

The observation session held on August 2nd was not held due to poor weather but a makeup session was held on August 23rd. The sky conditions were good but seeing was hampered by windy conditions. Due to advertising by the club on WJFF and flyers posted around the area, a significant public turn out occurred that evening. The session was advertised to give the public an opportunity to view Mars. We had a very enthusiastic response to the session from the public. There were between 30 and 40 people present at the session. Six telescopes were set up. As Mars rose the public was treated to views of the globular clusters M13 and M15. They also viewed the open clusters M7 and M11. The Andromeda Galaxy was viewed as well as the nebulae M57, M8, M17, and M27. Uranus was viewed as a small blue disk. The highlight of the evening was Mars. The south polar cap was easily seen as well as a major dark surface area called Mare Erythraeum. The pictures below is of a visitor named Chuck with his 12.5 inch dobsonian telescope and Alvin Schultheis with his C14.



On the evening of August 14th an additional observation session was held. Four members observed at Walnut Mountain. The sky condition was good for a while but turned poor. Before that a few double stars and deep sky objects were observed. Mars and the last gibbous moon were also viewed.

The observation session that was scheduled for August 30th was canceled due to potentially poor weather. The skies turned out to be great that night.

The observation sessions for September are on the 20th and 27th.

Anyone interested in submitting an astronomical observation or photograph for the newsletter, please contact John at kocis@verizon.net.

Each month the photo section of our newsletter will highlight the telescopes and equipment of club members. If you have a photo of your scope or equipment and a brief description of it that you would like to contribute please send it to John at kocis@verizon.net.

The club has selection of astronomy books, a Macintosh computer with astronomy software, and a Meade eight inch reflector for members to borrow. Please contact John at 791-5240 or kocis@verizon.net if you are interested in borrowing any of these.

Astronomy News:

Here are some articles from various NASA sources that might be of interest.

News Release: 2003-116

August 22, 2003

Earth Has a New Look

A brand new look and understanding of the place we call home. That's what you'll get in a complete global topographic data set generated by NASA and the National Imagery and Mapping Agency.



Produced by the Shuttle Radar Topography Mission, the global data set, called "SRTM30," greatly improves maps of Earth's land mass located

between 60 degrees north and 60 degrees south of the equator. That's roughly from the southern tip of Greenland to below the southern tip of South America.

Until now, the primary source of digital elevation data for scientists and analysts involved in global studies has been the U.S. Geological Survey's "GTOPO30," published in 1996, which consists of elevation measurements spaced every 30-arc-seconds. An arc-second is a measure of latitude and longitude used by geographers that corresponds to about 928 meters, or 1,496 feet, at the equator. This allows identification of features roughly the size of Disneyland in California. The SRTM30 map matches the GTOPO30 resolution, but with its seamless quality represents a leap in global-scale accuracy.

"SRTM30 is a powerful demonstration of the benefits which accrue from NASA's human space flight program and satellite radar mapping technology," said Dr. John LaBrecque, manager, Solid Earth and Natural Hazards Program, NASA Headquarters, Washington.

"The quality of previous maps of the Earth varied considerably, because they were compiled from various data gathered by generations of explorers and surveyors. In some places these maps are inaccurate. Using NASA technology, six Space Shuttle astronauts mapped 80 percent of Earth's land surface in just 10 days to produce the first 3-D map of the Earth's surface at a known and uniform accuracy," he said.

The need for accurate topographic maps is everywhere from planning a hike to building a highway. Knowing the exact shape and location of mountain peaks and river valleys is as important to the safe and efficient flight of aircraft as it is to the management of water resources and the control of forest fires.

Newly released images representing and illustrating the new SRTM30 data products depict Earth in two ways: as an image with all the continents shown (a common map-making method known as a Mercator projection); and as three globe images of Earth as viewed from points in space centered over the Americas, Africa and the western Pacific. Two visualization methods were combined to produce the images: shading and color-coding of topographic height. The shaded image was derived by computing topographic slope in the northwest-southeast direction, so that northwest slopes appear bright and southeast slopes appear dark. Color-coding depicts the lowest elevations in green, rising through yellow and tan, to white at the highest elevations.

The STRM30 map is one of a series of land surface products emerging from the very successful Shuttle Radar Topography Mission (SRTM). SRTM has produced more detailed topographic data for North and South America that resolves features approximately 90 feet square, or 10 times the global STRM30 database.

