

PRIME FOCUS

Tri-Valley Stargazers

December 2006



Meeting Info:

What

Holiday Potluck

Who

TVS Members

When

December 15, 2006

Set up at 6:30 p.m.

Dinner at 7:00 p.m.

Where

Unitarian Universalist

Church in Livermore

1893 N. Vasco Road

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December Meeting

Holiday Potluck

TVS Members

We barely have time to recover from the Thanksgiving feast when we have to gear up for the Christmas/Hannukkah/Kwanzaa/Winter Solstice overeating. To get us on our merry way, the December meeting is our annual Holiday Potluck. TVS will supply the drinks and plastic/paper ware. TVS members are asked to bring a dish to share.

Going by the first letter of your last name, please bring something from the following list:

A - F Rice or Potato Dish

G - L Vegetable or Fruit Dish

M - R Dessert

S - Z Main Dish

We'll be starting the meeting a half hour earlier, at 6:30 p.m., to allow time to get the tables and chairs set up. We'll start eating at 7:00. Friends, family, and elves are welcome to attend.

Membership Renewal

It's hard to believe, but another year has slipped by yet again. This can only mean one thing: It's Membership Renewal Time!

You can use the form on the back of the newsletter to send in your annual dues, or you can download a PDF version of the form from the Membership link on our web site.

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News & Notes

Membership Renewal *continued*

There are no increases in the dues this year. Regular membership is \$40 and a paper version of Prime Focus is mailed to you. Basic membership is \$30—you receive e-mail notification that the online version of Prime Focus is available for download. Student membership is only \$5 a year and have the option of receiving either the paper version or the e-mail notification. TVS considers a Student to be under the age of 18 or still in high school.

If you wish to access the club's dark sky site and do not presently have a key to the site, you need to become a Key Holder. There is a \$20 refundable key deposit that needs to be paid before you get your key.

For any Key Holder, you need to pay a \$10 access fee for the site. This is a yearly fee and the monies are used to offset the costs of maintenance at the site. The \$3 per car fee that you pay when visiting the site goes directly to the landowners.

There is also a Patron membership category. Patron members are allowed to use the club's scope at H2O. You must be a member of at least one year, and in good standing, in order to become a Patron member. The cost is an additional \$40 to either a Basic or Regular membership and you must also be a Key Holder and pay the \$10 access fee.

You can also sign up to receive discounts on magazine subscriptions. A one year subscription to *Sky & Telescope* magazine is \$32.95. A one year subscription to *Astronomy* magazine is \$34, or if you prefer, you can sign up for a two year subscription for \$60.

So where do your membership dollars go? A big chunk goes to paying the rent for our meeting and storage space at the church. We pay about \$550 in various dues (Astronomical League, Astronomical Association of Northern California, Western Amateur Astronomers, and International Dark-Sky Association), \$330 in insurance, \$400 in newsletter costs, \$300 for refreshments and food/drink for the two potlucks, H2O rent, plus many smaller cost items (PO Box rental, library purchases, etc.).

2006-2007 TVS Meeting Dates

Below are the TVS meeting dates for the next few months. The lecture meetings are on the third Friday of the month, with the Board meetings on the Monday following the lecture meeting. The *Prime Focus* deadline applies to that month's issue (e.g., the February 4th deadline is for the February issue).

Lecture Meeting	Board Meeting	Prime Focus Deadline
Dec. 15	Dec. 18	Dec. 3
Jan. 19	Jan. 22	Jan. 7
Feb. 16	Feb. 19	Feb. 4

Money Matters

Treasurer **David Feindel** reports the TVS account balances (as of November 20, 2006):

Checking	\$2,827.41	
CD #1	\$3,556.37	matures 11/17/06
CD #2	\$2,513.57	matures 11/27/06

TVS November Elections

The results are in from the last election, with the only change to the line up the election of David Woolsey as Secretary. Congrats to David!

