

Martian Chronicles

Volume 21, Issue 5

June, 2005



Up Coming Events

June 2005

10th—M.A.R.S. Club Meeting

Program: *The History and Evolution of the Eye Piece* by James Daggett

7:30 pm at MOSI

18th— MOSI SkyWatch

Starts 30 minuets after Sunset

July 2005

7th— *What's up in Astronomy Today* 7:00 at MOSI

8th—M.A.R.S. Club Meeting

Program: TBA

7:30 pm at MOSI

16th - MOSI SkyWatch

Starts 30 minuets after Sunset

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A Big Thank You to Everyone Who Helped with Astronomy Day 2005

These are just a few of the people who made Astronomy Day happen .

John Bell, Joe Carr, Mark Dixon, Steve Dixon, Ted Edie, Karen Edie, Mildred Simpson, Carolyn Olivero, Doug Ordetx, Gregory

Shanos, Ally Thomas, Jimmy Thomas, Joe Wasielewski, James Daggett, Elizabeth Mueller, Justin Harrell, Gordon Mills, Luis Albert, Charles Bearss, Jim Viggiano, Amy Williams, and the MOSI Staff.

Start thinking about what you want to do next year during Astronomy Day 2006.

Planet Hopping for Beginners

By Tanja Diederich



June offers a great opportunity for planet viewing, so head outside as soon as the sun sets. Venus and Mercury are racing higher into the Western sky as Saturn makes its slow descent after a spectacular viewing season. Jupiter is shining brightly just East of zenith. The easiest way to tell the planets apart from the stars is to remember the song “Twinkle, Twinkle, Little Star”. Planets don’t twinkle (unless they are really low on the horizon). Venus and Jupiter are brighter than all the stars as the second and third brightest objects in the evening sky. Venus, Mercury and Saturn will cluster between Gemini and Cancer around June 26th. The Moon will be up after midnight, so it will not diminish the glory of this planet grouping.

Scorpius is making its summer debut at sunset in the East followed closely by his rival Sagittarius. Notice that you won’t see Scorpius and Orion in the sky at the same time. One myth is that Scorpius was sent into the sky to kill Orion. Sagittarius chases Scorpius to protect Orion.

Don’t forget Deep Impact will encounter Comet Tempel 1 on July 4th.

From the Keeper of the Frog Scope

By Frances Ferguson, President

Thank you Greg for sharing your Solar Eclipse Adventure with us.

Summer officially starts June 21 with the Summer Solstice (the Longest Day of the Year). Is there anything the club would like to do together this summer? Do you have any suggestions?

We still need presentations for the remainder of the year. Please contact me if you would like to give a presentation or if there is a subject you would like to hear about.

Minutes of the May 2005 Meeting

Greg Shano presented a talk on Solar Eclipses and discussed his recent trip to the Galapagos to view the April Solar Eclipse. He also provide a slide show of the beautiful landscape and the wildlife in that area. 17 people were in attendance.

The business meeting was short. Most of the officers were away taking care of business. A discussion took place on where the What’s up in Astronomy Today? Should take place if the planetary is not available. Suggestions were change the day the talk is provided or hold the talks in the Library. Meeting was adjourned at 9:05pm

NASA's Space Eyes Focus on Deep Impact Target

On July 4, NASA's Deep Impact spacecraft will attempt an extraordinarily daring encounter with the far-flung comet Tempel 1 hurtling through space at tens of thousands of miles per hour. As if that is not challenging enough, the comet's size, shape and other characteristics are not entirely known.

Two of NASA's eyes in the sky, the Spitzer and Hubble Space Telescopes, helped scientists prepare for the comet encounter. From their orbits high above Earth, the telescopes watched Tempel 1 in early 2004. Together they came up with the best estimates of the comet's size, shape, reflectivity and rotation rate. The data may help Deep Impact snap pictures of the dramatic rendezvous and increase the probability of making contact with the comet.

"Even tiny adjustments to our model of Tempel 1 are crucial to hitting the target and setting camera exposure times," said Dr. Carey Lisse, Johns Hopkins University Applied Physics Laboratory, Laurel, Md. Lisse is team leader for the Tempel 1 Spitzer studies.

