ 85214-2202
www.eastvalleyastronomy.org

NASA's Space Place

Blue Rings Around Red Galaxies

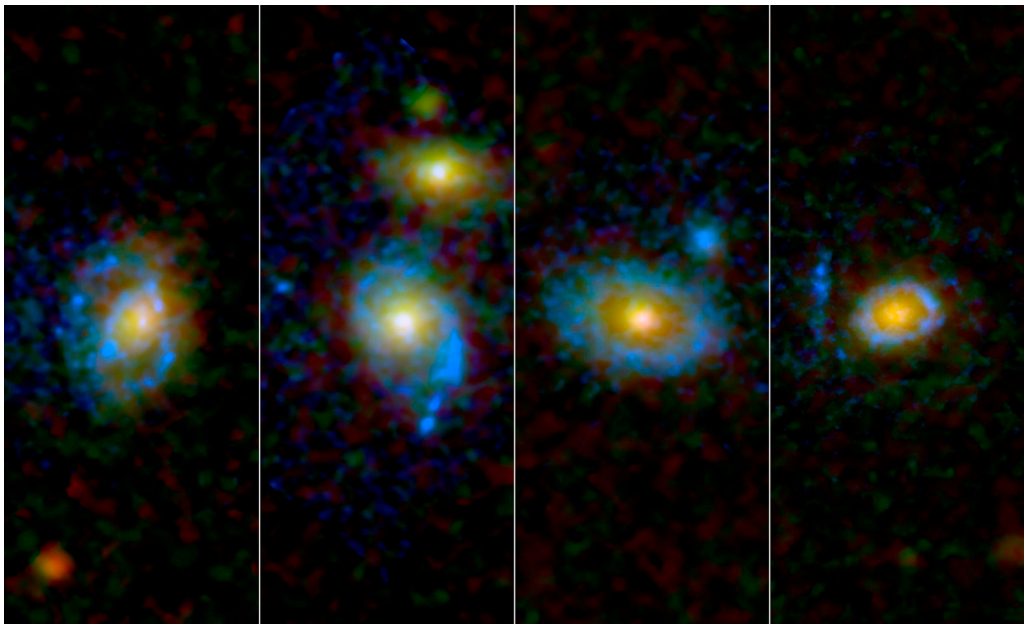
by Trudy E. Bell and Dr. Tony Phillips

Beautiful flat rings around the planet Saturn are one thing—but flat rings around entire galaxies?

That is the astonishing discovery that two astronomers, Samir Salim of Indiana University at Bloomington and R. Michael Rich of UCLA described in the May 10, 2010, issue of The Astrophysical Journal Letters.

"For most of the twentieth century, astronomers observing at visible wavelengths saw that galaxies looked either 'red and dead' or 'blue and new,'" explained Salim. Reddish galaxies were featureless, shaped mostly like balls or lentils; bluish ones were magnificent spirals or irregular galaxies.

Elliptical galaxies looked red, astronomers reasoned, because they had mostly old red giant stars near the end of their life cycles, and little gas from which new stars could form. Spiral and irregular galaxies looked blue, however, because they were rich in gas and dust that were active nurseries birthing hot, massive, bluish stars.



The Galaxy Evolution Explorer UV space telescope helped to identify red elliptical galaxies that also emitted the strongest UV. These are detailed, long-exposure Hubble Space Telescope images of four of these galaxies that capture the UV-emitting rings and arcs indicative of new star formation.

At least, that's how galaxies appear in visible light.

As early as the 1970s, though, the first space-borne telescopes sensitive to ultraviolet radiation (UV) revealed something mysterious: a few red elliptical galaxies emitted "a surprising ultraviolet excess," said Rich. The observations suggested that some old red galaxies might not be as "dead" as previously supposed.

To investigate, Salim and Rich used NASA's Galaxy Evolution Explorer satellite to identify 30 red elliptical galaxies that also emitted the strongest UV. Then they captured a long, detailed picture of each galaxy using the Hubble Space Telescope.