The SRTM30 data were processed at NASA's Jet Propulsion Laboratory, Pasadena, Calif., into research-quality digital elevation data. NIMA is providing additional processing to develop mapping products. The U.S. Geological Survey Earth Resources Observation Systems Data Center in Sioux Falls, S.D., provides final archiving and distribution of the SRTM data products.

The SRTM mission is a cooperative project of NASA, NIMA, German and Italian space agencies. The project is part of NASA's mission to understand and protect our home planet. The California Institute of Technology in Pasadena manages JPL for NASA.

The new images are available on the JPL Planetary Photojournal at <http://photojournal.jpl.nasa.gov/catalog/PIA03394> , <http://photojournal.jpl.nasa.gov/catalog/PIA03395> and <http://photojournal.jpl.nasa.gov/catalog/PIA03396> .

Information about the Shuttle Radar Topography Mission is available at <http://www.jpl.nasa.gov/srtm/> .

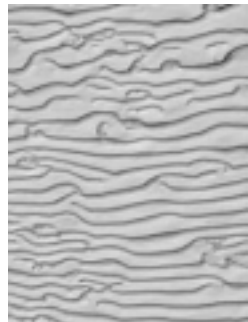
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News Release: 2003-114 August 20, 2003

NASA Seeks Public Suggestions for Mars Photos

Earth comes closer to Mars this month than it has in nearly 60,000 years, but one new opportunity for seeing details on the red planet comes from a vantage point much closer.

The public has an unprecedented opportunity to suggest places on Mars that should be photographed from a spacecraft orbiting that planet. Camera operators for NASA's Mars Global Surveyor spacecraft are ready to take suggestions online for new places to target for images from the Mars Orbiter Camera.



The spacecraft, managed by NASA's Jet Propulsion Laboratory, Pasadena, Calif., has been orbiting Mars since 1997, with more than 20,000 orbits so far. The Mars Orbiter Camera has already taken more than 120,000 pictures of Mars. Many of the camera's images have sharp enough resolution to show features as small as a school bus. The images have revealed relatively recent gully erosion, ancient sedimentary rocks and many other spectacular scientific surprises.

"We've only covered about three percent of the surface area of Mars with the high-resolution camera. We want to be sure we're not missing some place that could be important, so we're casting a wide net for new suggestions," said Dr. Ken Edgett, staff scientist at Malin Space Science Systems, the San Diego firm that supplied and operates the camera for NASA. "We're looking for excellent suggestions of areas on Mars that we have not already imaged. We'll look at every request that comes in."

"NASA's Mars Global Surveyor spacecraft team will examine each request to ensure the safety of this priceless 'eye in the sky' above Mars," said Dr. Jim Garvin, NASA's lead scientist for Mars exploration at NASA Headquarters, Washington.

Information about how to submit requests is online at the new Mars Orbiter Camera Target Request Site, at <http://www.msss.com/plan/intro> .

Requesters should describe the purpose for the suggested image. Suggestions for target sites already imaged by the camera will be disqualified unless there is a convincing reason for repeating the target. An online gallery of pictures taken by the camera is at http://www.msss.com/moc_gallery/ .

Some of the best requests may be places nowhere near any site the Mars Orbiter Camera has imaged before," Edgett said. As with pictures desired by Mars scientists working with the camera every day, new suggestions will need to wait until the Mars Global Surveyor flies directly over the selected target, which could be several months or longer. The first images from this public suggestion program will probably be released this fall.

JPL, a division of the California Institute of Technology, Pasadena, manages Mars Global Surveyor for NASA's Office of Space Science in Washington, D.C. JPL's industrial partner is Lockheed Martin Space Systems, Denver, which developed and operates the spacecraft. Malin Space Science Systems and the California Institute of Technology built the Mars Orbiter Camera. Malin Space Science Systems operates the

camera from facilities in San Diego.

For information about NASA on the Internet, visit <http://www.nasa.gov> .

Information about Mars Global Surveyor is available on the Internet at <http://mars.jpl.nasa.gov/mgs>.

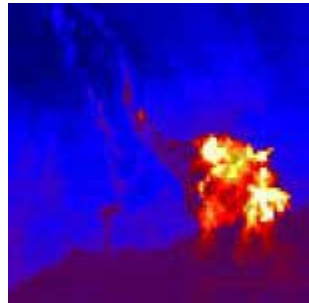
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Gay Hill (818) 354-0344

Jet Propulsion Laboratory, Pasadena, Calif. August 19, 2003

Infrared: Catch the Wave

When you pick up that TV remote to switch to your favorite channel, you're riding a wave-an infrared wave. Our eyes can't see the infrared light but our television sets can as we happily surf through reality shows, sitcoms and sports.



