



# THE OBSERVER

SAN BERNARDINO VALLEY AMATEUR ASTRONOMERS

Member THE ASTRONOMICAL LEAGUE

*"Celebrating Forty-Eight Years of Amateur Astronomy"*

VOLUME #48 ISSUE #03

MARCH 2006

## Feature Presentation: An IMAX movie called "Destiny in Space"

### Enceladus the Storyteller March 9, 2006

A masterpiece of deep time and wrenching gravity, the tortured surface of Saturn's moon Enceladus and its fascinating ongoing geologic activity tell the story of the ancient and present struggles of one tiny world. This is a story that is recounted by imaging scientists in a paper published in the journal *Science* on March 10, 2006.

The enhanced color view of Enceladus seen here is largely of the southern hemisphere and includes the south polar terrain at the bottom of the image.

Ancient craters remain somewhat pristine in some locales, but have clearly relaxed in others. Northward-trending fractures, likely caused by a change in the moon's rate of rotation and the consequent flattening of the moon's shape, rip across the southern hemisphere. The south polar terrain is marked by a striking set of 'blue' fractures and encircled by a conspicuous and continuous chain of folds and ridges, testament to the forces within Enceladus that have yet to be silenced.

The mosaic was created from 21 false-color frames taken during the Cassini spacecraft's close approaches to Enceladus on March 9 and July 14, 2005. Images taken using filters sensitive to ultraviolet, visible and infrared light (spanning wavelengths from 338 to 930 nanometers) were combined to create the individual frames. Credit: NASA/JPL/Space Science Institute



**MEETING: March 18, 2006--7:00PM**

**"Bring Scopes for Lunar and Planetary Observing"**

**SAN BERNARDINO COUNTY MUSEUM**

CALIFORNIA STREET EXIT FROM INTERSTATE 10

**PRE-MEETING DINNER: 5:00PM HOMETOWN BUFFET, LOMA LINDA**

## **SBVAA OFFICERS**

**President:** Martin Carey (909) 783-0839  
**Vice-President:** John Deems (909) 584-7568  
**Treasurer:** Fidel Hernandez (909) 864-0615  
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**Star Party Coordinator:** Tom Lawson  
 (909) 882-8198  
**SBVAA Webmaster:** Steve Miller  
 (625) 859-7776

**SBVAA WEBSITE:**  
[www.sbvaa.org](http://www.sbvaa.org)

### **March Meeting:**

The main feature of Saturday's meeting will be an IMAX movie called "Destiny in Space." We have no speaker this month.

Discussion of upcoming Messier Marathon, March 24-26, 2006 at the Owl Canyon Campground located at Barstow, Ca.

### **Reminder:**

The 2006 SBVAA Club Phone Directory will be published in April of 2006. Please make sure that we have your current phone number. Chris Clarke is the person to contact for updating your information.

Only club members will receive the 2006 Club Directory.

**2006**  
**SBVAA Club Phone Directory**  
**COMING**  
**APRIL, 2006**

## **SBVAA**

### **CALENDER OF EVENTS 2006**

Meetings held at the  
 San Bernardino County Museum  
 For information, call Chris Clarke at (909)  
 888-6511, ex.1458

March 18.....Meeting (3rd Saturday)  
 March 25.....Star Party  
 April 15.....Meeting (3rd Saturday)  
 April 29.....Star Party  
 May 20.....Meeting (3rd Saturday)  
 May 27.....Star Party  
 June 17.....Meeting (3rd Saturday)  
 June 23-25.....Star Party (Grandview)

**email**  
**articles and photos for**  
**The Observer to:**  
**WSMyer@aol.com**

**MESSIER MARATHON**  
**is coming**  
**MARCH 24-26, 2006**

**Owl Canyon**  
**Campground**  
**BARSTOW, CA**

## President's Message

By Martin L. Carey  
martincarey@sbcglobal.net

### Random Observations

All of a sudden, it's decided to be winter, and all of a sudden I've had enough. Warmer nights mean quicker cool down times for scopes and more willing spirits among the delicate folk. Bad nights can also be fun, as we found out last month. The Johnson Valley sky kept doing its pea soup thing. Saturn glowed dimly, but sometimes razor sharp. Steve Yeh had his new Meade 7" f/15 maksutov, which we got to share on first light. Very nice scope, thanks for sharing, Steve. Altogether, we had 27 people out there, including Rudy's entourage.