"Hubble revealed the answer," says Salim. The UV radiation was emitted by enormous, flat bluish rings that completely surrounded each reddish galaxy, reminiscent of the rings of Saturn. In some cases, the bluish rings even showed a faint spiral structure!

Because the bluish UV rings looked like star-forming spiral arms and lay mostly beyond the red stars at the centers of the elliptical galaxies "we concluded that the bluish rings must be made of hot young stars," Salim continued. "But if new stars are still being formed, that means the red-and-dead galaxies must have acquired some new gas to make them."

How does a galaxy "acquire some gas?" Salim speculates that it was an act of theft. Sometimes galaxies have close encounters. If a gas-rich irregular galaxy passed close to a gas-poor elliptical galaxy, the gravity of the elliptical galaxy could steal some gas.

Further studies by Galaxy Evolution Explorer, Hubble and other telescopes are expected to reveal more about the process. One thing is certain, says Rich: "The evolution of galaxies is even more surprising and beautiful than we imagined."

The press release is available at http://www.galex.caltech.edu/newsroom/glx2010-03f.html. The full published article is "Star Formation Signatures in Optically Quiescent Early-Type Galaxies" by Samir Salim and R. Michael Rich, The Astrophysical Journal Letters 714: L290–L294, 2010 May 10.

Point the kids to the Photon Pile-up Game at http://spaceplace.nasa.gov/en/kids/galex/photon, where they can have fun learning about the particle nature of light.

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

If It's Clear...

by Fulton Wright, Jr.
Prescott Astronomy Club

December 2010

Celestial events (from Sky & Telescope magazine, Astronomy magazine, and anywhere else I can find information) customized for Prescott, Arizona. Remember, the Moon is ½ degree or 30 arcminutes in diameter. All times are Mountain Standard Time.

I just noticed that on the night of Saturday, November 27, the comet 103P/Hartley 2 will pass directly between a pair of open clusters, M 46 (magnitude 6.1) and M 47 (magnitude 4.4). The magnitude of the comet is uncertain. One source said 6.8, another 12.7! The trio rises about 10:30 PM. The Moon rises about 11:35 PM, so the best time to look is between 11:00 PM and 11:30 PM. Use binoculars or a telescope with a 2 degree field of view to see all 3 at once. A third cluster, NGC 2423 (magnitude 6.7) should also be in the field.

The first week of December you can see Venus at its brightest (magnitude -4.7) at about 6:00 AM, 20 degrees above the horizon in the southeast. (You can't miss it.)

On Wednesday, December 1, about 6:00 PM, start the evening off by finding Mercury (magnitude -0.4) 5 degrees above the horizon in the southwest. It is at its greatest eastern elongation tonight. Then move on to observe a number of events with Jupiter's moons.

6:24 PM Europa moves in front of Jupiter.
8:24 PM Io emerges from Jupiter's shadow.
8:58 PM Europa's shadow falls on Jupiter.
9:06 PM Europa moves from in front of Jupiter.
9:44 PM Ganymede goes behind Jupiter.
11:36 PM Europa's shadow leaves Jupiter.
12:53 AM Ganymede emerges from behind Jupiter.
1:17 AM Jupiter sets.

On Sunday, December 5, it is new Moon so you have all night to hunt for faint fuzzies. Also, from sunset (5:20 PM) till 8:10 PM, Ganymede's shadow will be on Jupiter.

On Sunday, December 12, from dusk till about 11:00 PM, you can observe the South Pole reagon of the Moon at its best. Libration tips that part of the Moon toward us. The night before and after aren't bad either. Also on December 12, from 9:30 PM till 12:10 AM, you can see Ganymede's shadow on Jupiter.

On Monday, December 13, it is first quarter Moon which sets at 1:04 AM (Tuesday). The craters Ptolemaeus, Alphonsus, and Arzachel are displayed nicely near the terminator from the equator southward, as is Archimedes halfway to the north pole. But the real place of interest is the Straight Wall, just south and lunar west of Arzachel. The sun will be rising in the vicinity and you might be able to see long and changing shadows as earth's evening progresses. After moonset is a good time to look for the Geminid meteors. You might even see some earlier in the evening. Dress warmly. See Sky & Telescope, December 2010, p. 64 or Astronomy, December 2010, p. 41 for more details on the meteors.