Infrared has forged a distinct niche in our lifestyle. It's as much a tool as X-rays in the dentist chair or radio waves in our cars. Like the other two waves, infrared is a part of the electromagnetic spectrum. Sir Frederick William Herschel discovered it in 1800 when he directed sunlight through a prism and measured the temperatures from the rainbow of colors. When he dipped his thermometer into an area beyond the red, where there appeared to be no visible sign of light, he discovered this region had the highest temperature of all.

Herschel's discovery was named "infrared" meaning "below the red."

Infrared is an "invisible" light that we normally think of as heat. It's a kind of light that our eyes can't see, but we can still detect it even if it's dark, dusty or smoky.

Today infrared has many exciting and useful applications, although most people are unaware of the role it plays in our lives. Doctors use infrared as a medical diagnostic tool, to detect breast tumors and monitor blood flow in our bodies. Firefighters use infrared detection to find people trapped in smoke-filled buildings or pinpoint the location of forest fires through dense clouds of smoke. Infrared is used in search and rescue operations to find lost people in the ocean and wilderness at night.

Everything in the universe emits some kind of light, just not always the kind of light that we can see.

"There are processes and objects in the universe that we never see just with our human senses," says astronomer Dr. Michelle Thaller of JPL/ Caltech, "so we have to use our technology to extend our senses to be able to see things that have been invisible to us."

The Space Infrared Telescope Facility, scheduled to launch this month from Cape Canaveral Air Force Station in Florida, will give scientists a new "set of eyeglasses" to see space.

"We'll be looking for, among other things, warm discs of dust around stars that may indicate planets are forming," says Thaller, "and we'll see that in warm infrared light."

The Space Infrared Telescope Facility will be able to see deep into thick, dark and dusty regions of space, and its state-of-the-art detectors will make this observatory a million times more sensitive than previous infrared missions.

And finally, a factoid that only a couch potato could appreciate—this 19-hundred pound observatory is so sensitive it will be able to detect the pulse of a TV remote control five thousand miles away!

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http://science.nasa.gov/headlines/y2003/07aug_southpole.htm

Mars is Melting
NASA Science News
August 7, 2003

The south polar ice cap of Mars is receding, revealing frosty mountains, rifts and curious dark spots.

It's not every day you get to watch a planetary ice cap melt, but this month you can. All you need are clear skies, a backyard telescope, and a sky map leading to Mars.

Actually, you won't need the sky map because Mars is so bright and easy to find. Just look south between midnight and dawn on any clear night this month. Mars is that eye-catching red star, outshining everything around it. It's getting brighter every night as Earth and Mars

converge for a close encounter on August 27th.

Mars has gotten so big in recent weeks that even a backyard telescope will show details on the planet's surface: dust clouds, volcanic terrains, impact basins. Best of all is the polar ice cap. The southern hemisphere of Mars is tipped toward Earth and its bright southern cap, which reflects more sunlight than any other part of the planet, is remarkably easy to see. Don't wait too long to look, though, because the ice is melting.

Like Earth, Mars has seasons that cause its polar caps to wax and wane. "It's late spring at the south pole of Mars. The polar cap is receding because the sun is shining on it," explains planetary scientist Dave Smith of the Goddard Space Flight Center. "Southern summer on Mars begins September 29th; by then much of the polar cap will be gone."

Watching the polar cap disappear is fun. The shrinking cap develops rifts, dark spots, and a ragged border. Lately, for instance, amateur astronomers using 8-inch and larger telescopes have been watching a frosty mountain range emerge from the ice. Says Smith, "these are the Mountains of Mitchel"—named after the Ohio astronomer who first spotted them 150 years ago. A bold dark rift called Rimas Australis cuts through the polar ice just south of those mountains. (These features are visible in Thomas Williamson's photograph of Mars at the beginning of this story.)

Something else to look for is the "Cryptic region"—a dark zone hundreds of km wide. Even after the ice above it recedes, the Cryptic region remains remarkably cold according to infra-red cameras onboard NASA's Mars Global Surveyor spacecraft. No one is sure what the Cryptic region is, "but it's probably big enough to see from Earth," notes Smith.

Here's an amazing fact: The seasonal polar caps are made of martian air (carbon dioxide or CO₂) that freezes during winter. Depending on the time of year, more than a quarter of the martian atmosphere can be found lying on the ground around the poles.