I hope that you can make it to the Owl Canyon Messier Marathon Saturday, March 25th. I plan to get more serious this time and see more objects, although quality of view is more important to me. There are so many superb galaxies that poor Charles Messier missed. Coma Berenices and Virgo are really beckoning. Messier's telescope had about 3" of low quality aperture, and apparently couldn't resolve M13 into stars.

That's bad. On the other hand, he didn't expect to see stars in M13, and probably thought it a nuisance. We needed Lord Rosse's 72" metal-mirrored telescope to detect the spiral shape of M51. We can see the spiral pattern with a 6" on a good night, because we can visualize it. Of all the lenses we can collect, the ones behind our eyes are the critical ones.

Saturn is just amazing, and I have had the best all time views of it recently. It is worth dragging out a heavy scope and fine-collimating it for just Saturn. You should have seen the kids over at Highland Grove Elementary this week when they saw it under a very steady sky. Three early teen girls I won't forget. They were giggling and eye-rolling their way through line, one saying, "Oh, this is so retarded." She finally sashayed her way to the eyepiece and looked. It was a complete personality transformation:

"OH MY GAWD!"

The white storm on Saturn has been seen recently by amateurs, but not by me. Perhaps it has faded. Have any of you ever seen a storm on Saturn? Some features you might see on a good night include the shadow of the globe on the rings behind it. There is a very thin shady line on the outermost ring, but this is a real challenge.

With excellent optics, you might be able to see that Cassini's division looks wider than just a line. It can look like a black road. There is some debate as to whether this is just an illusion, or something we can actually resolve visually. I like to believe I have seen this effect several times. Of course, illusions are persistent things, like the moon looking bigger when it's near the horizon. Even so, Cassini's Division can look like a blacktop road.

## CARNEGIE OBSERVATORIES 2006 ASTRONOMY LECTURE SERIES AT THE HUNTINGTON

For the fourth consecutive season, the lectures will be held in Friends' Hall at the Huntington Library, Art Collections, and Botanical Gardens, 1151 Oxford Road, San Marino, California (visit [www.huntington.org](http://www.huntington.org) for directions).

Parking is free. All lectures start at 7:30 p.m.

For more information about the Carnegie Observatories or this lecture series, please call 626-304-0270 or e-mail [phifer@ociw.edu](mailto:phifer@ociw.edu).

### **TUESDAY APRIL 4, 2006 7:30 PM** **MAKING WEIRD AND BEAUTIFUL PLANETARY SYSTEMS**

**ALYCIA WEINBERGER**

**Staff Member**

Department of Terrestrial Magnetism  
Carnegie Institution of Washington

Our Sun sports a beautiful system of planets, and other planetary systems come in a wide variety of configurations quite unlike our own. To understand the mechanisms for planet building is an astronomical quest that compels us to look out to young stars. The leftovers from star formation are the raw materials for planets, and around young stars we look for analogues of the early Solar System. Dr. Weinberger will describe how we learn about nascent planetary systems and the processes that sculpt them.

