



THE OBSERVER

SAN BERNARDINO VALLEY AMATEUR ASTRONOMERS

Member THE ASTRONOMICAL LEAGUE

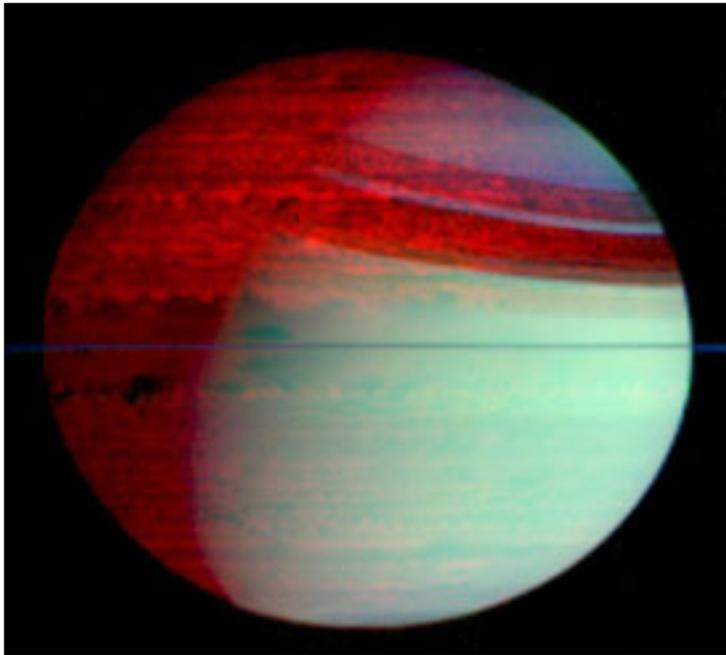
"Celebrating Forty-Eight Years of Amateur Astronomy"

VOLUME #48 ISSUE #10

OCTOBER 2006

"Enhancing Your Vision: Getting the Most From Your Telescope" Presentation by Martin Carey and Steve Miller

Saturn's Silhouetted Clouds October 5, 2006



This false-color mosaic of Saturn shows deep-level clouds silhouetted against Saturn's glowing interior. The image was made with data from Cassini's visual and infrared mapping spectrometer, which can image the planet at 352 different wavelengths.

This mosaic shows the entire planet, including features like Saturn's ring shadows and the terminator, the boundary between day and night.

The data were obtained in February 2006 at a distance of 1.6 million kilometers (1 million miles) from directly over the plane of Saturn's rings, which appear here as a thin, blue line over the equator. The image was constructed from images taken at wavelengths of 1.07 microns shown in blue, 2.71 microns shown in green, and 5.02 microns shown in red.

The blue-green color (lower right) is sunlight scattered off clouds high in Saturn's atmosphere and the red color (upper left) is the glow of thermal radiation from Saturn's warm interior, easily seen on Saturn's night side (top left), within the shadow of the rings, and with somewhat less contrast on Saturn's day side (bottom right).

The darker areas within Saturn show the strongest thermal radiation. The bright red color indicates areas where Saturn's atmosphere is relatively clear. The great variety

of cloud shapes and sizes reveals a surprisingly active planet below the overlying sun-scattering haze

The brighter glow of the northern hemisphere versus the southern indicates that the clouds and hazes there are noticeably thinner than those in the south. Scientists speculate that this is a seasonal effect, and if so, it will change as the northern hemisphere enters springtime during the next few years

MEETING: OCTOBER 14, 2005--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

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www.sbvaa.org

October Meeting:

"Enhancing Your Vision, Getting the Most From Your Telescope," a Powerpoint presentation by Martin Carey and Steve Miller. We will have telescopes of different designs on hand to demonstrate how to improve the performance and enjoyment of your instrument, whatever its size or type.

CALENDARS

The 2007 "Deep Space Mysteries" calendars are here. It will be available for sale starting with the club meeting on September the 16th. We have 30 for sale on a first come first served basis. The retail for this calendar is \$12.95 plus \$1.00 tax or \$13.95 altogether. Your cost, through the club, is \$10 a savings of \$4. See Fidel, the club treasurer, at the back of the room to make your purchase.

