

# **STARSCAN**

*Johnson Space Center  
Astronomical Society*



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## MARS 2005



*Just In Time For Halloween*

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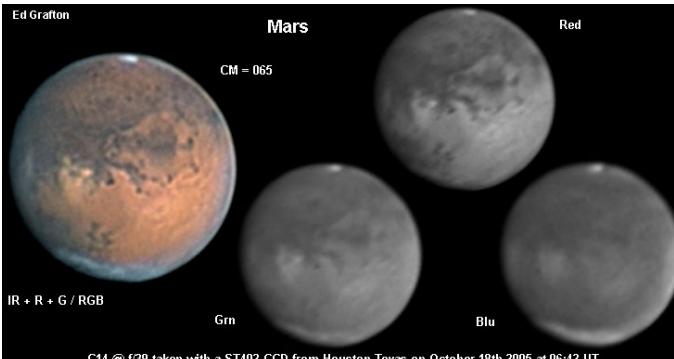
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# Mars 2005

Ken Lester



"Is it true that Mars look as big as the Moon?" Yes, I did get asked this question by an adult during the Bay Area Charter School star party. A lot of "misinformation" was spread around by the press, on the Internet, even the Home Shopping Network about the Mars opposition. That fact aside, JSCAS imagers, Glenn Schaeffer and Ed Grafton have been very busy capturing Mars at its best. Here are some of their images.



## Annular Solar Eclipse In Algeria

### October 3, 2005

By Paul D. Maley  
All photos by Lynn Palmer



Algeria's monument to the war dead



With Dr. Nassim Seghouani (right) the night before the eclipse

The second solar eclipse of 2005 was to be a large annular ring since the moon would be located far from the earth at this point in time. The length of annularity was to be over 4 minutes. Due to a number of reasons I decided to make this a personal expedition. I had never been to Algeria. In spite of its dangerous reputation, inquiries I had made led me to believe that it would be perfectly safe yet I felt it would be best to focus all attention on our little trip and not involve a group.

Lynn and I traveled to Algiers, Algeria by ourselves and had a very tight schedule; only 1 hour from central eclipse to the time we were required to be at the airport to catch our return flights. I had tried to get a decent airfare and was forced to contend with rising fuel prices, difficult schedules and work requirements.



Security is quite heavy especially at the airport.

Two years ago I had made contact with Dr. Jamal Mahmouni in Constantine where my original plan was to observe from the north edge of the path of annularity. However, because my time constraints made this impossible, I was fortunate to contact Dr. Nassim Seghouani (Center for Research in Astronomy, Astrophysics and Geophysics) in Algiers who coordinated permission for me to bring a telescope into the country. Past internal problems within the country made importation of telescopes unlawful and special permission was required to make this happen.

In the evening we were honored to have dinner with Dr. Seghouani, a wonderfully prepared Algerian meal consisting of couscous, salad, meat and vegetables as well as bread.

The day before the eclipse had been clear and warm. The sky had been cloudless for days prior to the eclipse. In our travels from Houston to Paris and then to Milan we finally saw massive cloud bands approaching Milan that stretched into the Mediterranean Sea.



Dinner at Nassim's house

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The ETX90 points in the direction of the sun at first contact



Great weather on October 2

We set up our base in the Hotel Mercure about a mile from the Algiers airport. The hotel staff had given me a room on the top floor (14th floor) and a great view out to the southeast where the entire eclipse could be seen. At 1130pm the night before the sky became overcast. When I awoke at 4:30am the sky had cleared and I went back to sleep with good thoughts. Two hours later it was raining and overcast. Contact 1 was to be at 8:44am, max eclipse about 10:05am and contact 4 at 11:37am. I set up a Meade ETX90 on top of two tables. The room's window opened to allow unobstructed photography of the entire eclipse area of the sky.

Very little is published on Algerian tourism so it was quite impossible to coordinate a group effort here. If we had done so, transport could have been organized and the group moved to avoid the clouds. As central eclipse approached we altered between watching the clouds to see if a break in the clouds appeared and the coverage on Algerian television which had been part of a wonderful campaign mainly coordinated by Dr. Seghouani to educate the public and prevent eye injuries.



A poster in Arabic providing information on the eclipse. Images showed the two best ways to safely observe the eclipse using projection and special eclipse glasses. Unfortunately eclipse glasses were not widely available.



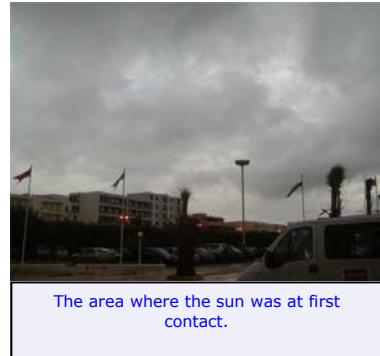
The partial phase as seen live on television and routed from Constantine.

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As part of our recent Ring of Fire Expeditions tradition, a run for the sun was organized and the photo shows Lynn running during the partial phases. This was the 3rd eclipse where we had a 'run for the sun'. In this case it occurred around the Mercure Hotel. But notice the rain on the ground from passing showers.

Central eclipse approached and we thought we had a chance to see the annulus as a gap appeared in the cloud. However, that was not to be.



The area where the sun was at first contact.



At mid eclipse a hole in the cloud opened but not close enough to do any good.



The hole in the direction of the airport.

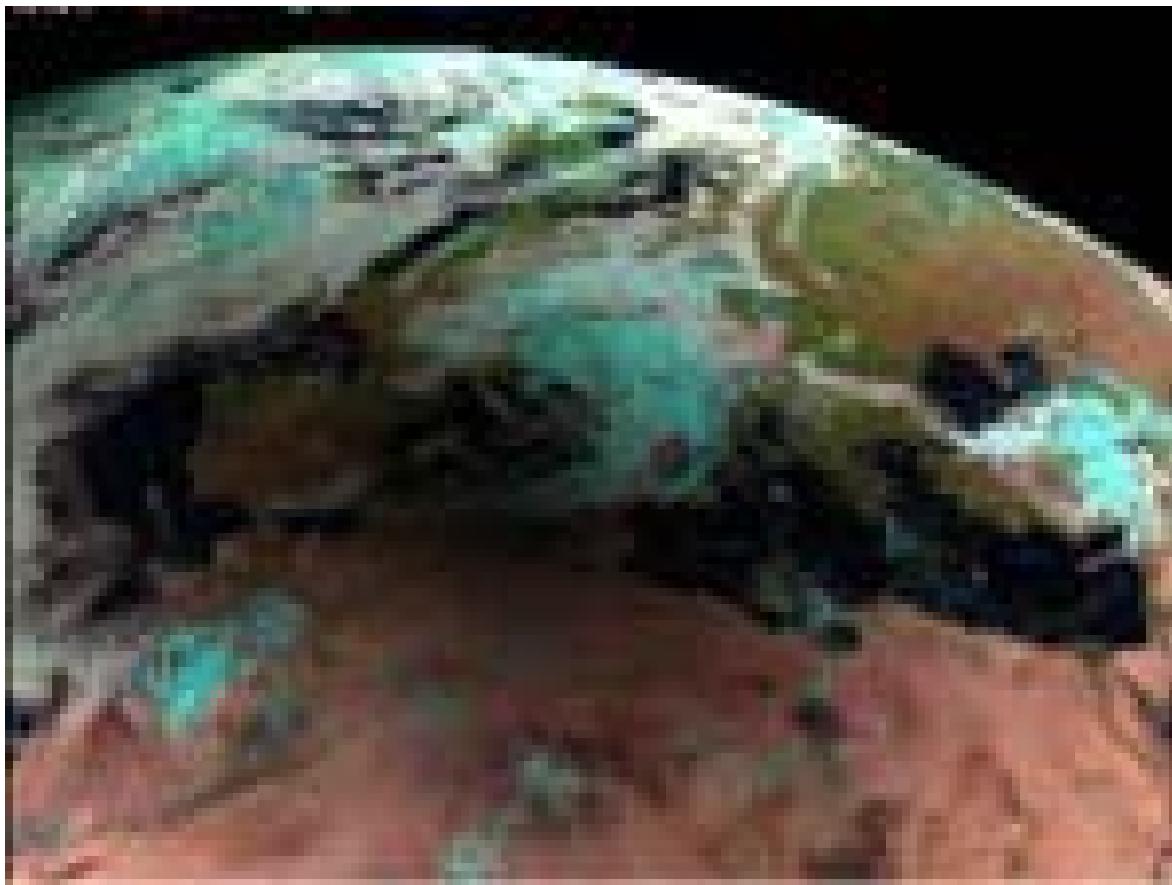
After central eclipse we headed to the airport and tried to catch up with a break in the clouds. The break actually was adjacent to the airport and we could nearly see the sun. However, we needed to get our boarding passes for our flight to Marseilles. When we were inside the terminal I kept checking for evidence of sunlight outside as an indicator that the sun had finally burst through the clouds. I ran up to the second floor and saw a window that appeared to be lit up. The sky cleared in the direction of the sun with about 50 minutes left in the eclipse process. I was able to video tape some of the partial phase through the Royal Air Maroc office windows. Those windows were clear glass and the brightness of the sun was rather overpowering even though light clouds acted as a partial filter. We then ran down to stand in line at the Air France counter which also had a good view to the southeast. There the tempered glass helped filter the sun even more and much better video was obtained.