We can still use volunteers to help out with other club duties, like being the refreshments wrangler, or helping to find speakers for our meetings. Should you be interested in becoming more involved with the club, just let any club officer or board member know and they'll be happy to help you take on any task.

School Star Parties

We have a star party scheduled for Thursday, December 21st. We'll be helping out at the December Pack Meeting of the Cub Scout Stars. The event takes place at Coyote Creek MPR (Coyote Creek Elementary School) in San Ramon from 7:00 to 8:00 p.m.

The school is located at 8700 North Gale Ridge Road. To get there, take 680 to Bollinger Canyon Rd and head east on Bollinger. Turn left onto Dougherty, then another left onto North Gale Ridge Road.

We'll have more information about it, and any other star party that might pop up, when we get closer to the date. Check our web site and the TVS eGroups list for the latest information.

RASC Handbooks

We've ordered a batch of RASC (Royal Astronomical Society of Canada) 2007 Observer's Handbooks and Calendars to be sold at the general meetings. We should have them available for purchase at the December meeting, otherwise they'll be here for the January meeting.

Newsletter header image: Saturn Storm

This hurricane-like storm is located at Saturn's south pole. It's about 5,000 miles across, with the upper level clouds around the outer part of the storm about 20-45 miles above those areas in the center of the storm. Go to <http://photo-journal.jpl.nasa.gov/archive/PIA08332.mov> to see a brief time-lapse video of the hurricane's movement.

This picture was taken on October 11, 2006, when the Cassini spacecraft was about 210,000 miles away from Saturn. The image was taken with a spectral infrared filter and was digitally enhanced.

Photo: Cassini Spacecraft (NASA, JPL, Space Science Institute)

Calendar of Events

December 11, 7:30 p.m.

What: *The Science of Spirit and Opportunity*

Who: Dr. Albert Haldemann (NASA JPL)

Where: Jewish Community Center, San Francisco

Cost: \$4.00 at the door or by mail

The scientific results obtained to date from the Mars Exploration Rovers are extensive. In one and a half Martian years on the planet Spirit has explored the varied rocks of the 'Columbia Hills,' from the summit of 'Husband Hill' into the 'Inner Basin,' while Opportunity verified past surface water in sedimentary rocks kilometers apart inside 'Eagle Crater,' 'Endurance Crater,' 'Erebus Crater' and 'Victoria Crater.'

All programs begin at 7:30 pm in Kanbar Hall at the Jewish Community Center of San Francisco, 3200 California Street. Parking is available across the street in the UCSF Laurel Heights campus parking lot for \$1.25 per night. Parking in the JCC garage is \$1.25 per half-hour. The #1 California, #3 Jackson, #4 Sutter, and #43 Masonic MUNI lines stop directly in front of the building. The #38 Geary and #24 Divisadero buses stop only a few blocks away.

For more information, call (415) 321-8000.

December 31, 3:45 to 5:00 p.m.

What: *Annual New Year's Eve Balloon Drop*

Who: You

Where: Chabot Space & Science Center, Oakland

Cost: Free with General Admission

SPACE IS LIMITED. ADVANCE TICKETS REQUIRED! Available at the Box office: 510-336-7373.

Join us for our annual balloon drop to cheer the arrival

of New Year 2007. At the stroke of 4:00 p.m. (midnight Greenwich Mean Time) celebrate the start of the real New Year with music and balloons dropping from our Rotunda, many filled with prizes. Children ages 5 and under are invited to their own balloon drop in the Discovery Lab.

There will be no 4 p.m. shows in the Planetarium or the Theater.

January 15, 7:30 p.m.

What: *Saturn's Rings: Ongoing Studies by Cassini*

Who: Dr. Jeff Cuzzi (NASA Ames Research Center)

Where: Jewish Community Center, San Francisco

Cost: \$4.00 at the door or by mail

The Cassini spacecraft arrived at Saturn in July 2004 and has provided many new insights into the structure and composition of Saturn's rings, and their dynamic interactions with nearby and embedded moonlets. By January 2007, the spacecraft will be at higher elevations above the ring plane than ever achieved before. New results will be put in the context of the big picture for understanding this fascinating system.

