




★ July 2005  Volume # 4 Issue # 07 ★

 **STARS & SCOPES** 

The Newsletter of the  
Southern Colorado Astronomical Society (SCAS)  
Web site : [www.rmastronomy.info](http://www.rmastronomy.info)

Editor not responsible for errors, misprints, etc. Some photos, digital images, etc. may be changed or adjusted in order to fit in the Newsletter. The editor has no intention of causing any intended harm or malice by production of this newsletter.

Picture top left courtesy of : <http://antwarp.gsfc.nasa.gov/apod/archivepix.html>  
Picture top left : M2-9 : Wings of a Butterfly Nebula  
Credit & Copyright: B. Balick (U Washington) et al, WFPC2, HST, NASA

Welcome and greetings from the SCAS Board & Editor.

The Star-hot-line is available, **560-STAR (560-7827)**. This is an information

message about each month's astronomical viewing.

The SCAS Board has decided to not have regular monthly meetings for the month of August.

**On August 6<sup>th</sup> the Club BBQ/Star watch/meeting will be at the Raptor Center Parking Lot. Contact Rose Marie Knight at 547-3214 for more information.** Please let her know if you will attend, so that enough food will be available. Please call Rose Marie if you bring a dish, so that there are not repeat items. Also if you can bring other picnic supplies let her know.  
[www.nasa.gov/mission\\_pages/deepimpact/main/index.html](http://www.nasa.gov/mission_pages/deepimpact/main/index.html)



Left is normal view and right is an inverted image. Image is at 67 seconds after impact. All images from NASA's Deep Impact Mission.

**SCAS Officers for 2005**  
**Bill Brown**.....President  
Ph # 549-2683 or 583-0354  
e-mail: [william.brown@colostate-pueblo.edu](mailto:william.brown@colostate-pueblo.edu)  
**Klaus Priebe**.....Vice-President  
Ph # 545-3931 Cell # 240-0020  
e-mail: [kpphoto7@hotmail.com](mailto:kpphoto7@hotmail.com)  
**Walt Russell**.....Treasurer  
Ph # 263-5483  
e-mail: [wdrussell1@juno.com](mailto:wdrussell1@juno.com)  
**Doug Knight**.....Secretary  
Ph # 547-3214  
e-mail: [dknight5@mindspring.com](mailto:dknight5@mindspring.com)  
open ....Member-at-Large  
Ph # e-mail:

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**Upcoming SCAS Events**  
Directions to areas are at the end of the newsletter.  
**Club Star Watch**  
08/06 So. Fishing Area #1  
09/03 Walter Russell's house  
The following dates are to be announced: 10/01 , 11/05 , 12/03  
**Public Star Watch**  
At the Raptor Center & CSUP Observatory. 07/16 , 08/13 , 09/10 , 10/08 , 11/12 , 12/10

**Observing Request**  
If anyone is interested in trying some astrophotography or would just like to get out and do some viewing, please contact Klaus Priebe at 719-240-0020 or e-mail me at [kpphoto7@hotmail.com](mailto:kpphoto7@hotmail.com) . Thanks! Klaus

**CSUP Observatory Open House**

Open house will continue on Tuesdays nights.

About 1 hour after sunset.

The observatory is run by volunteers & they may not be there always on time. Please be patient. The Observatory will not open during high winds (over 20 mph), rain, overcast, & snow.

**Celestial Events**

07/15 Alpha Lyrids meteor shower  
Lunar Phases – new 07/06/05,  
1<sup>st</sup> quarter 07/14/05, full 07/21/05,  
4<sup>th</sup> quarter 07/28/05.

**For a list of all Star Parties goto:**

<http://skyandtelescope.com>

goto resources then event calender.

**Regional Star Parties**

07/23 to 07/24, AZ

National Optical Astronomy Observatory  
CCD Workshops

[rwilson@noao.edu](mailto:rwilson@noao.edu)

[www.noao.edu](http://www.noao.edu)

08/04 to 08/06 WY

Weekend under stars

Marty Curran 307-635-5944

[curranm@bresnan.net](mailto:curranm@bresnan.net)

<http://home.bresnan.net/~curranm/>

08/12 to 08/13 KS

ALCON Expo 2005

[carrol-iorg@kc.rr.com](mailto:carrol-iorg@kc.rr.com)

[www.astroleague.org](http://www.astroleague.org)