SBVAA

CALENDER OF EVENTS 2006

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

- October 14.....Meeting (3rd Saturday)
- October 21.....Star Party
- November 11.....Meeting (2nd Saturday)
- November 18.....Star Party
- December 9.....Holiday Get-Together
(2nd Saturday)
- December 16.....Star Party

email
articles and photos
for
The Observer
to:

WSMyer@aol.com
We need your articles!!

SBVAA
Officer Elections
to be held
October, 2006

President's Message

Fall, after all, is my second favorite time of year for observing Spring being the first, I've decided. The sky looks nearly empty as the Summer Triangle gets low and Pegasus is overhead. "What's there to see?" you might ask. Well, friend, that's why you must come out into the dark for a star party this month and next, to find out. Remember these names: M31, NGC 253, M15, Pisces galaxies, etc. The fall is a great deep sky time of year.

The Asistencia outreach was a fun one with a few enthusiastic visitors. We tend to have a good time on outreaches regardless of the number of visitors who show up. Many of them stayed awhile and looked through all the scopes. The clouds showed up right as we were finishing, some kind of a sign, perhaps.

Jupiter is almost gone in the western sky, and will soon join Saturn and Venus in the early morning. Only a few got to see Saturn before dawn at Grandview last month. If they were up out of the warm bed at that time on that mountain, they deserve some kind of a special award. I think Fidel was one of those, nature's calls or not. Anyway, now is a very good time to see Saturn right before sunrise, as it will be sitting high in the sky at that time. In only four years, Saturn will present another "ring-lane crossing" where the rings present edge-on and disappear for about a month or so. We watched this in 1996.

All of us are surely very grateful for the wonderful food and snacks that our members (and future members) brought to Grandview. We had a terrific time, even though it was very cold on Friday night and Saturday morning. The skies had near perfect transparency both nights, and the deep sky sights were amazing. I hope you all got to see as much as you wished before you crawled frozen into your beds. This Grandview ranked among the best for viewing, and eating! Thanks for a truly wonderful time, everybody.

Then there is the great global warming on Mars. Many people have heard of this in the news and on the Internet, and are concerned for

the future of Mars. If both Earth and Mars appear to be experiencing global warming, some scientists are suggesting that there may be a "larger phenomenon" occurring in the solar system that is causing both climates to change. In the interest of the Precautionary Principle, we might need to change plans for future missions to Mars, such as enforcing the Kyoto Protocols for the Martians also. We can't be too careful, you know.

Nobel Physics Prize Goes to Big-Bang Work

by Deborah Amos and David Kestenbaum

Morning Edition, October 3, 2006 · The Nobel Prize in Physics will be awarded to two Americans whose findings lend support to the big-bang scenario of the universe's origins.

The winners are John Mather, 60, who works at NASA's Goddard Space Flight Center, and George Smoot, 61, who works at the Lawrence Berkeley National Laboratory in Berkeley, Calif.

"They have not proven the big-bang theory but they give it very strong support," said Per Carlson, chairman of the Nobel committee for physics.

The pair led an effort to measure ancient radiation left-over from the big bang. Their satellite experiment, called COBE and launched in 1989, made a very precise measurement of faint radiation produced after the big bang. When the data was finally shown at a conference, scientists gave a standing ovation.

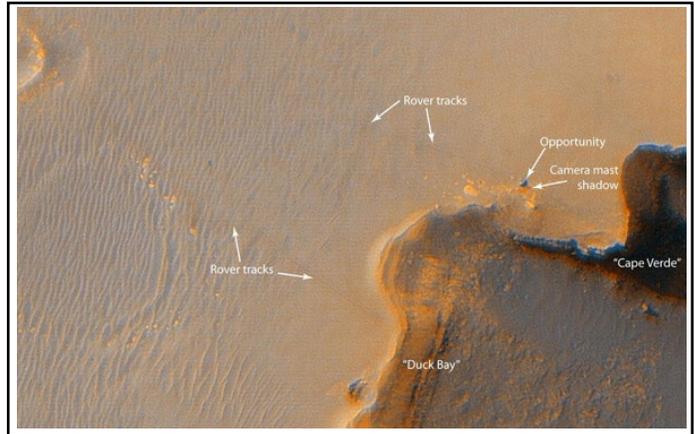
COBE's measurements gave strong support for the big bang, which was the only theory that could explain the precise pattern of radiation. The experiment also showed that the radiation had small variations in temperature in different directions. Scientists think these small irregularities explain why matter began to clump in the universe, leading to the formation of galaxies, instead of spreading out evenly.