All programs begin at 7:30 pm in Kanbar Hall at the Jewish Community Center of San Francisco, 3200 California Street. Parking is available across the street in the UCSF Laurel Heights campus parking lot for \$1.25 per night. Parking in the JCC garage is \$1.25 per half-hour. The #1 California, #3 Jackson, #4 Sutter, and #43 Masonic MUNI lines stop directly in front of the building. The #38 Geary and #24 Divisadero buses stop only a few blocks away.

For more information, call (415) 321-8000.

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Lecture Meeting:
Unitarian Universalist Church
1893 N. Vasco Road, Livermore

Board & Discussion Meetings:
Round Table Pizza
1024 E. Stanley Blvd., Livermore

Web & E-mail

www.trivalleystargazers.org
tvs@trivalleystargazers.org

Eyes on the Skies

Eyes on the Skies is a robotic solar telescope run by Mike Rushford (rushford@eyes-on-the-skies.org). You may access it by visiting www.eyes-on-the-skies.org.

TVS E-Group

So how do you join the TVS e-group you ask? Just send an e-mail message to the TVS e-mail address (tvs@trivalleystargazers.org) asking to join the group. Make sure you specify the e-mail address you want to use to read and post to the group.

What's Up *by Debbie Dyke*

All times Pacific Standard Time.

December

- 1 Fri Moon at perigee (226,872 miles). 4:00 p.m.
- 4 Mon **Full Moon.** 4:25 p.m.
- 6 Wed Saturn stationary. 12:00 p.m.
- 9 Sat Look for Mercury, Jupiter and Mars rising together in the southeast skies at 8:00 a.m.
- 10 Sun Saturn is 1° west of the Moon in the early southwest morning sky.
Mercury is 10' above Jupiter. Mars is 1° south of the pair.
- 11 Mon 1863 Annie Jump Cannon born. She catalogued over 300,000 stars and completed the Henry Draper Catalogue.
1972 Apollo 17 lands at Taurus-Littrow on the Moon.
- 12 Tues **Last Quarter Moon.** 6:32 a.m.
- 13 Wed Moon at apogee (250,739 miles). 11:00 a.m.
- 14 Thurs Geminid meteors peak. 3:00 a.m.
1546 Tycho Brahe born.
1972 Gene Cernan (Apollo 17) becomes the last man on the Moon.
- 15 Fri **Tri-Valley Stargazers general meeting.** 7:30 p.m. at the Unitarian Universalist Church, 1893 N. Vasco Road, Livermore.
1970 Venera 7 becomes the first craft to land on Venus and transmit data back to Earth.
- 16 Sat **Hanukkah begins.**
- 17 Sun **Tri-Valley Stargazers discussion meeting.** 2:00 p.m. at the Round Table Pizza on 1024 E. Stanley Blvd., Livermore. Discuss astro stuff with your fellow members.
Mercury at descending node.
- 18 Mon **Tri-Valley Stargazers Board meeting.** 7:00 p.m. at the Round Table Pizza in Livermore.
Pluto in conjunction with the Sun. 7:00 a.m.
- 20 Wed **New Moon.** 6:01 a.m.
- 21 Thurs **Winter Solstice.** 4:22 p.m.
1978 Venera 12 lands on Venus. Temperature is a toasty 860° F.
- 22 Fri Ursid meteors peak. 11:00 a.m.
- 23 Sat Neptune 3.5° above the crescent Moon low in the southwest sky in the early evening.
- 24 Sun 1968 Apollo 8 astronauts (Frank Borman, Frank Lovell, William Anders) are first to orbit the Moon.
- 25 Mon **Christmas Day.**
The Moon 3° above Uranus in the southwest evening sky.
1642 Isaac Newton born.
- 27 Wed **First Quarter Moon.** 6:48 a.m.
Moon at perigee (229,600 miles). 6:00 p.m.
1571 Johannes Kepler born.
- 30 Sat The Moon is just 3° from the Pleiades (M45) in the evening. It will occult M45 as they set in the west the next morning.