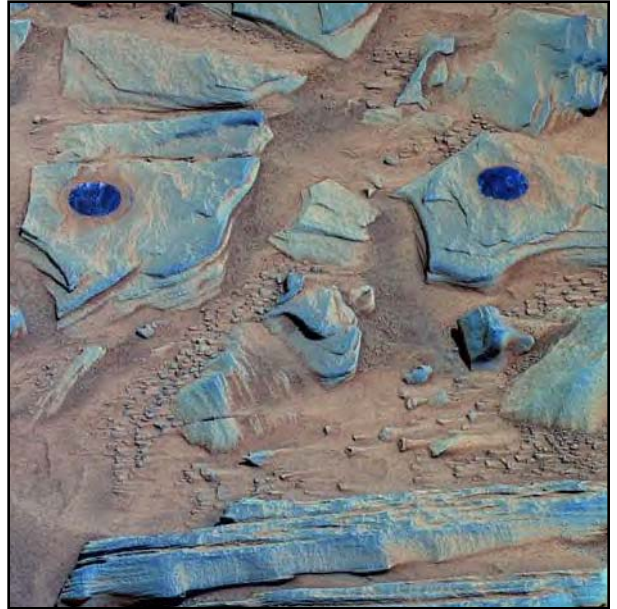
# MARS ROVERS UPDATES

## Studies Rock Outcrop at 'Home Plate'

NASA's Mars Exploration Rover Spirit acquired this false-color image at 11:48 local true solar time on Mars on the rover's 746th Martian day, or sol (Feb. 26, 2006), after using the rock abrasion tool to brush the surfaces of rock targets informally named "Stars" (left) and "Crawfords" (right). Small streaks of dust extend for several centimeters behind the small rock chips and pebbles in the dusty, red soils. Because the rover was looking southwest when this image was taken, the wind streaks indicate that the dominant wind direction was from the southeast.

The targets Stars and Crawfords are on a rock outcrop located on top of "Home Plate." The outcrop is informally named "James 'Cool Papa' Bell," after a Negro Leagues Hall of Famer who played for both the Pittsburgh Crawfords and the Kansas City Stars. To some science team members, the two brushed spots resemble the eyes of a face, with rocks below and between the eyes as a nose and layered rocks at the bottom of the image as a mouth.

The image combines frames taken by Spirit's panoramic camera through the camera's 753-nanometer, 535-nanometer, and 432-nanometer filters. It is enhanced to emphasize color differences among the rocks, soils and brushed areas. The blue circular area on the left, Stars, was brushed on 761 (Feb. 22, 2006). The one on the right, Crawfords, was brushed on sol 763 (Feb. 25, 2006). Image credit: NASA/JPL-Caltech/USGS/Cornell



# CASSINI UPDATE

## Taking a Bite Out of Tethys: March 14, 2006

Dione steps in front of Tethys for a few minutes in an occultation, or mutual event. These events occur frequently for the Cassini spacecraft when it is orbiting close to the ringplane.

The image was taken in visible red light with the Cassini spacecraft narrow-angle camera on Feb. 10, 2006, at a distance of approximately 3.7 million kilometers (2.3 million miles) from Dione and 4 million kilometers (2.5 million miles) from Tethys. Resolution in the original image was 22 kilometers (14 miles) per pixel on Dione (1,126 kilometers, or 700 miles across) and 24 kilometers (15 miles) per pixel on Tethys (1,071 kilometers, or 665 miles across). The image has been magnified by a factor of two.

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, Colo.

For more information about the Cassini-Huygens mission visit <http://saturn.jpl.nasa.gov>. The Cassini imaging team home-page is at <http://ciclops.org>. Credit: NASA/JPL/Space Science Institute





## Spring Break Tour of Deep Space Center

Since its beginnings in 1958, the National Aeronautics and Space Administration (NASA) has been investigating the solar system with autonomous spacecraft. These highly sophisticated robotic explorers have sent back new and often surprising information about our planetary neighbors Mercury, Venus, Mars, Jupiter, Saturn, Uranus, and Neptune. However, none of these missions of discovery would have been possible were it not for the Deep Space Network (DSN), which provides radio communications for all of NASA's interplanetary spacecraft.