MARS ROVERS UPDATES

Opportunity at Crater's 'Cape Verde' (Annotated)

This image from the High Resolution Imaging Science Experiment on NASA's Mars Reconnaissance Orbiter shows the Mars Exploration Rover Opportunity near the rim of "Victoria Crater." Victoria is an impact crater about 800 meters (half a mile) in diameter at Meridiani Planum near the equator of Mars. Opportunity has been operating on Mars since January, 2004. Five days before this image was taken, Opportunity arrived at the rim of Victoria, after a drive of more than 9 kilometers (over 5 miles). It then drove to the position where it is seen in this image.

Shown in the image are "Duck Bay," the eroded segment of the crater rim where Opportunity first arrived at the crater; "Cabo Frio," a sharp promontory to the south of Duck Bay; and "Cape Verde," another promontory to the north. When viewed at the highest resolution, this image shows the rover itself, wheel tracks in the soil behind it, and the rover's shadow, including the shadow of the camera mast. After this image was taken, Opportunity moved to the very tip of Cape Verde to perform more imaging of the interior of the crater.



SPIRIT UPDATE: Solar Power Is on the Rise as Spirit 'Follows the Water' - sol 970-976, September 29, 2006:

Solar power levels on Spirit are slowly beginning to rise again following a winter low of 275 watt-hours on Martian day, or sol, 933 (Aug. 18, 2006). One hundred watt-hours is the amount of electricity needed to light one 100-watt bulb for one hour. This week, the rover's power levels rose to about 296 watt-hours.

Spirit spent much of the week analyzing atmospheric dust attracted to magnets on the spacecraft. The rover identifies iron minerals in the dust using the Mössbauer spectrometer. One of the two magnets, the filter magnet, is weaker than the capture magnet, allowing scientists to separate mineral grains that have the highest magnetic susceptibility, particularly minerals that contain iron.

CASSINI UPDATE

Shorefront Property, Anyone? September 26, 2006

This lake is part of a larger image taken by the Cassini radar instrument during a flyby of Saturn's moon Titan on Sept. 23, 2006. It shows clear shorelines that are reminiscent of terrestrial lakes. With Titan's colder temperatures and hydrocarbon-rich atmosphere, however, the lakes likely contain a combination of methane and ethane, not water.

Centered near 74 degrees north, 65 degrees west longitude, this lake is roughly 20 kilometers by 25 kilometers (12 to 16 miles) across. It features several narrow or angular bays, including a broad peninsula that on Earth would be evidence that the surrounding terrain is higher and confines the liquid. Broader bays, such as the one seen at right, might result when the terrain is gentler, as for example on a beach.

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.

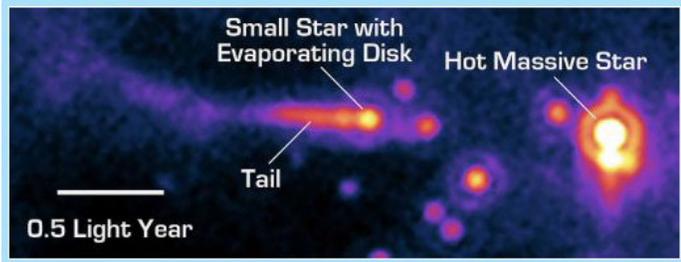
Credit: NASA/JPL



SPITZER SPACE TELESCOPE CAPTURES COSMIC "CRIME" AS IT HAPPENS

By Amir Alexander 5 October, 2006

A team of scientists studying the most massive and energetic stars in the universe stumbled upon a cosmic "crime" in the making: the destruction of a potential planetary system. Led by Zoltan Balog of the University of Arizona's Steward Observatory, the astronomers were using the Spitzer Space Telescope to observe O-type stars, the largest and most powerful stars in the universe. With a mass of up to 100 times that of the Sun -- the radiation from O-type stars is one million times as powerful.