The cover of the Spanish newspaper 'EL PAÍS' from October 4, 2005. The title 'EL PAÍS' is prominently displayed in large, bold letters. Below it, the subtitle 'DIARIO INDEPENDIENTE DE LA MAÑANA' and the edition information 'EDICIÓN EUROPA www.elpais.es'. The date 'MARTES 4 DE OCTUBRE DE 2005' and page number 'Año XXX. Número 10.348'. At the bottom, there is a graphic showing a sequence of seven white crescent shapes on a dark background, representing the stages of a solar eclipse. A caption below the graphic reads: 'Cientos de miles de españoles hicieron ayer un alto en su actividad para seguir el eclipse anular que recorrió el país durante tres horas. / Páginas 34 y 35'.

News coverage the day after featured eclipse sequential photos from Madrid.

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A satellite view of the moon's shadow on the earth.



De izquierda a derecha, el eclipse observado por una musulmana en Jordania, una miembra de la tribu sánduru en Kenia y un chino en Pekín. / AP/TELDEMO / AP/TELDEMO / AP

Some techniques in observing the eclipse were also published in Spain. From this we see the following. On the left we see a woman in Jordan using eclipse glasses; in the middle, a woman in Archers Post, Kenya (240 miles north of Nairobi) uses smoked glass; finally at right, a man in China uses a water bottle as a filter. The latter method is unsafe. Although smoked glass is safe, you cannot use smoked fish as an eclipse filter.



Traabajadores metalúrgicos en Barcelona con máscaras de soldar. A la derecha, un pastor observa el eclipse anelar visto desde Braga. / AP/TELDEMO / AP/TELDEMO

On the left metal workers in Barcelona use welder's helmets while at the right, a shepherd in the north of Portugal has somehow got a pair of eclipse glasses. There is no evidence that the sheep are using eye protection. The last annular eclipse to be seen in the same region was in 1764.

## Star Party News

Ken Lester



[Image by Becky Ramotowski](#)



### Fort McKavett Star Party

We had a great turnout for our Fall Fort McKavett star party, in spite of Hurricane Rita. The need to evacuate the low lying areas around Houston the weekend before the star party, prevented quite a few members from being able to come. We still had about 27 people who managed to attend anyway.

The weather was pretty good, with mostly clear skies and moderate temperatures. However, the wind bordered on a little too brisk for the CCDers. The Friday night luau was great. King Lopaka (Bob Taylor's name in Hawaiian) prepared a succulent stuffed pig with everyone else bringing a side dish. What a feast.



As always, the Saturday noon BBQ was fabulous. The fort was holding a town reunion and the Friends of Fort McKavett was holding their annual meeting. That meant there was a really big crowd at lunch. Our hats are off to the volunteers who prepared and served this wonderful meal.

[At the BBQ—images by Ken Lester](#)

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According to Becky Ramotowski, "One other highlight of the trip to the Fort was seeing that bodacious fireball that streaked all the way across the sky on Friday night. It was one of the best ones I've ever seen, and I think just about everyone on the field saw it."

After the BBQ, we were treated to a cannon firing demonstrations by some of the living historians.

Since the hurricane changed so many of our presenter's plans we had to cancel the school visit for Friday. It will be rescheduled for the spring. We had a nice turn out of public Saturday night. We made many new friends and lots of people came away with a renewed interest in looking up!

## Upcoming Star Parties



Cannon Fire—images by Ken Lester

November will be a busy month for star parties. The last Haak Winery star party of the year will be Saturday, November 5<sup>th</sup>. The Haak star party is one of our premier events. The skies in Santa Fe are darker than most around the Houston area and the adult beverages are a treat. The winery has just released a new vintage called the Pink Pelican.

Following the Haak star party will be our last Moody Gardens Star Party. It will be held on November 12<sup>th</sup>. On November 16<sup>th</sup> and 17<sup>th</sup>, Space Center Houston has requested a solar party between 11 am and 2 pm. If you have solar filters for your scope or an H-alpha scope, please consider supporting this event.

The last star party of the year is the evening of November 17th. It will be held at Seabrook Intermediate school. Check our star party web page at <http://www.riverofstars.net/JSCAS/StarParties/starparty.htm> for details, maps and directions to these star parties.

Event	Date	Sun Set	Moon		Jupiter		Saturn		Mars		Venus	
			Illum.	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise
<b>2005</b>												
Haak Winery	Nov 5	17:29	18	10:26	20:26	05:45	16:57	23:31	12:58	17:31	06:52	10:26
Moody Gardens	Nov 12	17:48	89	15:22	03:05	05:24	16:34	23:04	12:31	16:54	06:13	10:28
Space Center Houston	Nov 16 - Nov 17			Solar Observing from 11 am to 2 pm								
Seabrook Intermediate	Nov 17	17:40	95	18:36	08:26	05:10	16:18	22:44	12:11	16:28	05:47	10:27

## Upcoming Events

The 3<sup>rd</sup> annual **Eldorado Star Party** will be held November 2<sup>nd</sup> — 5<sup>th</sup> at the X-bar Ranch near Eldorado Texas. The ranch is located 46 miles west of Fort McKavett and 8 miles north of I-10. For more information visit their web site at: <http://www.eldoradostarparty.org>.

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The **50<sup>th</sup> anniversary picnic for the Houston Astronomical Society** has been rescheduled for January 21, 2006. In place of hamburgers and hot dogs, the organizers felt that chili and beef stew would be better for that time of year.

50 years ago in September, 1955, the Houston Astronomical Society was formed. The Society has done many new things over the years. One of the major accomplishments since the founding of the Society was the building of their Columbus Observatory. The land surveying started in 1979, and in 1982 the current observatory building was dedicated. Three years later a time capsule was placed in the ground on the south side of the building.