The DSN is also utilized for radio astronomy and radar observations of the solar system and universe. Some Earth-orbiting spacecraft in high-Earth orbits, and a selected group of spacecraft in low-earth orbits, also communicate through the DSN. The DSN is part of NASA's Space Operations Management Office (SOMO) and is managed, technically directed, and operated for NASA by the Jet Propulsion Laboratory (JPL), a division of the California Institute of Technology (Caltech) in Pasadena, California. On Monday, April 3rd, the Big Bear Valley Astronomical Society (BBVAS) is sponsoring a tour of the Goldstone Deep Space Center Communications Complex. The tour will begin at the

Goldstone Visitor's Center with a presentation on the antennas and the history of Goldstone Deep Space Communications Complex. This is followed by a presentation in the current mission museum. Visitors will then travel the 53 square mile complex to see the antennas of the Echo Site, Apollo Valley and Mars Valley with a stop in the Signal Processing Center to view the Goldstone Mission Operations Center.

Participants will meet at the StarGazers Inn & Observatory, 717 Jeffries Road (behind the Middle School) in Big Bear Lake, at 9am and travel by charter bus to Fort Irwin. Cost of the trip is \$30 and does not include lunch at Goldstone's Cafeteria.

Participants must have valid picture id. Children must be accompanied by an adult. No infants or toddlers. Non-citizens must have valid passport, green-card or visa. The bus is expected to return by 6pm. Don't miss this exiting opportunity! Tour is limited to 50 visitors. Reservations must be paid by March 25th.

Doreen Wiggins, Innkeeper  
StarGazers Inn & Observatory

866-482-STAR (7827) Reservations  
909-878-4496; 909-878-4067, Fax  
717 Jeffries Road, P.O. Box 2819  
Big Bear Lake, CA 92315-2819  
www.stargazersinn.com

## An Invitation To Join

### The San Bernardino Valley Amateur Astronomers

- Monthly Meetings/Speakers
- Monthly Star Party
- The Observer Newsletter
- Learn about Astronomy
- Learn about Telescopes
- Learn about Astrophotography

Fill out and mail this form along with \$30.00 Annual Membership Fee. Add an additional \$33.00 to include a one (1) year subscription to "Sky and Telescope" magazine and or \$29.00 for one (1) year subscription to "Astronomy" Magazine.

Make check payable to: San Bernardino Valley Amateur Astronomers.

Mail to: **Fidel Hernandez, SBVAA Treasurer,**  
**27799 21st St, Highland, CA, 92346**