09/29 to 10/02 AZ

Lowell Star Party

Rusty Tweed 928-774-3358

[tweedr@lowell.edu](mailto:tweedr@lowell.edu)

<http://kraken.lowell.edu/lsp3/index.html>

09/29 to 10/02 NM

Southern New Mexico Star Party

John Gilkison 505-527-8386

[jgilkiso@zianet.com](mailto:jgilkiso@zianet.com)

[www.Astro-npo.org](http://www.Astro-npo.org)

**Other Astronomy Organizations**

CO Springs Astronomical Society

[www.csastro.org](http://www.csastro.org)

Denver Astronomical Society

[www.denverastrosociety.org](http://www.denverastrosociety.org)

Longmont Astronomical Society

[www.longmontastro.org](http://www.longmontastro.org)

Northern CO Astronomical Society

[www.ncastro.org](http://www.ncastro.org)

Western CO Astronomical Club

[www.coloradowestastronomy.org](http://www.coloradowestastronomy.org)

**For complete list of all astronomical organizations goto:**

[www.amsky.com/whitepages](http://www.amsky.com/whitepages)

[www.nasa.gov/returntoflight/main/index.html](http://www.nasa.gov/returntoflight/main/index.html)

***Shuttle returns to flight.***

During a countdown status briefing Sunday morning at Kennedy Space Center, NASA Test Director Jeff Spaulding and STS-114 Payload Manager Scott Higginbotham announced they are go for launch. Launch Weather Officer Kathy Winters expects a 30% chance that weather may prevent launch on Wednesday. In the event of a delay, the forecast is slightly less promising, with the chance of weather violating launch constraints rising to 40% on Thursday and Friday.

The crew of STS-114 arrived at Kennedy aboard a NASA Gulfstream II jet at 6:30 p.m. EDT Saturday. The astronauts flew in from Houston a day early to avoid treacherous travel conditions caused by Hurricane Dennis.

Note: Launch countdown officially began at 6 p.m. EDT, July 10.

Liftoff of Space Shuttle Discovery on NASA's Return to Flight Mission is scheduled for 3:51 p.m. EDT July 13.

[Www.esa.int/esaCP/SEMJ086DIAE\\_index\\_2.html](http://www.esa.int/esaCP/SEMJ086DIAE_index_2.html)

***History's greatest comet hunter approaches major milestone***

As of 6 July 2005, 990 comets have been discovered using the ESA/NASA Solar and Heliospheric Observatory (SOHO) spacecraft, which is expected to discover its 1000th comet this summer. The SOHO spacecraft, a joint effort between NASA and the European Space Agency, has been so prolific that it has accounted for almost half of all comet discoveries for which orbits have been computed in the history of astronomy.

Before SOHO was launched, only 16 'sungrazing' comets had been discovered by space observatories. Based on that experience, who could have predicted that SOHO would discover more than sixty times that number, and in only nine years?

About 85 percent of the comets discovered so far by SOHO belong to the Kreutz group of 'sungrazing' comets, so named because their orbits take them very close to the Sun. The Kreutz sungrazers come within 800 000 km of the Sun's visible surface. In comparison, Mercury, the planet closest to the Sun, is about 57.6 million km from the solar surface.

SOHO has also been used to discover three other well-populated comet groups: the Meyer (at least 55 members), Marsden (at least 21 members), and Kracht (24 members) groups. Comet groups are named after the astronomer who determined that they are related because they have similar orbits.

Many SOHO comet discoveries have been by amateurs using SOHO images on the internet. SOHO comet hunters come from all over the world. Almost all SOHO's comets are discovered using images from its Large Angle and Spectrometric Coronagraph (LASCO) instrument. LASCO is used to observe the faint, multimillion-degree outer atmosphere of the Sun, called the corona.

A disk in the instrument is used to make an artificial eclipse, blocking direct light from the Sun so the much fainter corona can be seen. Sungrazing comets are discovered when they enter LASCO's field of view as they pass close by the Sun.

SOHO successfully completed its primary mission in April 1998, and it has enough fuel to remain on station and keep hunting comets for decades, assuming the LASCO instrument continues to function.