Too close for comfort

The Sun-like star on the left wandered too close to the giant O-type star on the right, and is having its protoplanetary disk blown off. The comet-like tail shows that ongoing process of "photoevaporation" in this image from the Spitzer Space Telescope. Credit: NASA/JPL-Caltech/Z. Balog (Univ. of Ariz./Univ. of Szeged)

According to prevailing theories, the radiation from O-type stars is so strong, that it affects smaller stars

that stray into the giant's neighborhood. In particular, O-type stars would burn away the disk of gas and dust that commonly surrounds young Sun-like stars. These clouds, known as protoplanetary disks, are the stuff from which planets are formed, and without them no planetary system can evolve. As a result, Balog and his colleagues expected to see nothing but bare stars in the neighborhood of the giant O-type, bereft of planets or of protoplanetary disks that form them.

What they actually saw was far more dramatic: A group of Sun-like stars in star-forming cloud IC 1396, 2450 light years away, had strayed close by a giant and violent O-star, and at least one of them was clearly in the process of losing its protoplanetary disk. "Unfortunately these Sun-like stars just got a little too close to the fire" observed University of Arizona Regents Professor George Rieke ruefully. It was like observing a crime as it happened.

The process captured by Spitzer is known as "photoevaporation." The enormous energy output from the O-star heats up the disks surrounding smaller neighboring stars to such a degree that the gas and dust literally boil off. When the disk can no longer hold together, photon (or light) blasts from the O-star blow the evaporated material into interstellar space. That was precisely the dramatic image that Balog and his group witnessed in the Spitzer images.

"To see protoplanetary disks in an area where no one expected to see one is very exciting" said Balog. "But to see a disk in the process of evaporation is even more thrilling." THE PLANETARY SOCIETY

An Invitation To Join

The San Bernardino Valley Amateur Astronomers

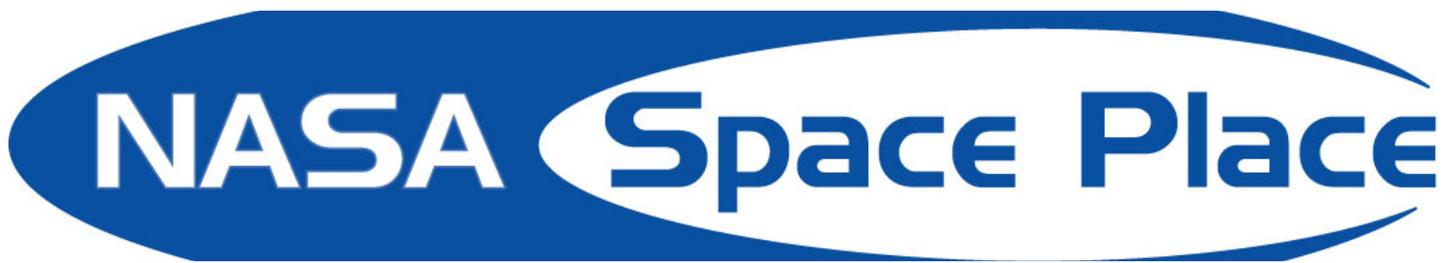
- Monthly Meetings/Speakers
- Monthly Star Party
- The Observer Newsletter
- Learn about Astronomy
- Learn about Telescopes
- Learn about Astrophotography

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.

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Staggering Distance

By Dr. Tony Phillips

Tonight, when the sun sets and the twilight fades to black, go outside and look southwest. There's mighty Jupiter, gleaming brightly. It looks so nearby, yet Jupiter is 830 million km away. Light from the sun takes 43 minutes to reach the giant planet, and for Earth's fastest spaceship, New Horizons, it's a trip of 13 months.

That's nothing.

Not far to the left of Jupiter is Pluto. Oh, you won't be able to see it. Tiny Pluto is almost 5 billion km away. Sunlight takes more than 4 hours to get there, and New Horizons 9 years. From Pluto, the sun is merely the brightest star in a cold, jet-black sky.