Name \_\_\_\_\_

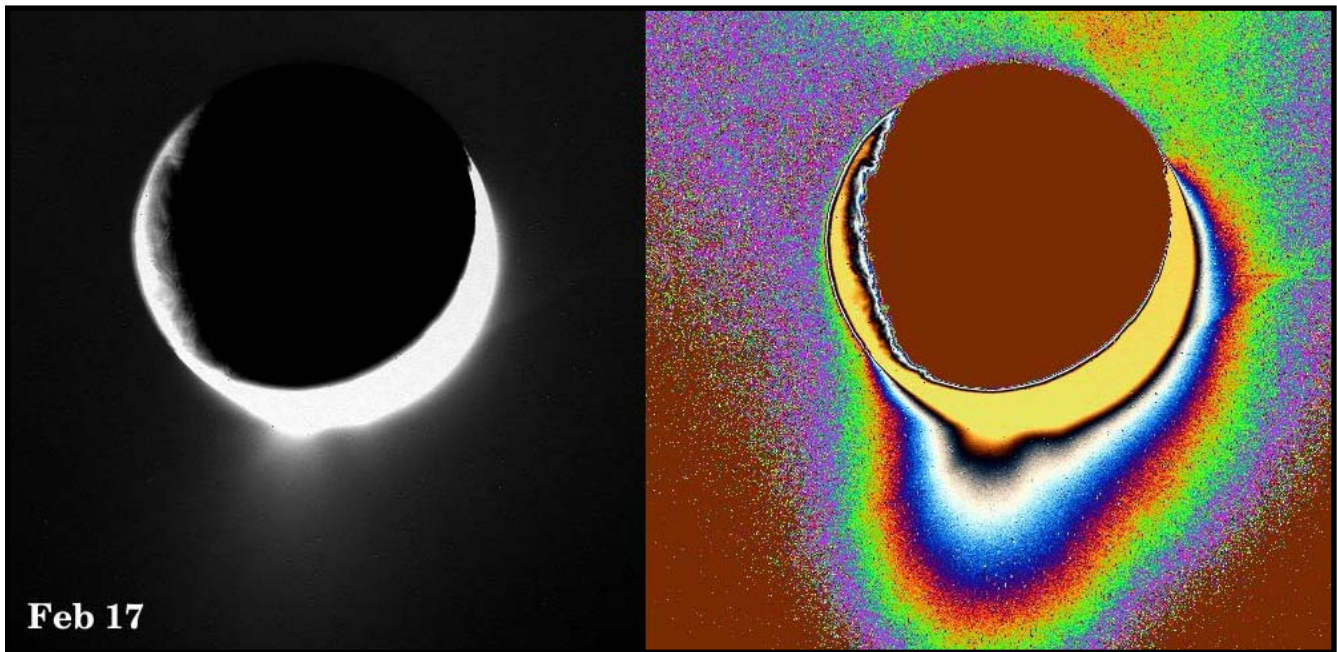
Address \_\_\_\_\_

City and State \_\_\_\_\_

Zip \_\_\_\_\_ Phone \_\_\_\_\_

Internet E-mail Address \_\_\_\_\_

## Spray Above Enceladus III March 9, 2006



Plumes of icy material extend above the southern polar region of Saturn's moon Enceladus as imaged by the Cassini spacecraft in February 2005. The monochrome view is presented along with a color-coded version on the right. The latter reveals a fainter and much more extended plume component.

Images like these are being analyzed by scientists as they seek to explain the processes that could be producing such incredible features. As reported in the journal *Science* on March 10, 2006, imaging scientists believe that the plumes are geysers erupting from pressurized subsurface reservoirs of liquid water above 273 degrees Kelvin (0 degrees Celsius).

Another plume view, (Spray Above Enceladus II), was taken one month earlier and looks broadside at the moon's prominent "tiger stripe" fractures. In the January view, the plume appears to have a single component. This (February) view looks along the tiger stripe fractures and reveals both a large and a small component to the plume; the smaller, fainter component is separated from the main plume by about 100 kilometers (60 miles). See *Tiger Stripes Up Close* for a view of the tiger stripe features.

This clear-filter image was taken with the Cassini spacecraft narrow-angle camera at a distance of approximately 321,000 kilometers (199,000 miles) from Enceladus at a Sun-Enceladus-spacecraft, or phase, angle of 153 degrees. The image scale is approximately 1.8 kilometers (1.1 miles) 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, Colo.

For more information about the Cassini-Huygens mission visit <http://saturn.jpl.nasa.gov> . The Cassini imaging team homepage is at <http://ciclops.org> .

Credit: NASA/JPL/Space Science Institute



## Planets in Strange Places

By Trudy E. Bell

Red star, blue star, big star, small star—planets may form around virtually any type or size of star throughout the universe, not just around mid-sized middle-aged yellow stars like the Sun. That's the surprising implication of two recent discoveries from the 0.85-meter-diameter Spitzer Space Telescope, which is exploring the universe from orbit at infrared (heat) wavelengths blocked by the Earth's atmosphere.

At one extreme are two blazing, blue "hypergiant" stars 180,000 light-years away in the Large Magellanic Cloud, one of the two companion galaxies to our Milky Way. The stars, called R 66 and R 126, are respectively 30 and 70 times the mass of the Sun, "about as massive as stars can get," said Joel Kastner, professor of imaging science at the Rochester Institute of Technology in New York. R 126 is so luminous that if it were placed 10 parsecs (32.6 light-years) away—a distance at which the Sun would be one of the dimmest stars visible in the sky—the hypergiant would be as bright as the full moon, "definitely a daytime object," Kastner remarked.

Such hot stars have fierce solar winds, so Kastner and his team are mystified why any dust in the neighborhood hasn't long since been blown away. But there it is: an unmistakable spectral signature that both hypergiants are surrounded by mammoth disks of what might be planet-forming dust and even sand.