On Saturday, January 21, 2006 (with a rain date of January 28<sup>th</sup>), HAS will have their annual picnic (the Fall Picnic was postponed due to Hurricane Rita). At the picnic they will unearth and open the capsule. To help celebrate their 50<sup>th</sup> anniversary they are inviting all the area clubs to attend their picnic. As usual, the HAS will supply the food for the picnic, including chili, beef stew and sides, you bring the drinks. We will also have the observatory open for our visitors, a constellation tour at twilight, and the usual observing session when it gets dark. Bring your own telescope to test their night skies. There will be a "light window" around midnight that if you would like to leave you may, or you can to spend the night at the site if you wish.

Here is the planned schedule of activities:

Gates open 10 AM on Saturday  
Unearthing of time capsule at 2 PM  
Dinner served at 4 PM  
Observing when it gets dark: Sunset 05:57 PM, Twilight ends 07:18 PM  
Gates close Noon on Sunday

They need an RSVP by January 16<sup>th</sup> if you are planning to attend. Please RSVP to Bob Taylor if you plan to attend.

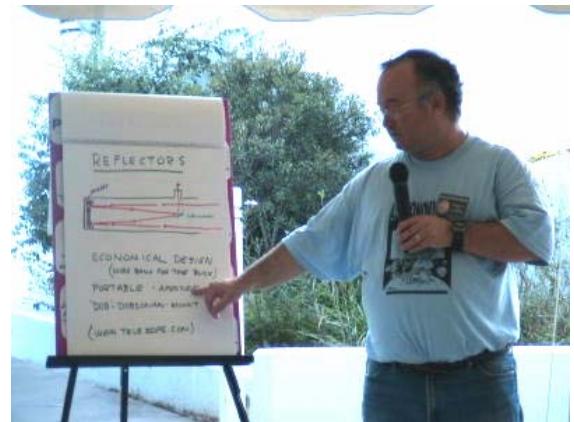
You may bring your RV / trailer / 5th wheel to the site. However, we do not have enough utilities for power, water and dump to support everyone. So if you plan to come to the site be prepared to dry camp (we do have a dump station if you want to dump before leaving). As an alternative, there is an RV park on I-10 at Hatterman Lane, which is the exit to get to the site. From there it is about a 15 minute drive to our site. If you are interested in staying at the RV park, here is their contact info: Motorcoach RV Park, 2965 Hwy. 90, Weimar, TX 78962, <http://www.motorcoachrvpark.com>, phone: 979-732-9494.

Motel Information: There are several motels in Columbus if you want to spend the night or part of the next day before going back home. Watch for details in the coming months. Mark your calendar now for January 21<sup>st</sup>. Here is a link to our web site: <http://spacibm.rice.edu/~has/AnniversaryPicnic.htm>.

## Astronomy Day 2005: A Pictorial Review

Images Courtesy of David Haviland

Barbara Wilson reports that the park headquarters count for Astronomy Day was 1,586. There were 441 individual campers in the park, for a total of 2027 people count on Saturday. So the conservative number in attendance for Astronomy Day is 1586. There were a total of 62 volunteers who logged in for this event.



## 2006 Star Party Dates

Saturday, March 4<sup>th</sup> — Moody Gardens  
Thursday, March 30<sup>th</sup> — Sunday, April 2<sup>nd</sup> — Fort McKavett  
Saturday, April 22<sup>nd</sup> — Haak Winery  
Sunday, April 23<sup>rd</sup> — Sunday, April 30<sup>th</sup> — TSP  
Saturday, August 26<sup>th</sup> — Moody Gardens  
Saturday, September 23<sup>rd</sup> — Haak Winery  
Thursday, October 19<sup>th</sup> — Sunday, October 22<sup>nd</sup> — Fort McKavett  
Saturday, October 28<sup>th</sup> — Moody Gardens  
Saturday, November 11<sup>th</sup> — Haak Winery

## Sky & Telescope and now Astronomy Magazine Subscriptions – Don't Forget about the Club Discount!

Sky & Telescope offers a "Club Discount" on subscriptions. You can subscribe to Sky and Telescope for \$10 off the normal price (\$32.95 with the club discount). Astronomy magazine is also offering a club discount. JSCAS members can subscribe to Astronomy for \$29 a year. We need to have a minimum of five subscribers to take advantage of the discount. If you are a current subscriber, *please* contact me so I can put you on the list for the club discount when your subscription is due for renewal!

Contact me by the email listed on the JSCAS web site, catch me at a meeting, or send your check and renewal form to my home address: 2407 Elkton Ct., Pearland, TX, 77584. I'll put your renewal in the mail within 48 hours after I receive it.

David Haviland  
Vice-president and Secretary

### HOUSTON AREA ASTRONOMY CLUBS

Brazosport Astronomy Club  
Meets the Third Tuesday of the month, 7:45 p.m.  
At the Planetarium  
400 College Drive  
Clute, Texas  
For more information, contact Judi James at the Planetarium  
979-265-3376

Fort Bend Astronomy Club <http://www.fbac.org/>  
Meets the third Friday of the month, 7:00 p.m.  
First Colony Conference Center  
3232 Austin Pkwy  
Sugar Land, Texas

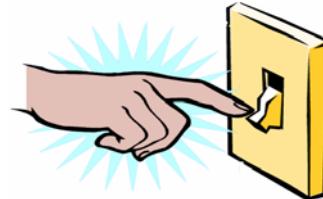
Houston Astronomical Society <http://spacibm.rice.edu/~has/>  
Meets the first Friday of the month, 8:00 p.m.  
University of Houston, University Park  
Science and Research Building, room 117

North Houston Astronomy Club <http://www.astronomyclub.org/>  
Meets the fourth Friday of the month, 7:30 p.m.  
In the Teaching Theater at Kingwood College  
20000 Kingwood Drive  
Kingwood, Texas

## Help turn off the lights...

Join the  
**International Dark-Sky Association (IDA)**  
<http://www.darksky.org>

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



Visit the homepage of the Texas IDA affiliate of the International Dark-Sky Association. Their web site is at: <http://www.texasida.org/>.

According to the Texas IDA, on October 20, 2005 in Washington D.C., the Dallas-Fort Worth International Airport received the 'Star of Energy' Award from the Alliance to Save Energy. (See <http://www.ase.org/content/article/detail/2323>). The Texas IDA suggests the following.

Please contact the D-FW International Airport Board of Directors to congratulate them on this award, and more importantly as you can read below, to urge them to direct their attention to the lighting on the DFW main thoroughfare and parking lots, to help meet their energy-saving goals for the future. Jeff Wentworth, Fort Worth, is chairman of the Board of Directors, P.O. Box 619428, DFW Airport, TX 85261-9428. Executive Offices telephone is 972.574.6701, but email is available only through their secretary.

Many of you have flown over DFW International Airport at night. In spite of many improvements they have made to save energy there, the effects of certain unshielded outdoor lighting is 'glaringly' obvious. Our observer in Irving, east of DFW reports that the clouds in the night sky to the east of Irving are pinkish orange and the sky glow is brighter looking toward DFW than is the Dallas sky to the west.

## Member Recognition

An image of Arp 295 taken with the 1 meter USNO telescope near Flagstaff by Arne Henden and processed by JSCAS' **Al Kelly** was featured on Astronomy Picture of the Day on October 8, 2005.