As seasons come and go, this CO₂ shifts back and forth—lying on the ground during cold months, floating through the air during warmer months. The world-wide air pressure rises and falls by 25%.

For comparison, the air pressure inside a hurricane on Earth is often only a few percent lower than ambient. You can experience a full 25% difference in pressure by traveling from sea level to the top of a 9000 ft (3000 m) mountain. Just try running a 100 yard dash up there.

The south polar cap is vaporizing now, which means CO₂ is rushing back into the atmosphere. “Remember, though,” adds Smith, “there are two polar caps on Mars—north and south. While the south polar cap is vaporizing the north polar cap is growing. It’s a balancing act. Overall air pressure will be greatest when there’s the least amount of CO₂ on the ground.” The next such peak is due in early October—that is, early southern summer on Mars.

The boost in pressure has some interesting consequences. It won’t make the martian atmosphere thick by Earth-standards. At best the air pressure on Mars is 100 times less than Earth. But it might become thick enough in some places for liquid water to flow.

Liquid water is normally impossible on Mars because the air pressure is so low. On a warm summer day, ice doesn’t melt. It vaporizes. But a small boost in pressure could be enough to allow water to flow under a warm summer sun. Southern summer, therefore, might be a good time for future human explorers to visit.

On the other hand, thicker air also encourages dust storms, which are a big problem on Mars. Small dust clouds stirred by sun-warmed winds sometimes grow to encircle the entire planet. In 2001 such a storm lasted for months and frustrated astronomers who couldn’t see through the haze.

Will that happen again this year? No one knows.

When the seasonal polar cap finally vanishes, Smith recommends looking for the permanent polar cap. “The permanent cap is made of frozen water hiding beneath the seasonal cap of CO₂,” he explains. While the seasonal cap is wide-ranging (90° to 60° latitude) and shallow (only 1-meter deep), the permanent cap is compact and about 3-km deep. “It harbors a mass of water comparable to the mass of the martian moon Phobos.” To amateur astronomers peering through telescopes, the water-ice cap will look like a tight white knot within 10° latitude of the pole.

Dark “cryptic” spots. Mountainous rifts. A treasure trove of water. There’s a lot to look for around the south pole of Mars. Grab a telescope and see for yourself!

Editor’s note: In this story we talk about the martian polar caps “melting” or “vaporizing.” That’s not exactly right. A physicist would say more accurately “the polar caps are subliming.” In other words, the frozen

CO₂—better known as “dry ice”—transforms directly from a solid to a gas without going through an intermediate liquid phase.

News Release: 2003-109 August 6, 2003

Mars Exploration Rover Mission Status

The first in-flight checkouts of the science instruments and engineering cameras on NASA's twin Spirit and Opportunity spacecraft on their way to Mars have provided an assessment of the instruments' condition after the stressful vibrations of launch.



The instrument tests run by the Mars Exploration Rover flight team at NASA's Jet Propulsion Laboratory, Pasadena, Calif., finished with performance data received Tuesday from two of the spectrometers on Opportunity.

Each rover's suite of science instruments includes a stereo panoramic camera pair, a microscope camera and three spectrometers. The tests also evaluated performance of each spacecraft's engineering cameras, which are a stereo navigation camera pair, stereo hazard-avoidance camera pairs on the front and back of the rover, and a downward-pointing descent camera on the lander to aid a system for reducing horizontal motion just before impact.

All 10 cameras on each spacecraft - three science cameras and seven engineering cameras on each - performed well. One of the three spectrometers on Spirit returned data that did not fit the expected pattern. The other two spectrometers on Spirit and all three on Opportunity worked properly. Teams have been busy since the tests began nearly three weeks ago analyzing about 200 megabits of instrument data generated from each spacecraft.

"All the engineering cameras are healthy," said JPL imaging scientist Dr. Justin Maki. "We took two pictures with each engineering camera — 14 pictures from each spacecraft. Even when the cameras are in the dark, the images give characteristic signatures that let us know whether the electronics are working correctly."

The science cameras on each rover - the Pancam color panoramic cameras and the Microscopic Imagers - all performed flawlessly. A

spectrometer on each rover for identifying minerals from a distance, called the miniature thermal emission spectrometer, or mini-TES, also worked perfectly on each rover.

Two other spectrometers - an alpha particle X-ray spectrometer and a Mössbauer spectrometer - are mounted on an extendable arm for close-up examination of the composition of rocks and soil. Both instruments on Opportunity, as well as Spirit's alpha particle X-ray spectrometer worked properly. The Mössbauer spectrometer on Spirit is the one whose test data did not fit the pattern expected from normal operation.