Stars and Scopes Newsletter  
 1580 N. Cheshire Dr.  
 Pueblo West CO 81007  
 Editor – Michael Verry  
 Ph # 719-547-7957  
 e-mail

[rmacmikebrdmmbr@yahoo.com](mailto:rmacmikebrdmmbr@yahoo.com)

Binocular & Small Telescope  
 Objects – –Mid-Summer  
 M 83 in Hydra ,M 05 in Serpens  
 M 102 in Draco  
 M 13, 92 in Hercules  
 M 9, 10, 12, 14, 19, 62, 107 in  
 Ophiuchus  
 M 4, 6, 7, 80 in Scorpius

[www.nasa.gov/mission\\_pages/deepimpact/main/index.html](http://www.nasa.gov/mission_pages/deepimpact/main/index.html)  
 More images and information from Deep Impact.



The image to the left, shows comet Tempel 1 approximately 5 minutes before Deep Impact's probe smashed into its surface. It was taken by the probe's impactor targeting sensor. The Sun is to the right of the image and reveals terrain varying in brightness by a factor of two. Shadows and bright areas indicate surface topography. Smooth regions with no features (lower left and upper right) are probably younger than rougher areas with circular features, which are most likely impact craters. The probe crashed between the two dark-rimmed craters near the center and bottom of the comet.

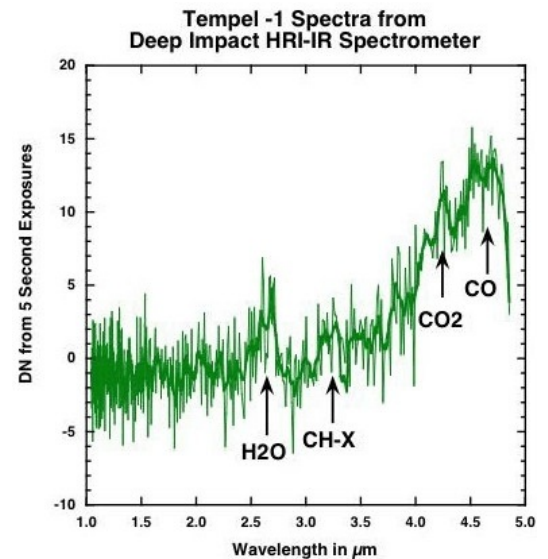
The nucleus is estimated to be about 5.7 (4.3 miles) kilometers tall.

kilometers (3.1 miles) across and  
 Image credit NASA/JPL- Caltech/UMD



The image to the left, shows the view from Deep Impact's probe 90 seconds before it was pummeled by comet Tempel 1. The image was taken by the probe's impactor targeting sensor. Image credit NASA/JPL- Caltech/UMD

The image to the left, shows the data of the comet taken by the spacecraft's infrared spectrometer. This instrument breaks apart light like a prism to reveal the "fingerprints," or signatures, of chemicals. Even though the spacecraft was over 10 days away from the comet when these data were acquired, it detected some of the molecules making up the comet's gas and dust envelope, or coma. The signatures of these molecules - including water, hydrocarbons, carbon dioxide and carbon monoxide - can be seen in the graph, or spectrum.

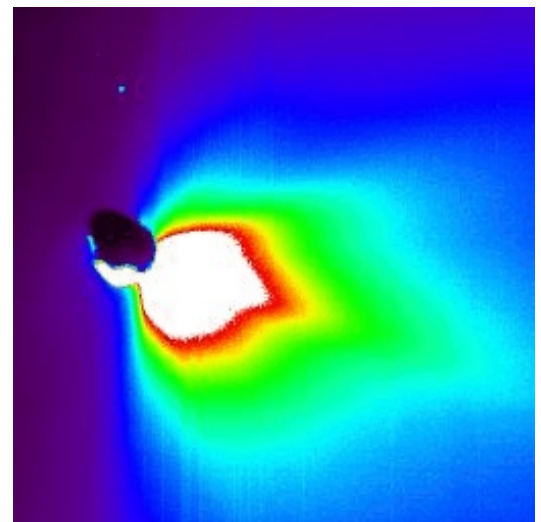


The mission's flyby spacecraft will use its infrared spectrometer to sample the ejected material, providing the first look at the chemical composition of a comet's nucleus. This data was acquired from June 20 to 21, 2005. The infrared spectrometer uses the same telescope as the high-resolution instrument camera.

#### NASA's Deep Impact Tells a Tale of the Comet 07.08.05

Data from Deep Impact's instruments indicate an immense cloud of fine powdery material was released when the probe slammed into the nucleus of comet Tempel 1 at about 10 kilometers per second (6.3 miles per second or 23,000 miles per hour). The cloud indicated the comet is covered in the powdery stuff. The Deep Impact science team continues to wade through gigabytes of data collected during the July 4 encounter with the comet measuring 5-kilometers-wide by 11-kilometers-long (about 3-miles-wide by 7-miles-long).