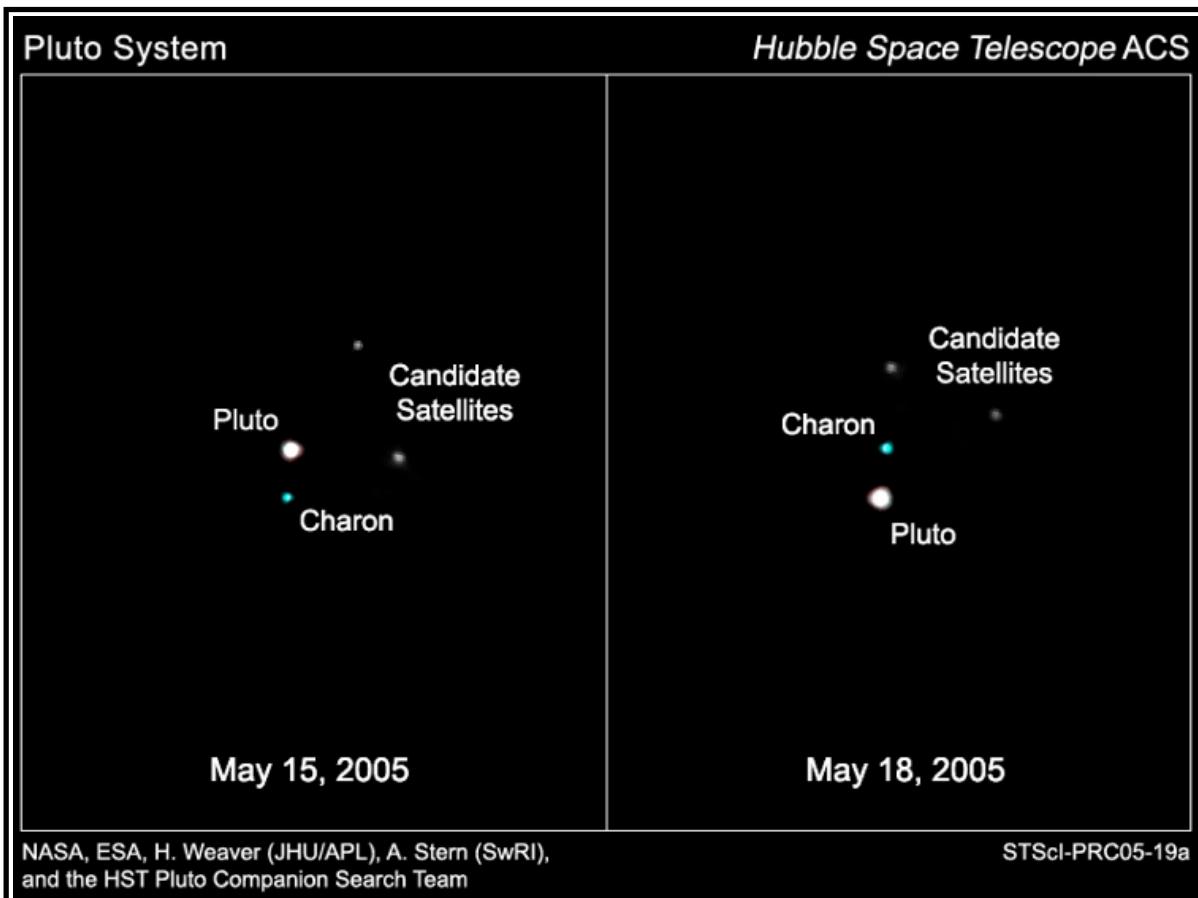
Ed Grafton's image of a dust storm on Mars appeared on SpaceWeather.com on October 20<sup>th</sup>. This image is one of many that Ed has cranked out during this Mars opposition. To see them all, visit his web site at <http://www.ghg.net/egrafton/>.

Sky & Telescope ran a featured article on JSCAS past president **Becky Ramotowski's** sighting of Mercury during daytime. The 1½ page article, starting on page 74 of the December issue, describes Becky's daytime pursuit of Mercury. In author Stephen O'Meara's words, "...Ramotowski became the first person I know of to accomplish a naked-eye sighting of Mercury without the aid of a solar eclipse."

Ed Malewitz reports that **Al Kelly's** image of NGC 1931 was featured in Astronomy Magazine's Newsletter the week of October 16<sup>th</sup>.

## Library News

The JSCAS library has received two new books, donated at the All Clubs Meeting in October. The first, donated by **Cynthia Gustava**, is *Star Clusters*, by Brent Archinal and Steven Hynes. The second, donated by **Drell Setzer**, is *Cosmic Butterflies, The Colorful Mysteries of Planetary Nebulae*, by Dr. Sun Kwok. Our thanks to Drell and Cynthia for their generous contributions.



### Hubble Spies Possible New Moons Orbiting Pluto

STScl-PRC2005-19a

These Hubble Space Telescope images, taken by the Advanced Camera for Surveys, reveal Pluto, its large moon Charon, and the planet's two new candidate satellites. Between May 15 and May 18, 2005, Charon, and the putative moons, provisionally designated P1 and P2, all appear to rotate counterclockwise around Pluto. P1 and P2 move less than Charon because they are farther from Pluto, and therefore would be orbiting at slower speeds. P1 and P2 are thousands of times less bright than Pluto and Charon. The enhanced-color images of Pluto (the brightest object) and Charon (to the right of Pluto) were constructed by combining short exposure images taken in filters near 475 nanometers (blue) and 555 nanometers (green-yellow). The images of the new satellites were made from longer exposures taken in a single filter centered near 606 nanometers (yellow), so no color information is available for them.

### NASA Space Observatories Glimpse Faint Afterglow of Nearby Stellar Explosion

Intricate wisps of glowing gas float amid a myriad of stars in this image of a supernova remnant, the ejected material from the explosion of a massive star, that occurred some 3,000 years ago. This titanic explosion took place in the Large Magellanic Cloud, a nearby neighbor galaxy some 160,000

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light-years away. This composite image of N132D comprises visible-light data taken in January 2004 with Hubble's Advanced Camera for Surveys, and X-ray images obtained in July 2000 by Chandra's Advanced CCD Imaging Spectrometer. The complex structure of N132D is due to the expanding supersonic shock wave from the explosion impacting the interstellar gas of the LMC. A supernova remnant like N132D provides information on stellar evolution and the creation of chemical elements such as oxygen through nuclear reactions in their cores.



Credit: NASA, ESA, and The Hubble Heritage Team (STScI/AURA)

## NASA Takes Giant Step Toward Finding Earth-Like Planets

News Release: 2005-157: Sept. 29, 2005

Are we alone in the universe? Are there planets like Earth around other "suns" that might harbor life? Thanks to a recent technology breakthrough on a key NASA planet-finding project, the dream of answering those questions is no longer light-years away.

On a crystal clear, star-filled night at Hawaii's Keck Observatory in Mauna Kea, NASA engineers successfully suppressed the blinding light of three stars, including the well-known Vega, by 100 times. This breakthrough will enable scientists to detect the dim dust disks around stars, where planets might be forming. Normally the disks are obscured by the glare of the starlight.

Engineers accomplished this challenging feat with the Keck Interferometer, which links the observatory's two 10-meter (33-feet) telescopes. By combining light from the telescopes, the Keck Interferometer has a resolving power equivalent to a football-field sized telescope. The "technological touchdown" of blocking starlight was achieved by adding an instrument called a "nuller."

This setup may eventually help scientists select targets for NASA's envisioned Terrestrial Planet Finder missions. The success of those potential future missions, one observing in visible light and one in infrared, depends on being able to find Earth-like planets in the dust rings around stars.

"We have proven that the Keck Interferometer can block light from nearby stars, which will allow us to survey the amount of dust around them," said Dr. James Fanson, project manager for the Keck Interferometer at NASA's Jet Propulsion Laboratory. That survey will begin in late 2006 after the team refines the nuller's sensitivity level.