Previous observations of Tempel 1 taken with ground-based telescopes indicated the comet is dark and oblong, with a width of a few miles. Spitzer and Hubble refined these measurements, revealing a matte black comet approximately 8.7 by 2.5 miles, or roughly one-half the size of Manhattan Island, N.Y.

"Spitzer was crucial in pinning down the comet's size," said Dr. Michael A'Hearn, University of Maryland, College Park. He is principal investigator for Deep Impact and the Hubble observations. "We'll know exactly what it looks like when we get there," he said.

The Deep Impact spacecraft was launched on January 12, 2005. Its mission is to study the primordial soup of our solar system, which is sealed away inside comets.

On July 3, as it approaches Tempel 1, the spacecraft will separate into two parts. The impactor will attempt the tricky task of placing itself in the path of the speeding snowball, while the second part, the flyby spacecraft, swings around for a ringside view.

After the impactor is released, its specialized software will steer it toward the sunlit portion of Tempel 1's nucleus. To program the software, mission planners at NASA's Jet Propulsion Laboratory (JPL) needed to know the size and reflectivity of Tempel 1's surface. Since its surface can't be observed directly from Earth, scientists turned to Spitzer's infrared eyes to measure its size.

When viewing a comet in visible light from very far away, only reflected sunlight can be seen, so a big, dark comet can look the same as a highly reflective, small comet. In infrared light, a comet's radiated heat is measured, providing a direct look at its size.

Once the size of Tempel 1 was known, scientists could calculate surface reflectivity. They calculated the amount of reflected, visible light observed by Hubble and found Tempel 1 reflects only four percent of the sunlight that falls on it.

"Knowing the reflectivity also tells us how to set up our cameras," Lisse said. "Like photographers, it's important for us to know our subject before the shoot."

Tempel 1's shape and two-day rotation rate were derived from long-term observations made by various telescopes, including Hubble, Spitzer and the University of Hawaii's 2.2-meter telescope at Mauna Kea.

In addition to the flyby spacecraft images, at least 30 telescopes around the world, including Spitzer, Hubble and the Chandra X-ray Observatory, will be watching the dramatic impact. By analyzing the material blown out of the interior of the comet, this global network of telescopes will assemble a list of the raw ingredients that went into making the planets in our solar system.

JPL manages the Deep Impact mission for NASA. The Space Telescope Science Institute (STScI) is operated by the Association of Universities for Research in Astronomy, Inc. (AURA), for NASA, under contract with the Goddard Space Flight Center, Greenbelt, MD. The Hubble Space Telescope is a project of international cooperation between NASA and the European Space Agency (ESA).

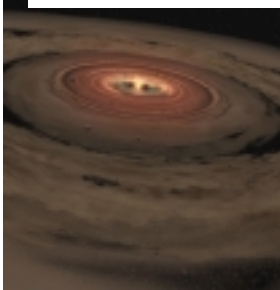


The Impactor

Release Date:
1:00PM (EDT)
June 2, 2005
Release Number:
STScI-2005-18



The Deep Impact spacecraft hovers in the clean room at Astrotech. The impactor spacecraft is surrounded with a protective structure.



Artist's rendering of brown dwarf OTS44 with its rotating planetary disk.

Seeing in the Dark with Spitzer

by Patrick Barry and Tony Phillips

Have you ever gotten up in the middle of the night, walked to the bathroom and, in the darkness, tripped over your dog? A tip from the world of high-tech espionage: next time use night-vision goggles.

Night vision goggles detect heat in the form of infrared radiation—a “color” normally invisible to the human eye. Wearing a pair you can see sleeping dogs, or anything that’s warm, in complete darkness.

This same trick works in the darkness of space. Much of the exciting action in the cosmos is too dark for ordinary telescopes to see. For example, stars are born in the heart of dark interstellar clouds. While the stars themselves are bright, their birth-clouds are dense, practically impenetrable. The workings of star birth are thus hidden.

That's why NASA launched the Spitzer Space Telescope into orbit in 2003. Like a giant set of infrared goggles, Spitzer allows scientists to peer into the darkness of space and see, for example, stars and planets being born. Dogs or dog *stars*: infrared radiation reveals both.