January

- 1 Mon **New Year's Day**
1801 First asteroid (Ceres) discovered by Giuseppe Piazzi.
- 3 Wed 2004 NASA's Rover Spirit successfully lands on Mars.

Martian Devils

by Dr. Tony Phillips

Admit it. Whenever you see a new picture of Mars beamed back by Spirit or Opportunity, you scan the rocks to check for things peeking out of the shadows. A pair of quivering green antennas, perhaps, or a little furry creature crouched on five legs...? Looking for Martians is such a guilty pleasure.

Well, you can imagine the thrill in 2004 when scientists were checking some of those pictures and they *did* see something leap out. It skittered across the rocky floor of Gusev Crater and quickly disappeared. But it wasn't a Martian; Spirit had photographed a dust devil!

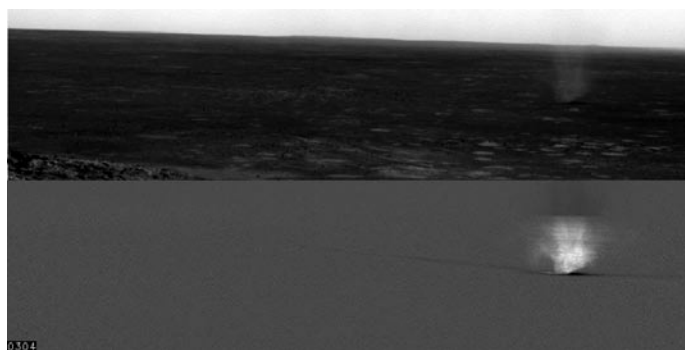
Dust devils are tornadoes of dust. On a planet like Mars which is literally covered with dust, and where it never rains, dust devils are an important form of weather. Some Martian dust devils grow almost as tall as Mt. Everest, and researchers suspect they're crackling with static electricity—a form of “Martian lightning.”

NASA is keen to learn more. How strong are the winds? Do dust devils carry a charge? When does “devil season” begin—and end? Astronauts are going to want to know the answers before they set foot on the red planet.

The problem is, these dusty twisters can be devilishly difficult to catch. Most images of Martian dust devils have been taken by accident, while the rovers were looking for other things. This catch-as-catch-can approach limits what researchers can learn.

No more! The two rovers have just gotten a boost of artificial intelligence to help them recognize and photograph dust devils. It comes in the form of new software, uploaded in July and activated in September 2006.

“This software is based on techniques developed and tested as part of the NASA New Millennium Program's Space Technology 6 project. Testing was done in Earth



The top half of this image is part of a series of images of a passing dust devil on Mars caught by Spirit. In the bottom half, the image has been filtered to remove everything that did not change from one image to the other. Notice the faint track left by the dust devil. Credit NASA/JPL/Mark T. Lemmon, Univ. of Arizona Lunar and Planetary Laboratory.

orbit onboard the EO-1 (Earth Observing-1) satellite,” says Steve Chien, supervisor of JPL's Artificial Intelligence Group. Scientists using EO-1 data were especially interested in dynamic events such as volcanoes erupting or sea ice breaking apart. So Chien and colleagues programmed the satellite to notice change. It worked beautifully: “We measured a 100-fold increase in science results for transient events.”

Now that the techniques have been tested in Earth orbit, they are ready to help Spirit and Opportunity catch dust devils—or anything else that moves—on Mars.

“If we saw Martians, that would be great,” laughs Chien. Even scientists have their guilty pleasures.