On Saturday, December 18, in the early evening, the almost full Moon will be passing near the Pleiades star cluster.

On Monday, December 20, at 5:57 PM (11 minutes after sunset) the full Moon rises, spoiling any chance of hunting for faint fuzzies. But wait, there is a total lunar eclipse tonight, so all is not lost. Here is the schedule

10:29 PM Moon enters penumbra (unobservable)
10:55 PM penumbra maybe visible
11:33 PM partial phase starts
12:41 AM total phase starts
1:17 AM mid eclipse
1:53 AM total phase ends
3:01 AM partial phase ends
3:35 AM penumbra last visible
4:04 AM Moon leaves penumbra (unobservable)

On Saturday, December 25, from 11:30 PM till 6:30 AM (the 26th) give yourself a last minuter Christmas gift by observing the Moon's North Pole reagon at its best. Libration tips it toward us.

On the night of Monday, December 27, it is last quarter Moon, which doesn't rise until 12:49 AM (Tuesday morning).

From the Desk of the President

Continued from page 1

scopes during this past year. We will be holding an auction at the January meeting. We will try and get some flyers ready, and post them on the website as well, showing the various items that will be available.

Dues are due again. Yes, it is that time of year again. The next general membership meeting is in January, but you can pay your dues now, by using either the PayPal option on our website (http://evaconline.org/join_evac.htm) or mailing your check to our Treasurer, at PO Box 2202, Mesa, AZ 85214. The dues are $30 (individual) and $35 (family).

As I write this, I am watching the weather, and position of the lunar cycle. In a few days, things should clear off, and the skies will be dark. I am in desperate need of some good *photon time*. We all should be able to get in some good observing between now and the Holiday Party. So until then….. lets all "Keep Looking Up" !!

NASA Sets Shuttle Discovery's Launch For No Earlier Than Dec. 17

The STS-133 crew members, from the left, are NASA astronauts Alvin Drew and Nicole Stott, both mission specialists; Eric Boe, pilot; Steve Lindsey, commander; Michael Barratt and Tim Kopra, both mission specialists. Image credit: NASA

NASA managers have targeted space shuttle Discovery's launch for no earlier than Dec. 17. Shuttle managers determined more tests and analysis are needed before proceeding with the STS-133 mission.