There is one problem, though, for astronomers. “Infrared telescopes on the ground can't see very well,” explains Michelle Thaller, an astronomer at the California Institute of Technology. “Earth's atmosphere blocks most infrared light from above. It was important to put Spitzer into space where it can get a clear view of the cosmos.”

The clear view provided by Spitzer recently allowed scientists to make a remarkable discovery: They found planets coalescing out of a disk of gas and dust that was circling—not a star—but a “failed star” not much bigger than a planet! Planets orbiting a giant planet?

The celestial body at the center of this planetary system, called OTS 44, is only about 15 times the mass of Jupiter. Technically, it's considered a “brown dwarf,” a kind of star that doesn't have enough mass to trigger nuclear fusion and shine. Scientists had seen planetary systems forming around brown dwarfs before, but never around one so small and planet-like.

Spitzer promises to continue making extraordinary discoveries like this one. Think of it as being like a Hubble Space Telescope for looking at invisible, infrared light. Like Hubble, Spitzer offers a view of the cosmos that's leaps and bounds beyond anything that came before. Spitzer was designed to operate for at least two and a half years, but probably will last for five years or more.

For more about Spitzer and to see the latest images, go to <http://www.spitzer.caltech.edu/spitzer>. Kids and grown-ups will enjoy browsing common sights in infrared and visible light at the interactive infrared photo album on The Space Place, http://spaceplace.nasa.gov/en/kids/sirtf1/sirtf_action.shtml.

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

June 2005

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6 New Moon	7	8	9	10 Mars Club Meeting 7:30 pm at MOSI	11
12	13	14 First Quarter Moon	15	16 The Moon occults Jupiter	17	18 MOSI SkyWatch 30 min. after sunset
19	20	21 Summer Solstice	22 Full Moon	23	24	25
26 Mercury Passes 1.4 degrees from Saturn	27	28 Last Quarter Moon	29	30		

Newsletter of the Museum
Astronomical Resource Society

M.A.R.S. Astronomy Club
Frances Ferguson
1527 W. River Lane
Tampa, Florida 33603

Phone: 813-238-8299

Email: faferguson@sisna.com

We're on the Web
www.marsastro.org

Newsletter of the Museum Astronomical Resource Society

Martian Chronicles is published monthly by the Museum Astronomical Resource Society (also known as M.A.R.S. Astronomy Club), to provide club news and other items of interest to its member. MARS is sponsored by MOSI Tampa Florida. Annual club membership dues are \$15.00 single and \$20.00 for families. Dues can be paid to any club officer at a meeting or event or mailed to the Club Membership/Renewal Address listed below. Newsletters are available to nonmembers by requesting a complimentary issue. Please send all inquiries, comments and newsletter contributions to the address below. The deadline for submitted contributions is the 25th of the month prior to the next issue. Contribution may be delayed in publication due to available space.

*Membership/Renewal
Make checks payable to: Mildred Simpson, (Club Treasurer)
M.A.R.S.
C/O Mildred Simpson
1522 W. River Lane
Tampa Florida, 33603*

2005 M.A.R.S. Club Officers

President—Frances Ferguson, 813-238-8299

faferguson@sisna.com

Vice President—Wade Holland, 813-988-6689

Treasurer—Mildred Simpson, 813-238-8299

mildreds@sisna.com

Secretary—Katherine Holland, 813-988-6689

Newsletter— Acting Editor Frances Ferguson

Web Master—

Education Outreach Coordinator—

Jimmy Thomas, 813-88-7187

Astronomy Day Coordinator—

Librarian—Douglas Ordetx

MOSI Contact—Al Pesche

Odds and Ins and Other Information

The Club has received the order form for Astronomy's *Deep Space Mysteries* 2006 Calendar. Cost \$ 6.00, to reserve a copy see Mildred Simpson, Treasurer.

Web Sites:

Free Atlas on the Web.

<http://www.asahi-met.or.jp/~zs3t-tk/atlas/atlas.htm>

Views of the Solar System

[Http://www.solarviews.com/eng/homepage.html](http://www.solarviews.com/eng/homepage.html)

New Books in the Science Library at MOSI:

Spacecraft by Tim Furniss

This New Ocean by William E. Burrows