That's nothing.

A smidgen to the right of Pluto, among the stars of the constellation Ophiuchus, is Voyager 1. Launched from Florida 29 years ago, the spacecraft is a staggering 15 billion km away. It has traveled beyond all the known planets, beyond the warmth of the sun, almost beyond the edge of the solar system itself.

Now that's something.

"On August 15, 2006, Voyager 1 reached the 100 AU mark—in other words, it is 100 times farther from the Sun than Earth," says Ed Stone, Voyager project scientist and the former director of NASA's Jet Propulsion Laboratory. "This is an important milestone in our exploration of the Solar System. No other spacecraft has gone so far."

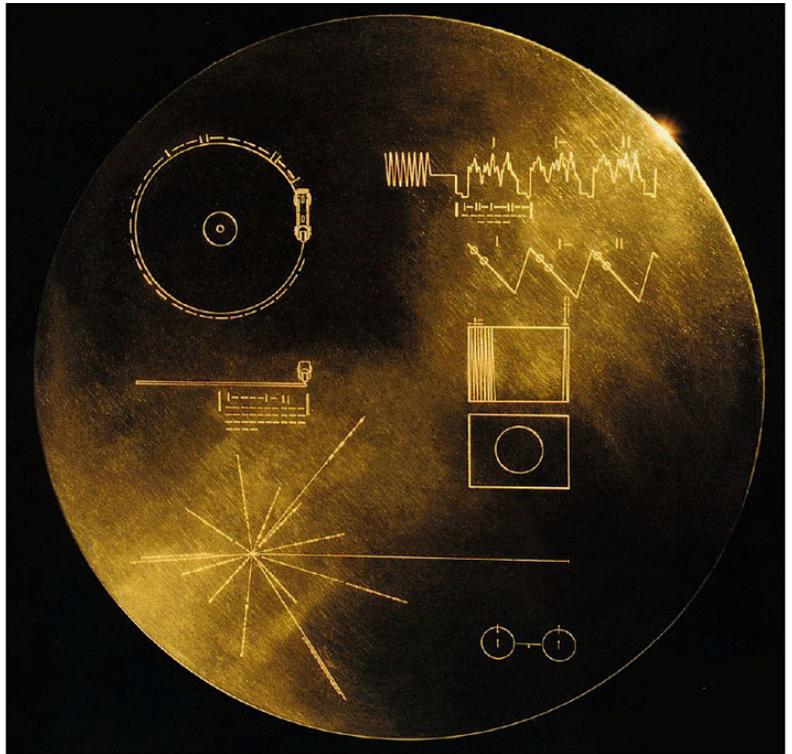
At 100 AU (astronomical units), Voyager 1 is in a strange realm called "the heliosheath."

As Stone explains, our entire solar system—planets and all—sits inside a giant bubble of gas called the heliosphere. The sun is responsible; it blows the bubble by means of the solar wind. Voyager 1 has traveled all the way from the bubble's heart to its outer edge, a gassy membrane dividing the solar system from interstellar space. This "membrane" is the heliosheath.

Before Voyager 1 reached its present location, researchers had calculated what the heliosheath might be like. "Many of our predictions were wrong," says Stone. In situ, Voyager 1 has encountered unexpected magnetic anomalies and a surprising increase in low-energy cosmic rays, among other things. It's all very strange—"and we're not even out of the Solar System yet."

To report new developments, Voyager radios Earth almost every day. At the speed of light, the messages take 14 hours to arrive. Says Stone, "it's worth the wait."

Keep up with the Voyager mission at voyager.jpl.nasa.gov. To learn the language of Voyager's messages, kids (of all ages) can check out spaceplace.nasa.gov/en/kids/vgr_fact1.shtml. NASA



In case it is ever found by intelligent beings elsewhere in the galaxy, Voyager carries a recording of images and sounds of Earth and its inhabitants. The diagrams on the cover of the recording symbolize Earth's location in the galaxy and how to play the record.

STAR PARTY: OWL CANYON

OCTOBER 21, 2006

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

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**2024 ORANGE TREE LANE, REDLANDS, CA
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