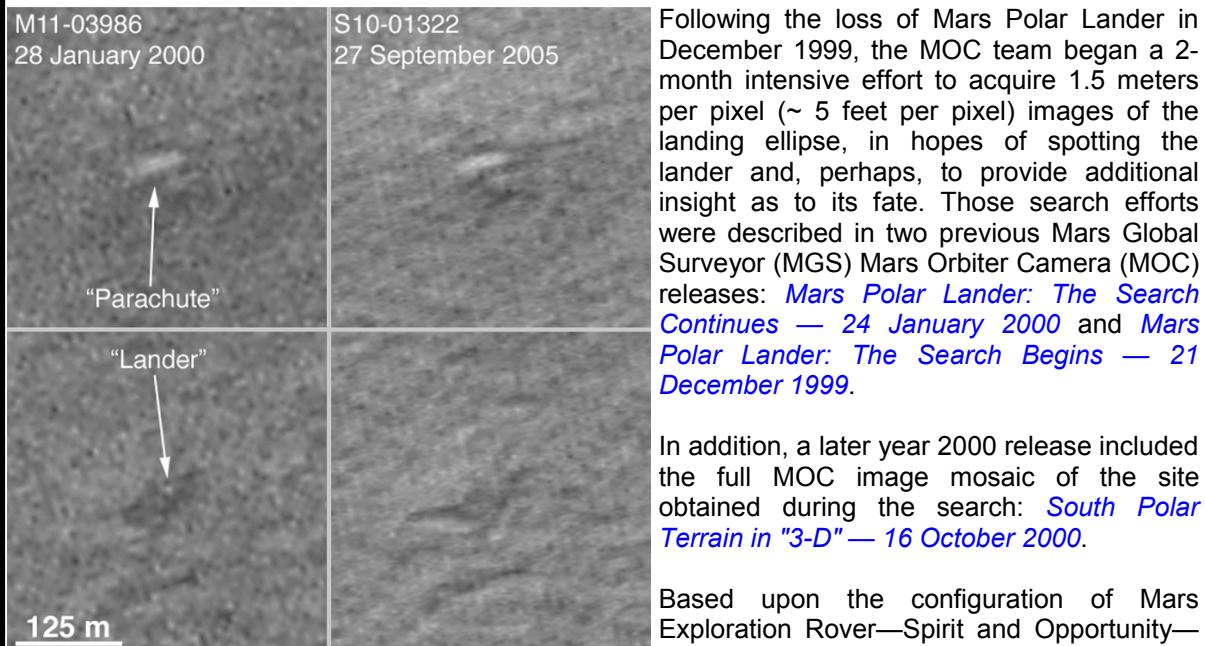
Combined information from all of NASA's planet-hunting missions will provide a complete picture of possible Earth-like planets: how big they are, whether they are warm enough for life, and if their atmospheres and surfaces show chemical signatures of current life.

"People have been talking about whether there are other earths out there for 2,500 years. Only now are we developing the technology to go find out," said Michael Devirian, manager of NASA's Navigator Program at JPL, which is investigating potential planet-exploring missions.

So far, scientists around the world have found 150 planets orbiting other stars. Most are giants, like Jupiter; none is as small as Earth. Scientists believe the best odds of finding life outside our solar system are on Earth-sized planets, particularly those with the right temperature, density and chemistry.

## Mars Polar Lander NOT Found

MGS MOC Release No. MOC2-1253, 17 October 2005



Following the loss of Mars Polar Lander in December 1999, the MOC team began a 2-month intensive effort to acquire 1.5 meters per pixel (~ 5 feet per pixel) images of the landing ellipse, in hopes of spotting the lander and, perhaps, to provide additional insight as to its fate. Those search efforts were described in two previous Mars Global Surveyor (MGS) Mars Orbiter Camera (MOC) releases: [Mars Polar Lander: The Search Continues — 24 January 2000](#) and [Mars Polar Lander: The Search Begins — 21 December 1999](#).

In addition, a later year 2000 release included the full MOC image mosaic of the site obtained during the search: [South Polar Terrain in "3-D" — 16 October 2000](#).

Based upon the configuration of Mars Exploration Rover—Spirit and Opportunity—lander hardware observed from orbit by MOC

In early 2004, we revisited the December 1999/January 2000 images of the Mars Polar Lander site. Earlier this year, we identified a location in images acquired in January 2000 that included features reminiscent of those that might be expected to exist at the location where the Mars Polar Lander reached the surface. Specifically, we identified a bright feature that resembled a parachute, and a dark area with a small, light-toned central spot that could be the location of the lander amid a dust-deflated area cleared by the lander's descent engines. This finding, along with a definitive image of the Viking 2 lander, was detailed in: [MGS Finds Viking Lander 2 and Mars Polar Lander \(Maybe\) — 5 May 2005](#).

At the time of this identification in early 2005, the Mars Polar Lander landing ellipse was covered by seasonal carbon dioxide frost. As the frost began to sublime away and spring gave way to summer, we attempted to acquire an image of the candidate Mars Polar Lander site at a spatial resolution that is higher than we were able to achieve during the initial search in December 1999/January 2000. To obtain an image with an effective spatial resolution better than 1 meter per pixel, we used the cPROTO (compensated Pitch and ROLL Targeted Observation) technique described and illustrated last year in: [cPROTO Views of Spirit's Rover Tracks and Athabasca Vallis Flood Features — 27 September 2004](#).

Hitting a specific target with the cPROTO technique is challenging, and often it takes 3–4 attempts before we hit. For the candidate Mars Polar Lander location, we made 6 attempts. The first was in April 2005, when the surface was still covered with frost—that image was saturated white because of the frost. The next attempts were made after the frost had sublimed away—these were made in July, August, and September 2005. We finally hit the candidate lander location on 27 September 2005.

The figure above compares the features extracted from the earlier, January 2000, image with the same location seen in the new, September 2005, image. The two pictures were taken under nearly

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identical illumination and atmospheric conditions, almost exactly 3 Mars years apart. The feature identified as a candidate for Mars Polar Lander's parachute is found to be the illuminated slope of a small hill. The hill is part of a group of similar hills in the area. The dark feature that was identified as possible rocket blast zone has faded (which would be expected owing to dust deposited by dust storms), but, more importantly, the spot interpreted to be the lander has disappeared. In reality, this spot is a pixel whose value differed from its neighbors in the first image owing to a bigger than average contribution of noise. Close inspection of the January 2000 image (bottom left) shows many small bright and dark blurry spots that do not show up in the September 2005 image (bottom right). There are even smaller, blurry spots in the second image, they are also noise. The fact that these pixels do not coincide is excellent evidence that they are not real features on the surface of Mars.

We conclude that our interpretation of these features was in error. This is NOT the location of the Mars Polar Lander. Because the landing uncertainty ellipse is so much larger than our images, and we do not have another candidate to which to target additional cPROTOs, we cannot continue to hunt for the lander. Finding it now falls to the High Resolution Imaging Science Experiment (HiRISE) presently en route to Mars on-board the Mars Reconnaissance Orbiter (MRO) spacecraft.