"The Mössbauer results we just received from Opportunity are helping us interpret the data that we've been analyzing from Spirit," said Dr. Steve Squyres of Cornell University, Ithaca, N.Y., principal investigator for the suite of science tools on each rover. "Some of the theories we had developed for what might be causing the anomalous behavior of the Mössbauer instrument on Spirit have been eliminated by looking at the data from the one on Opportunity."

The remaining theories focus on an apparent problem in movement of a mechanism within the instrument that rapidly vibrates a gamma-ray source back and forth.

"The Mössbauer spectrometer on Spirit is working, and even if we don't come up with a way to improve its performance, we'll be able to get scientific information out of the data it sends us from Mars," Squyres said. "But it's a very flexible instrument, with lots of parameters we can change. We have high hopes that over the coming months we'll be able to understand exactly what's happened to it and make adjustments that will improve its performance. And if the Mössbauer spectrometer on Opportunity behaves on Mars the way it did today, we'll get beautiful data from that instrument."

The two types of spectrometers on the rovers' extendable arms complement each other. The alpha particle X-ray spectrometers provide information about what elements are in a rock. The Mössbauer spectrometers give information about the arrangement of iron atoms in the crystalline mineral structure within a rock.

As of 6 a.m. Pacific Daylight Time August 7, Spirit will have traveled 157.1 million kilometers (97.6 million miles) since its June 10 launch, and Opportunity will have traveled 82.7 million kilometers (51.4 million miles) since its July 7 launch. After arrival, the rovers will examine their landing areas for geological evidence about the history of water on Mars.

JPL, a division of the California Institute of Technology, manages the Mars Exploration Rover project for NASA's Office of Space Science, Washington, D.C. Additional information about the project is available from JPL at <http://mars.jpl.nasa.gov/mer> and from Cornell University, Ithaca, N.Y., at <http://athena.cornell.edu> .

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Midveining Observing Highlights for September

The Milky Way stretches across the sky from southwest to northeast. Cygnus can be found directly overhead. The Great Square of Pegasus is rising in the east. To the northeast of the Great Square the constellation of Andromeda can be seen and just above its center is M31, the Andromeda Galaxy. The Double Cluster (NGC 869 and NGC 884) in Perseus can be seen rising in the northeast. Sagittarius and Scorpius are in the southwest. The bright star Arcturus is setting in the west. The Big Dipper is low on the northern horizon. Mars is still dominant in the southern sky.

The image below shows the location of M31 as well as other deep sky objects near Andromeda.

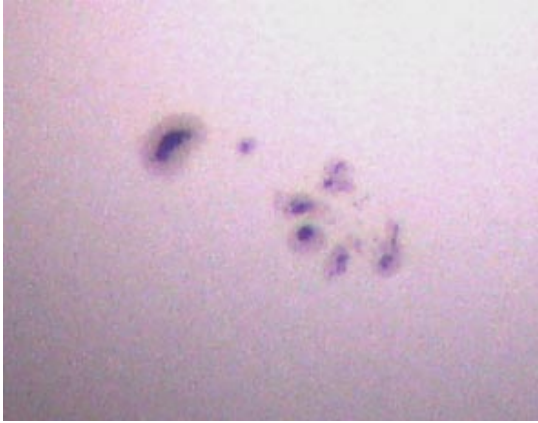


Full moon is on September 10th and new moon is on September 26th.

Observations and Photographs

The picture below was taken by John Kocijanski using an Olympus D-550 digital camera through a 20mm Meade Super Plossl eyepiece and

Stellarvue AT1010. A maximum zoom of 2.8x was used. Taken on July 5, 2003 it shows sunspot group 375. That group rotated into view twice during its existence.



Member's Telescopes and Equipment

This review was submitted by Tony Kim.