*Image right: This false-color image shows comet Tempel 1 about 50 minutes after Deep Impact's probe smashed into its surface (back side of comet in this picture).*



"The major surprise was the opacity of the plume the impactor created and the light it gave off," said Deep Impact Principal Investigator Dr. Michael A'Hearn of the University of Maryland, College Park. "That suggests the dust excavated from the comet's surface was extremely fine, more like talcum powder than beach sand. And the surface is definitely not what most people think of when they think of comets — an ice cube."

The data review process is not overlooking a single frame of approximately 4,500 images from the spacecraft's three imaging cameras taken during the encounter. "We are looking at everything from the last moments of the impactor to the final look-back images taken hours later, and everything in between," added A'Hearn. "Watching the last moments of the impactor's life is remarkable. We can pick up such fine surface detail that objects that are only four meters in diameter can be made out. That is nearly a factor of 10 better than any previous comet mission. The final moments of the impactor's life were important, because they set the stage for all subsequent scientific findings. Knowing the location and angle the impactor slammed into the comet's surface is the best place to start. Engineers have established the impactor took two not unexpected coma particle hits prior to impact. The impacts slewed the spacecraft's camera for a few moments before the attitude control system could get it back on track. The penetrator hit at an approximately 25 degree oblique angle relative to the comet's surface. That's when the fireworks began.

The fireball of vaporized impactor and comet material shot skyward. It expanded rapidly above the impact site at approximately 5 kilometers per second (3.1 miles per second). The crater was just beginning to form. Scientists are still analyzing the data to determine the exact size of the crater. Scientists say the crater was at the large end of original expectations, which was from 50 to 250 meters (165 to 820 feet) wide.

Expectations for Deep Impact's flyby spacecraft were exceeded during its close brush with the comet. The craft is more than 3.5 million kilometers (2.2 million miles) from Tempel 1 and opening the distance at approximately 37,000 kilometers per hour (23,000 miles per hour). The flyby spacecraft is undergoing a thorough checkout, and all systems appear to be in excellent operating condition.

The Deep Impact mission was implemented to provide a glimpse beneath the surface of a comet, where material from the solar system's formation remains relatively unchanged. Mission scientists hoped the project would answer basic questions about the formation of the solar system by providing an in-depth picture of the nature and composition of comets. The University of Maryland is responsible for overall Deep Impact mission science, and project management is handled by JPL. The spacecraft was built for NASA by Ball Aerospace & Technologies Corporation, Boulder, Colo. JPL is a division of the California Institute of Technology, Pasadena, Calif.

Science News, V167, #18, article title "*Far-out Science*" by Ron Cowen

When scientists announced last year that they had discovered the most remote object known in the solar system, they reported that the icy body probably had a moon. That's because the object, named Sedna, seemed to spin unusually slowly, just once every 20 days. Only the tug of a small companion body could slow the rotation to such a leisurely rate, the astronomers reasoned.

The Hubble Space Telescope, however, failed to find a moon. Now, new measurements show that Sedna rotates some 50 times as fast as earlier observations indicated.

Scott Gaudi of the Harvard-Smithsonian Center for Astrophysics in Cambridge, Mass., and his colleagues studied Sedna's spin using the MMT Telescope on Mount Hopkins in Arizona. With that telescope's sensitivity, the researchers could discern tiny periodic variations in Sedna's brightness, providing a better estimate of the body's rotation than was possible before. The researchers describe their findings online (<http://arxiv.org/abs/astro-ph/0503673>).

In a separate study, scientists using the Gemini North Telescope atop Hawaii's Mauna Kea found no evidence of ice or frozen methane on Sedna. That's unlike conditions on two other remote solar system bodies, Pluto and its moon Charon.

Astronomers propose that Sedna initially had an icy surface but that bombardment by cosmic rays and the sun's ultraviolet light produced a dark, hydrocarbon veneer. Because Pluto and Charon lie closer to the sun than Sedna does, they're subject to more collisions with solar system debris. Those collisions either prevent the formation of a dark coating or deliver fresh supplies of bright ice on top of the coating.