## Cassini Views Dione, a Frigid Ice World

October 17, 2005

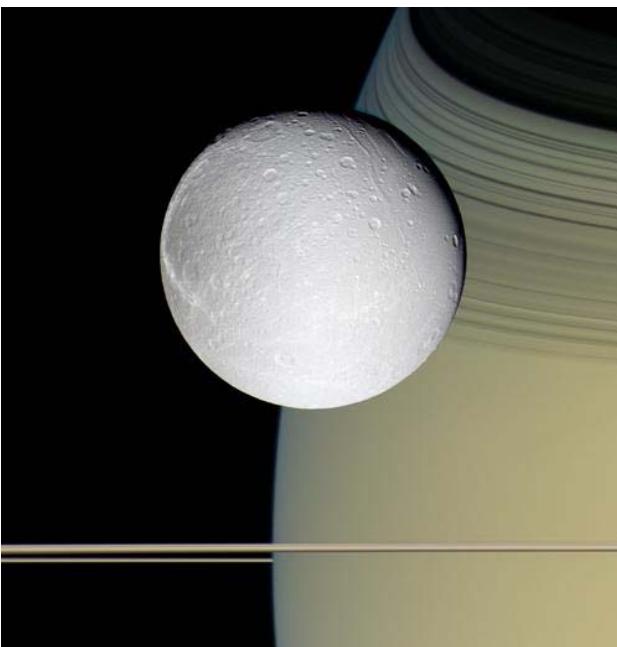
JPL News Release - 2005

Speeding toward pale, icy Dione, Cassini's view is enriched by the tranquil gold and blue hues of Saturn in the distance. The horizontal stripes near the bottom of the image are Saturn's rings. The spacecraft was nearly in the plane of the rings when the images were taken, thinning them by perspective and masking their awesome scale. The thin, curving shadows of the C ring and part of the B ring adorn the northern latitudes visible here, a reminder of the rings' grandeur.

It is notable that Dione, like most of the other icy Saturnian satellites, looks no different in natural color than in monochrome images.

Images taken on Oct. 11, 2005, with blue, green and infrared (centered at 752 nanometers) spectral filters were used to create this color view, which approximates the scene as it would appear to the human eye. The images were obtained with the Cassini spacecraft wide-angle camera at a distance of approximately 39,000 kilometers (24,200 miles) from Dione and at a Sun-Dione-spacecraft, or phase, angle of 22 degrees. The image scale is about 2 kilometers (1 mile) per pixel.

The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency. The Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, manages the mission for NASA's Science Mission Directorate, Washington, D.C. The Cassini orbiter and its two onboard cameras were designed, developed and assembled at JPL. The imaging operations center is based at the Space Science Institute in Boulder, Colorado.



## Failed Stars May Succeed in Planet Business

Whitney Clavin, Propulsion Laboratory, Pasadena, Calif.

News Release: 2005-160

Oct. 20, 2005

NASA's Spitzer Space Telescope has spotted the very beginnings of what might become planets around the puniest of celestial orbs – brown dwarfs, or "failed stars."

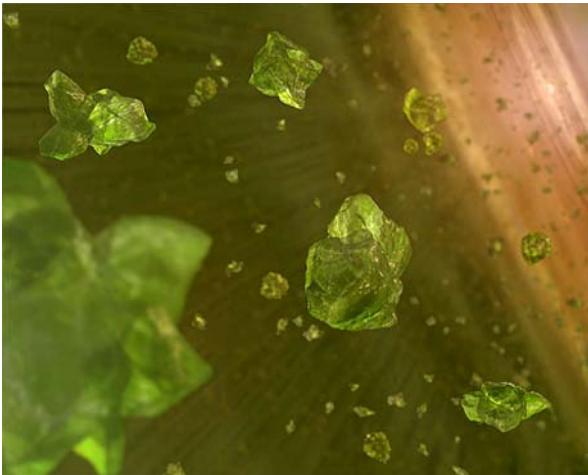
The telescope's infrared eyes have for the first time detected clumps of microscopic dust grains and tiny crystals orbiting five brown dwarfs. These clumps and crystals are thought to collide and further lump together to eventually make planets. Similar materials are seen in planet-forming regions around stars and in comets, the remnants of our own solar system's construction.

The findings provide evidence that brown dwarfs, despite being colder and dimmer than stars, undergo the same initial steps of the planet-building process.

"We are learning that the first stages of planet formation are more robust than previously believed," said Dr. Dániel Apai, an astronomer at the University of Arizona, Tucson, and member of the NASA Astrobiology Institute's Life and Planets Astrobiology Center. "Spitzer has given us the possibility to study how planets are built in widely different environments."

The observations also imply that brown dwarfs might be good targets for future planet-hunting missions. Astronomers do not know if life could exist on planets around brown dwarfs.

Brown dwarfs differ from stars largely due to their mass. They lack the mass to ignite internally and shine brightly. However, they are believed to arise like stars, out of thick clouds of gas and dust that collapse under their own weight. And like stars, brown dwarfs develop disks of gas and dust that circle around them. Spitzer has observed many of these disks, which glow at infrared wavelengths



Artist Concept, Credit: NASA/JPL-Caltech/T. Pyle (SSC)

## First Internet-built Student Satellite Successfully Launched

ESA Press Release N° 47-2005; 27 October 2005



Credit: ESA

SSETI Express, a low Earth orbit spacecraft designed and built by European university students under the supervision of ESA's Education Department, was successfully launched this morning (Oct 27, 2005) at 08:52 hrs from the Plesetsk Cosmodrome on a Russian Cosmos 3M launcher. At 10:29 hrs this morning, the ground control centre at the University in Aalborg (DK) received the first signals from the satellite.

SSETI Express (SSETI being the acronym for Student Space Exploration and Technology Initiative) is a small spacecraft, similar in size and shape to a washing machine (approx. 60x60 x90 cm). Weighing about 62 kg it

(Continued on page 19)

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has a payload of 24 kg. On-board the student-built spacecraft were three pico-satellites, extremely small satellites weighing around one kg each. These were deployed one hour and 40 minutes after launch. In addition to acting as a test bed for many designs, including a cold-gas attitude control system, SSETI Express will also take pictures of the Earth and function as a radio transponder.

The challenge has been for the 23 university groups, working from locations spread across Europe and with very different cultural backgrounds, to work together via the Internet to jointly build the satellite.

The Student Space Exploration and Technology Initiative, which provides the framework for the mission, was launched by ESA's Education Department in 2000 to get European students involved in real space missions. The initiative aims at giving students practical hands-on experience and encourage them to take up careers in space technology and science, thereby helping to create a pool of talented experts for the future.

Since its creation, SSETI has developed a network of students, educational institutions and organisations to facilitate work on various spacecraft projects. More than 400 European students have made an active, long-term contribution to this initiative, either as part of their degree course or in their spare time. In addition, many hundreds more have been involved in or inspired by SSETI.

SSETI students are currently working on two other satellite projects:

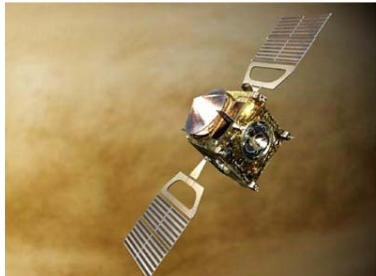
- SSETI ESEO: The European Student Earth Orbiter, a 120kg spacecraft designed for Ariane 5, planned for launch in 2008.
- A study for a European Student Moon Orbiter - timeframe 2010-2012. The orbiter will conduct experiments on its way to the Moon as well as when lunar orbit is achieved.

**31 October 2005**

Since Friday morning, the ground control station in Aalborg has not had any contact with SSETI Express. Thorough analysis over the weekend indicates that a failure in the electrical power system on board the spacecraft is preventing the batteries from charging, resulting in a shutdown of the satellite. There is a small but significant possibility of recovery, the likelihood of which is being ascertained by ongoing testing.

## Venus Express Set for Launch to the Cryptic Planet

ESA INFO 01-2005. 21 October 2005



Artist's impression of Venus Express  
Credit: ESA

A dense curtain of mysteries surrounding Venus, the hot and hazy sister planet to Earth, awaits to be opened after the launch of Venus Express, the next planetary probe of the European Space Agency.

On Wednesday, 26 October 2005, the sky over the Baikonur Cosmodrome, Kazakhstan, will be illuminated by the blast from a Soyuz-Fregat rocket carrying this precious spacecraft aloft.