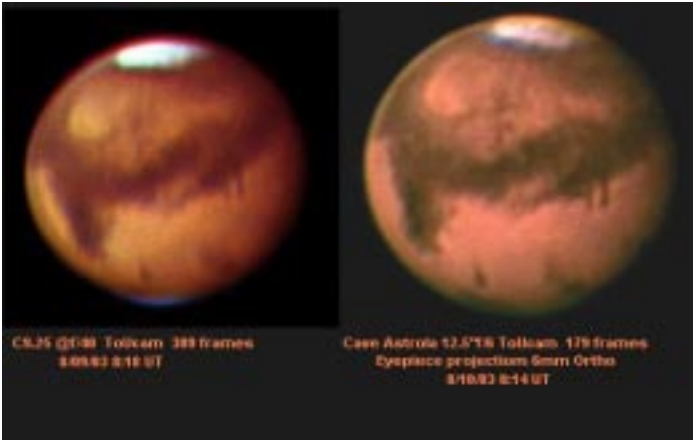
This isn't a thorough review of the UHC, but I'll mention what I thought of it the other night. When I looked through your scope with the O-III, I could clearly see the "apple core" shape. Looking through my scope with the UHC, it was brighter but the apple core was not nearly as defined as in yours. Later that night, Geoff happened to have the O-III from Astronomik, the same brand I bought the UHC from. Going back and forth between the UHC and O-III in my scope, I noticed that the UHC gave brighter views of the nebulas (Ring, Swan, Lagoon, to name a few), but that the O-III gave more contrast. This is pretty much what most other reviewers on the 'net have said, and I finally got to demonstrate it myself. It's been said that if you can have only one filter, make it the UHC. I don't know about that. Yes, it's brighter but not as contrasty. I'm starting to have a bit of buyer's remorse. I may end up selling the UHC or just getting the O-III (I sold my old Lumicon last week).

BARLOW BOB'S CORNER

Barlow Bob is a member of the Rockland Astronomy Club.

These two ultimate pictures of Mars were taken by Roland Chavez

from Powder Springs, GA ROLOCHAVEZ@AOL.COM and I am sending his permission to publish these with credit due.



NASA Space Place

Careful Planning and Quick Improvisation Succeed in Space Biz

By Tony Phillips

On December 18, 2001, ground controllers at JPL commanded NASA's Deep Space 1 (DS1) spacecraft to go to sleep. "It was a bittersweet moment," recalls Marc Rayman, the DS1 project manager. Everyone was exhausted, including Deep Space 1, which for three years had taken Rayman and his team on the ride of their lives.

DS1 blasted off atop a Delta rocket in 1998. Most spacecraft are built from tried-and-true technology-otherwise mission controllers won't let them off the ground. But Deep Space 1 was different. Its mission was to test 12 advanced technologies. Among them: an experimental ion engine, a solar array that focused sunlight for extra power, and an autopilot with artificial intelligence. "There was a good chance DS1 wouldn't work at all; there were so many untried systems," recalls Rayman.

Nevertheless, all 12 technologies worked; the mission was a big success.

Indeed, DS1 worked so well that in 1999 NASA approved an extended mission, which Rayman and colleagues had dreamed up long before

DS1 left Earth-a visit to a comet. "We were thrilled," says Rayman.

And that's when disaster struck. DS1's orientation system failed. The spacecraft couldn't navigate!

What do you do when a spacecraft breaks and it is 200 million miles away? "Improvise," says Rayman.

Ironically, the device that broke, the 'Star Tracker,' was old technology. The DS1 team decided to use one of the 12 experimental devices-a miniature camera called MICAS-as a substitute. With Comet Borrelly receding fast, they reprogrammed the spacecraft and taught it to use MICAS for navigation, finishing barely in time to catch the comet. "It was a very close shave."

In September 2001, DS1 swooped past the furiously evaporating nucleus of Comet Borrelly. "We thought the spacecraft might be pulverized," Rayman recalls, but once again DS1 defied the odds. It captured the best-ever view of a comet's heart and emerged intact.

By that time, DS1 had been operating three times longer than planned, and it had nearly exhausted its supply of thruster-gas used to keep solar arrays pointed toward the Sun. Controllers had no choice but to deactivate the spacecraft, which remains in orbit between Earth and Mars.

Rayman has moved on to a new project-Dawn, an ion-propelled spacecraft that will visit two enormous asteroids, Ceres and Vesta, in 2010 and 2014. "Dawn is based on technologies that DS1 pioneered," he says.

Even asleep, DS1 continues to amaze.

Find out more about DS1 at <http://nmp.jpl.nasa.gov/ds1> . For kids, go to <http://spaceplace.nasa.gov/ds1dots.htm> to do an interactive dot-to-dot drawing of Deep Space 1.

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



This was the final image of the nucleus of comet Borrelly, taken just 160 seconds before Deep Space 1's closest approach to it. This image shows the 8-km (5-mile) long nucleus from about 3417 kilometers (over 2,000 miles) away.