Chad Trujillo of the California Institute of Technology in Pasadena and his colleagues report their findings in an upcoming *Astrophysical Journal*.

### SCAS Board Highlights

SCAS Board Meeting highlights: 1) On August 6<sup>th</sup>, 2005, the Club BBQ/Star watch/meeting & get together with the members of the two merged clubs.

The next Club Star Watch, on August 06<sup>th</sup>, will be at So. Fishing Area #1. Start time at least an hour after sunset. Viewing gets better after the twilight.

Aug. 5<sup>th</sup> at the Pueblo Reservoir, at the end of the West Fishing Road is a special event for the campers at the Reservoir. Start time around sunset. Please come and support the club with this event and bring your telescope. Contact M Verry at 547-7957 for more information.

The next Public Star Watch, on July 16<sup>th</sup>, will be at the Raptor Center Parking Lot and at the CSUP Observatory. Start time at least an hour after sunset. Viewing gets better after the twilight.

### PLANET & OTHER OBJECT HIGHLIGHTS. *(Information from Sky & Telescope Magazine)*

Venus & Mercury keep close company after dusk, for the beginning of the month. Jupiter is bright in the southwest and does not set to after 1AM. Mars rises around 2AM and get brighter during the month. Uranus is about mag 6.0 and is in the constellation of Aquarius. Neptune is about mag 7.8 and in the constellation Capricornus. And Pluto is about mag. 13.9 and is in the constellation Ophiuchus. Saturn may be visible at dusk for a short time.

The Alpha Lyrids meteor shower is at the 15<sup>th</sup> of this month.

### A Call for Newsletter Submissions

If you would like to contribute an article, observing report, astro-photo, etc. to be published in the Stars and Scopes Newsletter, then submit them to Michael Verry, 1580 N. Cheshire Dr., Pueblo West CO 81007 or e-mail them to rmacmikebrmmbr@yahoo.com. When sending photos, please send them in JPG format and as large as possible. Please note that I can scan photographs, negatives and slides. I will return your photo/slide/negative. If you would like to see something in the newsletter or would something changed, submit your request.

The dues for SCAS are as follows: Individual member – \$20.00/yr, Family member – \$25.00/yr, Senior Membership – \$15.00/yr, Junior membership – \$5.00/yr and College membership – \$15.00/yr. Membership descriptions are in the SCAS Bylaws. An additional fee of \$5.00 will be added to members who have their Newsletter mailed to them. Dues are pro-rated for new members by the quarter year. Regular member dues are due at the beginning of the year. Contact any of the Board members on page one for more information

### — Directions to various club meeting and viewing locations. —

#### — SCAS Meetings —

Take Hwy. 47 to CSUP, Pueblo, CO. In the Technology building, room 244 at 6:00 pm for Board meetings and room #103 at 7:00 pm for Regular Club meetings. The Technology building is next to the radio station.

#### — Raptor Center & CSUP Observatory—

Take Pueblo Blvd. to 11th street. Turn west on to 11th street. About 0.6 mile & at the top of the hill turn left into the Raptor Center Parking lot. At the end of the parking lot is a trail leading up to the CSUP Observatory.

Please take a flashlight with you. The observatory is run by volunteers & they may not be there always on time. Please be patient. The Observatory will not open during high winds (over 20 mph), rain, overcast, & snow

#### — So. Fishing Area #1 —

From Pueblo Blvd., turn west on Hwy. 96 (toward Wetmore) and travel about 10.6 miles. Sign lake pueblo state park on right. Make a right turn. Stay on the paved road for 1.6 miles and take it till it ends.

#### — N. Fishing Area #1 —

From Pueblo take Hwy 50 west to McCulloch Blvd. Turn south on McCulloch Blvd. About 5 1/4 miles, there is a green sign indicating the entrance to Lake Pueblo State Park, turn south on Nicholas Road. Just before the park entrance make a right hand turn onto a dirt road. This road also leads to Turkey Creek. Stay to the left after the going over the bridge, then stay on the main road till it ends, about 2 miles. This area also is good viewing of any eagles that happen to be around and the nesting poles are within view. There is a restroom facility at this area.

#### — Graneros Gorge —

From Pueblo, take I25 south to exit 71 Graneros Road. (Next exit past Colo. City.) Go over interstate & make left (north) on the frontage road. Pavement ends, make right over cattle guard onto dirt (&bumpy) road stay right, go 1 mile, road ends in a cul-de-sac.