The celestial motion of the planets in our Solar System has given  
*(Continued on page 20)*

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Venus Express the window to travel to Venus on the best route. In fact, every nineteen months Venus reaches the point where a voyage from Earth is the most fuel-efficient. To take advantage of this opportunity, ESA has opted to launch Venus Express within the next 'launch window', opening on 26 October this year and closing about one month later, on 24 November.

Again, due to the relative motion of Earth and Venus, plus Earth's daily rotation, there is only one short period per day when it is possible to launch, lasting only a few seconds. The first launch opportunity is on 26 October at 06:43 Central European Summer Time (CEST) (10:43 in Baikonur).

Venus Express will take only 163 days, a little more than five months, to reach Venus. Then, in April 2006, the adventure of exploration will begin with Venus finally welcoming a spacecraft, a fully European one, more than ten years after humankind paid the last visit.

### **The journey starts at launch**

One of the most reliable launchers in the world, the Soyuz-Fregat rocket, will set Venus Express on course for its target. Soyuz, procured by the European/Russian Starsem company, consists of three main stages with an additional upper stage, Fregat, atop. Venus Express is attached to this upper stage.

The injection of Venus Express into the interplanetary trajectory which will bring it to Venus consists of three phases. In the first nine minutes after launch, Soyuz will perform the first phase, that is an almost vertical ascent trajectory, in which it is boosted to about 190 kilometres altitude by its three stages, separating in sequence.

In the second phase, the Fregat-Venus Express 'block', now free from the Soyuz, is injected into a circular parking orbit around Earth heading east. This injection is done by the first burn of the Fregat engine, due to take place at 06:52 CEST (04:52 GMT).

At 08:03 CEST, about one hour and twenty minutes after lift-off and after an almost full circle around Earth, the third phase starts. While flying over Africa, Fregat will ignite for a second time to escape Earth orbit and head into the hyperbolic trajectory that will bring the spacecraft to Venus.

After this burn, Fregat will gently release Venus Express, by firing a separation mechanism. With this last step, the launcher will have concluded its task.

### **Plenty of ground activities for a successful trip**

Once separated from Fregat at 08:21 CEST, Venus Express will be awoken from its dormant status by a series of automatic on-board commands, such as the activation of its propulsion and thermal control systems, the deployment of solar arrays and maneuvers to 'orient' itself in space.

From this moment the spacecraft comes under the control of ESA's European Space Operations Centre (ESOC) for the full duration of the mission. The flight control team co-ordinate and manage a network of ESA ground stations and antennas around the globe, to regularly communicate with the spacecraft.

The New Norcia station in Australia and the Kourou station in French Guiana will in turn communicate with Venus Express in the initial phase of the mission. The first opportunity to receive a signal and confirm that the spacecraft is in good health will be the privilege of the New Norcia station about two hours after launch.

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In this early phase of the mission, once ESOC has taken full control of the satellite, the spacecraft will be fully activated. Operations will also include two burns of the Venus Express thrusters, to correct any possible error in the trajectory after separation from Fregat.

On 28 October, the newly inaugurated Cebreros station in Spain, with its 35-metre antenna, will start to take an active part in ground network operations to relay information between ESOC and the spacecraft. During the cruise phase and once the spacecraft has arrived at Venus, Cebreros will be the main information relay point between ESOC and Venus Express.

### Reaching for Venus

During its 163 day journey to Venus, Venus Express will cover about 400 million kilometers at an average speed of some 28 kilometers per second with respect to the Sun. After an initial commissioning period, the spacecraft will cruise peacefully with no specific operations planned, besides routine checks of its subsystems and scientific instruments, and minor trajectory corrections if needed.

The thrills will start again on 6 April 2006, at the end of the cruise, when the spacecraft will have to perform a delicate maneuver to brake and be captured into orbit around Venus. The energy required for Venus Orbit Insertion (VOI) is very high, and will need the main engine to fire (burn) for approximately 51 minutes.

This maneuver will place the spacecraft in a highly elliptical 'capture' orbit around the planet, with a pericentre (closest point to the Venusian surface) of 250 kilometers near the north pole, and an apocentre (furthest distance from the surface) at 350 000 kilometers roughly at the south pole.

At the end of this initial 10-day 'capture' orbit, Venus Express will ignite its main engine again. About six days later, after a series of other minor orbit adjustments, the spacecraft will have been positioned in its final operational orbit. This will be an elliptical polar orbit, lying between 250 and 66 000 kilometers above Venus, and will last 24 hours.



Artist's impression of Venus Express mounted on the Fregat upper-stage rocket.  
Credits: ESA / AOES Medialab

The capture orbit could already provide the first opportunity for scientific observations, but the nominal science phase will start on 4 July 2006, after the spacecraft and instruments commissioning phase has been concluded.

The set of seven instruments on board Venus Express represents an unprecedented diagnostic package to study the thick and enigmatic atmosphere of Venus - an atmosphere so dense and so intimately coupled with the planet's surface, that studying it will help provide clues about the features, status and evolution of the entire planet.

# MEMBER'S GALLERY

**Mars**  
**Fort McKavett, Texas**



10/02/05 1:43am CST seeing 6/10  
20" Obsession@f/10 Toucam Pro II  
483 Frames out of 625/RegiStax3

Mars Simulator  
T. Ikemura

**Mars ▲**  
©Glenn Schaffer

**▼ M 22**  
©Chris Wells

This image was taken from League City, Texas on October 28th around 8pm when Sagittarius was very low in the horizon. Celestron C8 at f7 on a PM1 equatorial mount. L/RGB Processing from 13 clear, 5 red, 5 green and 11 blue images. All images were 15 seconds in duration.





### ▲ Helix Nebula

©Chuck Shaw Images taken at the Fall Fort McKavett Star Party. All three were LRGB shots, using an ED80 with HX916 camera. All used about 60 minutes for the luminance (un-binned), and the times for the chrominance varied between 10 to 30 minutes for the different shots. AstroDon parfocal LRGB filters were used in an Andy Homeyer motorized filter wheel. Processing was all done in AIP Version 2, and Photoshop 5.5.

### ▼ M20, The Trifid Nebula

### ▲ NGC 6960, The Veil Nebula



# Visual Observing November 2005

Chris Randall

## ★SSO: (Solar System Objects) Summary for the 15 November 05

Object	Const	Mag	% III	Rise Time	Transient	Set Time
<b>Sun</b>	Lib	-26.7	100	06:45	12:04	17:24
<b>Moon</b>	Tau	----	100	17:06	00:00	06:20
<b>Mercury</b>	Oph	-0.9	23	08:11	13:15	18:23
<b>Venus</b>	Sgr	-4.5	43	10:30	15:26	20:26
<b>Mars</b>	Ari	-2.1	100	16:39	23:21	05:59
<b>Jupiter</b>	Vir	-1.7	100	05:17	10:51	16:25
<b>Saturn</b>	Cnc	0.6	100	22:53	05:37	12:21
<b>Uranus</b>	Aqr	5.8	100	13:35	19:19	00:58
<b>Neptune</b>	Cap	7.9	100	12:26	17:49	23:16
<b>Pluto</b>	Ser	14.0	99	08:47	14:12	19:41
<b>TNO 2003 UB313</b>	Cet	???	99	21:32	03:21	09:10
<b>Quaoar</b>	Oph	19.2	99	13:04	18:31	00:01
<b>90377 Sedna</b>	Cet	21.2	99	22:48	05:04	11:19

Highlighted times denote daylight events.