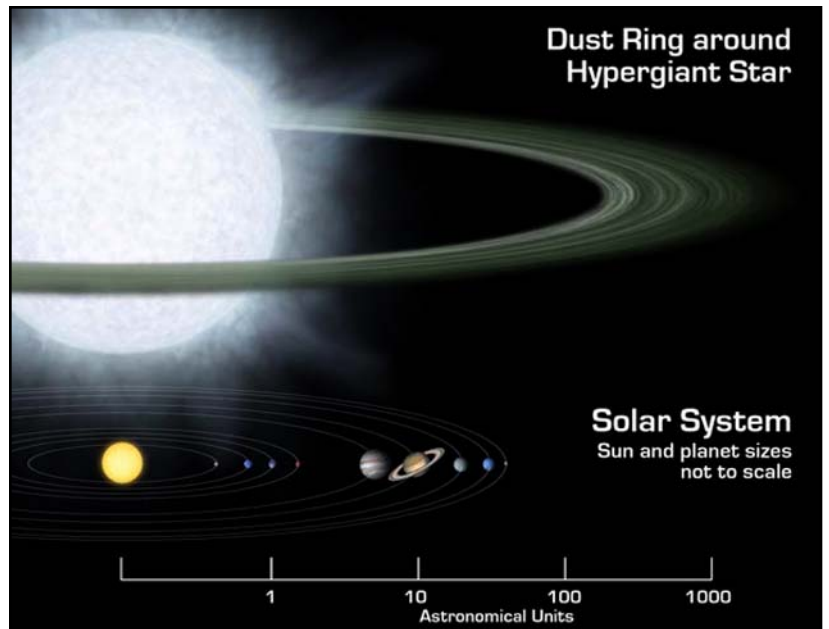
At the other extreme is a tiny brown dwarf star called Cha 110913-773444, relatively nearby (500 light-years) in the Milky Way. One of the smallest brown dwarfs known, it has less than 1 percent the mass of the Sun. It's not even massive enough to kindle thermonuclear reactions for fusing hydrogen into helium. Yet this miniature "failed star," as brown dwarfs are often called, is also surrounded by a flat disk of dust that may eventually clump into planets. (Note: This brown dwarf discovery was made by a group led by Kevin Luhman of Pennsylvania State University.) Although actual planets have not been detected (in part because of the stars' great distances), the spectra of the hypergiants show that their dust is composed of forsterite, olivine, aromatic hydrocarbons, and other geological substances found on Earth.

These newfound disks represent "extremes of the environments in which planets might form," Kastner said. "Not what you'd expect if you think our solar system is the rule."

Hypergiants and dwarfs? The Milky Way could be crowded with worlds circling every kind of star imaginable—very strange, indeed.

Keep up with the latest findings from the Spitzer at [www.spitzer.caltech.edu/](http://www.spitzer.caltech.edu/). For kids, the Infrared Photo Album at The Space Place ([spaceplace.nasa.gov/en/kids/sirtf1/sirtf\\_action.shtml](http://spaceplace.nasa.gov/en/kids/sirtf1/sirtf_action.shtml)) introduces the electromagnetic spectrum and compares the appearance of common scenes in visible versus infrared light.

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



Artist's rendering compares size of a hypothetical hypergiant star and its surrounding dusty disk to that of our solar system.

**MESSIER MARATHON STAR PARTY:  
Saturday, MARCH 24-26, 2006  
at Owl Canyon Campground, Barstow, CA**

See Tom Lawson, Star Party Coordinator,  
to receive club online updates and color PDF Newsletter.

**MEETING: MARCH 18, 2006--7:00PM  
Feature Presentation: An IMAX movie  
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**"Bring Scopes for Lunar and Planetary Observing"**

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2024 ORANGE TREE LANE, REDLANDS, CA

CALIFORNIA STREET EXIT FROM INTERSTATE 10

**PRE-MEETING DINNER: 5:00PM, HOMETOWN BUFFET, LOMA LINDA**



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Riverside, Ca 92501