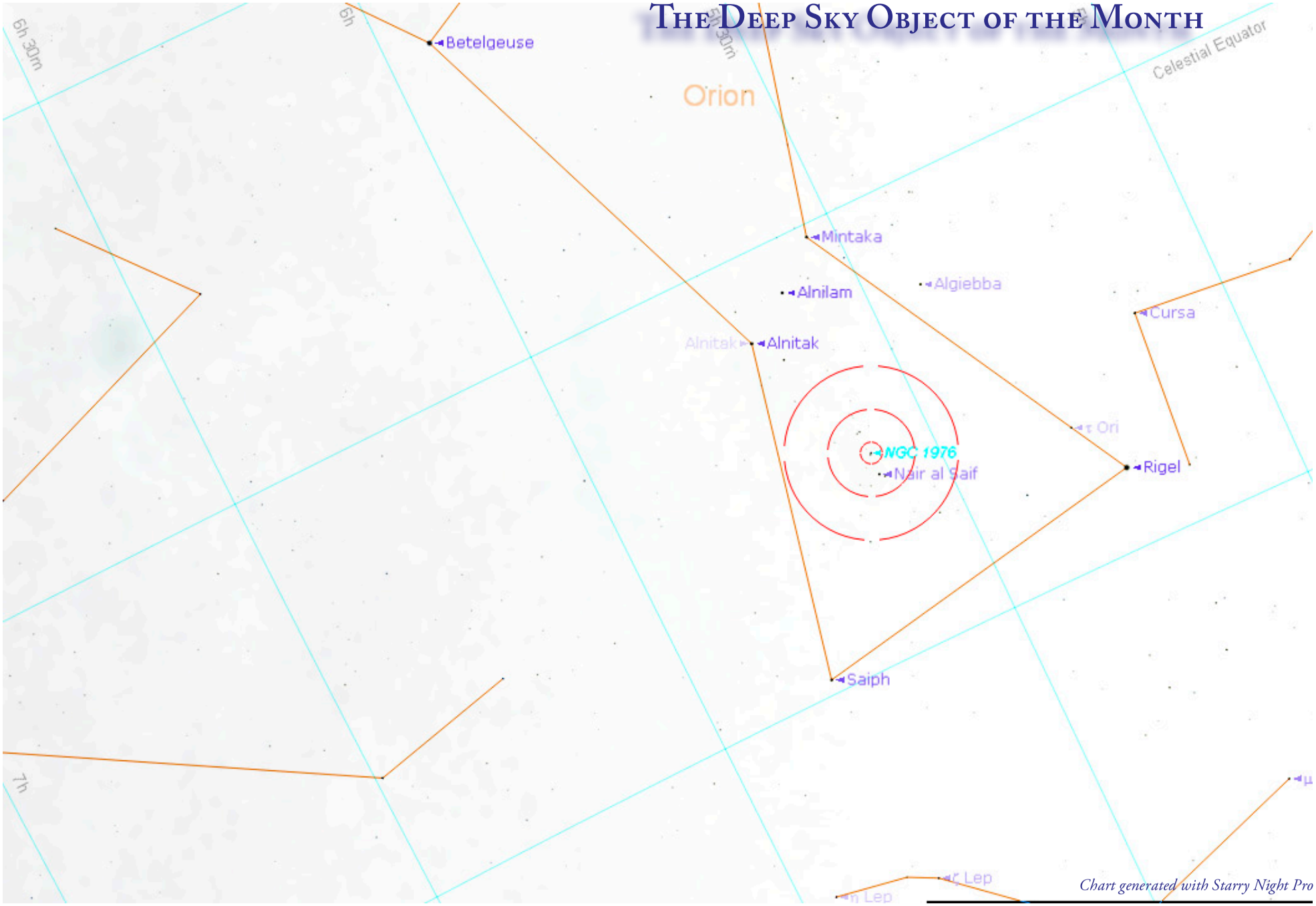
The Program Requirements Control Board (PRCB) reviewed on Wednesday repairs and engineering evaluations associated with cracks on two 21-foot-long, U-shaped aluminum brackets, called stringers, on the shuttle's external tank. Managers decided the analysis and tests required to launch Discovery safely are not complete. The work will continue through next week.

The next status review by the PRCB will be Thursday, Dec. 2. If managers clear Discovery for launch on Dec. 17, the preferred time is approximately 8:51 p.m. EST.

During space shuttle Discovery's final spaceflight, the STS-133 crew members will take important spare parts to the International Space Station along with the Express Logistics Carrier-4. Discovery has been moved to Launch Pad 39A at NASA's Kennedy Space Center in Florida.

Technicians spray foam insulation on a section of repaired stringers on space shuttle Discovery's external fuel tank. Photo credit: NASA

The Deep Sky Object of the Month



M42 (NGC 1976, Orion Nebula) Diffuse Nebula in Orion

RA: 05h 35m 18.0s Dec: -05° 23' 00" Magnitude: 4.0 Size: 40' x 20'

2011 EVAC Governing Body

As we conclude another year, we thank those serving as officers of the club in 2010. Looking ahead, we welcome the new slate of officers for 2011.

Executive Officers

President - Steven Aggas

Vice President - Howard Israel

Secretary - Claude Haynes

Treasurer - Silvio Jaconelli

Board of Directors

Marty Pieczonka

Dave Coshow

Brad Geisler

Ray Heinle

Ed Thomas

Administrative Officers

Properties - David Hatch

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