## ★BSO: (Bright Sky Objects)

**NGC 224 (M31)** - Galaxy in Andromeda, Magnitude 4.4, Size 192' x 62'.

**NGC 752 (Cr 23, C 28)** - Open Cluster in Andromeda, Magnitude 5.7, Size 49', Stars 60.

**CR 463** - Open Cluster in Cassiopeia, Magnitude 5.7, Size 36', Stars 40.

**NGC 457 (Cr 12, Mel 7, C 13, ET)** - Open Cluster in Cassiopeia, Magnitude 6.4, Size 13', Stars 80.

## ★DSO: (Dark Sky Objects)

**NGC 246 (C-56)** – Planetary Nebula in Cetus, Magnitude 8.0, Size 4'.

**NGC 628 (M 74)** – Galaxy in Pisces, Magnitude 10, Size 10.5' x 9.5'.

**NGC 404 (H-224-2)** – Galaxy in Andromeda, Magnitude 11.2, Size 3.4' x 3.4'

**NGC 1** - Galaxy in Pegasus, Magnitude 12.8, Size 1.8' x 1.2'.

## ★CDMP: (Chris' Don't Miss Pick)

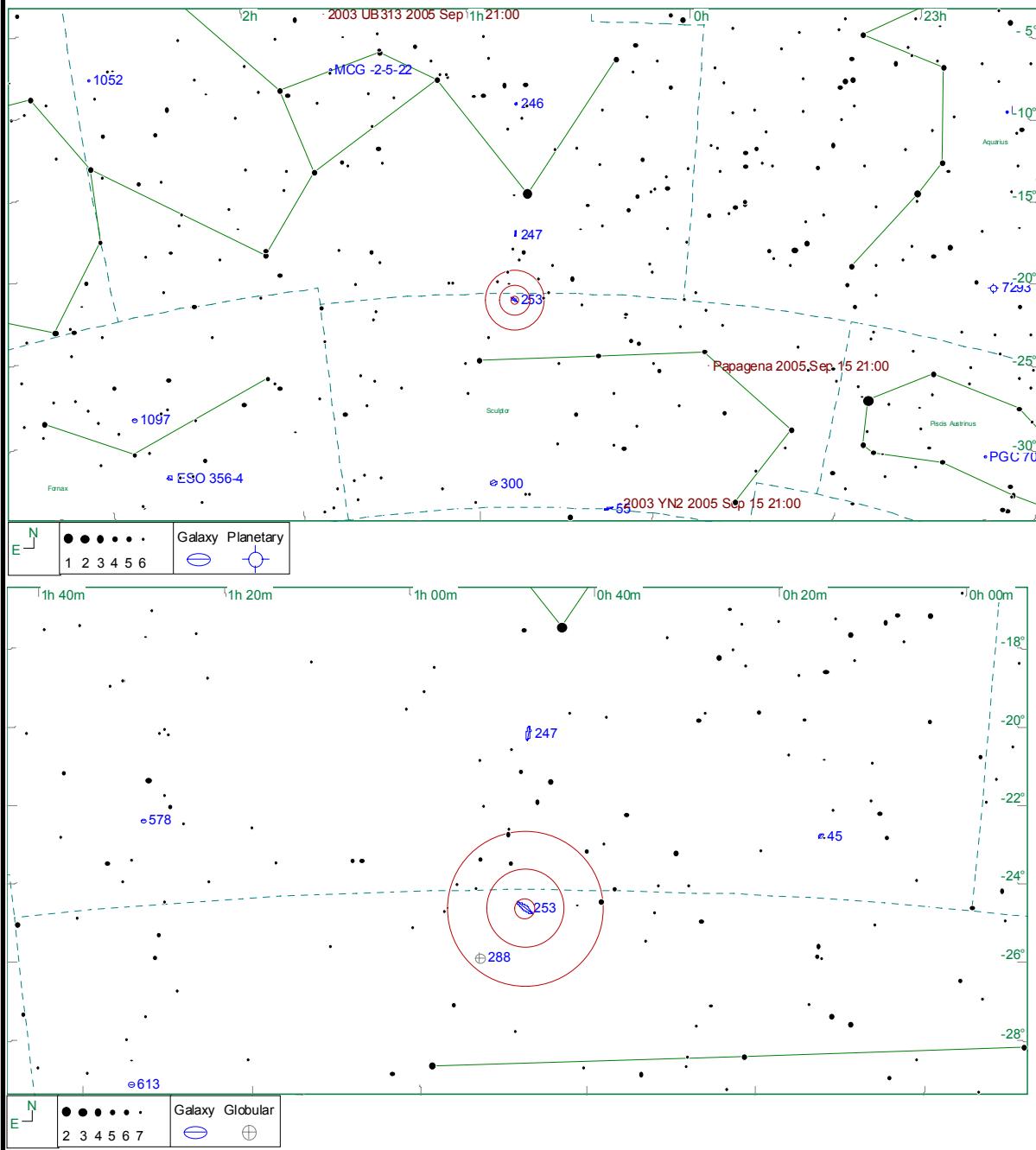
**NGC 253 (C-65)** – Galaxy in Sculptor, Magnitude 8.0(B), Size 28' x 7'

NGC 253 is the brightest member of the Sculptor group of galaxies, which is grouped around the south galactic pole (also named "South Polar Group"). The Sculptor group is perhaps the nearest to our Local Group of galaxies. NGC 253 is also one of the brightest galaxies beyond the Local Group. The RASC Observer's Handbook gives the common name *Silver Coin Galaxy* for NGC 253; it is also referred to as the *Sculptor Galaxy*.

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NGC 253 was one of the major discoveries of Caroline Herschel, the sister of William Herschel (according to John Herschel's General Catalog). She discovered this object on September 23, 1783 with "an excellent small Newtonian Sweeper" of 27 inches focal length and a power of 30 (William Herschel's description). William Herschel included it in his catalog as No. V.1. For More information go to <http://www.seds.org>. Note the globular cluster NGC 288 (Mag 8.1 size 13') on the way to NGC 253 when star hopping from Alpha Sculptor.



## **Johnson Space Center Astronomical Society**

An association of amateur astronomers dedicated to the study and enjoyment of astronomy. Membership is open to anyone wishing to learn about astronomy.

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Binocular Observing       Leslie Eaton  
Telescope Making           Bob Taylor  
Deep Sky Observing        Chris Randall

## **November Meeting Agenda**

November 11<sup>th</sup>, 7:30 p.m., Center for Advanced Space Studies/Lunar Planetary Institute, 3600 Bay Area Blvd. (at Middlebrook Drive).

- Welcome!!!
- Guest Speaker: Dennis Webb — Dig Deep, there's lots of data in those CCD images
- Break
- SIG reports, Star Party News
- Astronomical Oddities — Hernan Contreras
- Last Words, Door Prizes

Any unfinished discussions can be continued over food and beverages at a location to be announced at the end of the meeting.

### **StarScan Submission Procedures**

Original articles of astronomical interest will be accepted up to **6 P.M. November 25<sup>th</sup>**.

The most convenient way to submit articles or a Calendar of Events is by electronic mail, however computer diskettes or CDs will also be accepted. All articles should include author's name and phone number. Also include any picture credits. The recommended format is Microsoft Word. Text files will also be accepted.

Submitter bears all responsibility for the publishing of any e-mail addresses in the article on the World Wide Web.

Editor's electronic address is: [lestek@swbell.net](mailto:lestek@swbell.net). Be sure to include the word StarScan in the subject line for proper routing of your message.

### **StarScan Staff**

Editor	Ken Lester
Associate Editors	Sheila Steele
	Ken Steele

### **Cover Image**

**Mars**

**Credit: Glenn Schaeffer**

Taken October 30, 2005 from Santa Fe, Texas. 20" Obsession @f/20 on a Tom Osypowski Aluminum Dual Axis Equatorial Platform using a Toucam Pro II camera.