Find out more about the Space Technology 6 “Autonomous Sciencecraft” technology experiment at nmp.nasa.gov/st6/TECHNOLOGY/sciencecraft_tech.html, and the use of the technology on the Mars Rovers at nmp.nasa.gov/TECHNOLOGY/infusion.html. Kids can visit spaceplace.nasa.gov/en/kids/nmp_action.shtml and do a New Millennium Program-like test at home to see if a familiar material would work well in space.

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

Astro Events

Transit of Mercury

The weather played games with some of our members, but we did have some successful viewings of the November 8th Transit of Mercury. If you missed the transit, you'll get another opportunity to see it in on May 9th, 2016, although you'll have to get up early as it starts around 4:15 a.m. PDT. (The transit ends around 11:30.)



The Sun, Mercury and sunspot 923.
Photos: Debbie Dyke (top), David Woolsey (bottom)



Tri-Valley Stargazers
P.O. Box 2476
Livermore, CA 94551



PRIMEFOCUS

Tri-Valley Stargazers Membership Application

Member agrees to hold Tri-Valley Stargazers, and any cooperating organizations or landowners, harmless from all claims of liability for any injury or loss sustained at a TVS function.

Name _____ Phone _____ e-mail _____

Address _____

Do not release my: _____ address, _____ phone, or _____ e-mail information to other TVS members.

- Membership category: _____ \$5 Student.
_____ \$30 Basic. You will receive e-mail notification when the PDF version of *Prime Focus* is available for download off the TVS web site.
_____ \$40 Regular. You will receive a paper version of *Prime Focus* in the mail.
_____ \$32.95 One year subscription to *Sky & Telescope* magazine.
_____ \$34 One year subscription to *Astronomy* magazine.
_____ \$60 Two year subscription to *Astronomy* magazine.
_____ \$10 Hidden Hill Observatory (H2O) yearly access fee. You need to be a key holder to access the site.
_____ \$20 H2O key holder fee. (A refundable key *deposit*—key property of TVS).
_____ \$40 Patron Membership. Must be a member for at least a year and a key holder.
\$ _____ Tax deductible contribution to Tri-Valley Stargazers.
\$ _____ TOTAL – Return to: Tri-Valley Stargazers, P.O. Box 2476, Livermore, CA 94551

Membership information: Term is one calendar year, January through December. Student members must be less than 18 years old or still in high school.

BENJAMIN DEAN LECTURES
Fall/Winter 2006/2007 Series

All programs begin at 7:30 pm in Kanbar Hall at the Jewish Community Center of San Francisco, 3200 California Street. Tickets are \$4 at the door or by mail.

27 November

Dr. George Rieke, Deputy Director, Steward Observatory, University of Arizona
“Spitzer - The Last of the Great Observatories”

Over 20 years after starting the project, NASA launched the Spitzer infrared telescope into space as the last of the great observatories that began with the Hubble Telescope. Why did it take so long? Was it worth it? This talk will illustrate Spitzer’s capabilities by showing what we have learned about other planetary systems. Spitzer results are revealing new aspects of how the Earth formed and about the collisions that still occur among planets and asteroids.

15 January

Dr. Jeff Cuzzi, NASA Ames Research Center
“Saturn’s Rings: Ongoing Studies by Cassini”

The Cassini spacecraft arrived at Saturn in July 2004 and has provided many new insights into the structure and composition of Saturn’s rings, and their dynamic interactions with nearby and embedded moonlets. By January 2007, the spacecraft will be at higher elevations above the ring plane than ever achieved before. New results will be put in the context of the big picture for understanding this fascinating system.

All programs begin at 7:30 pm in Kanbar Hall at the Jewish Community Center of San Francisco, 3200 California Street. Tickets are \$4 at the door or by mail.

For more information, call (415) 321-8000.

New Location:

During the reconstruction of the Academy, the Dean Lectures have temporarily moved to the San Francisco Jewish Community Center at 3200 California Street (at Presidio Avenue). Parking is available across the street in the UCSF Laurel Heights campus parking lot for \$1.25 per night. Parking in the JCC garage is \$1.25 per half-hour. The #1 California, #3 Jackson, #4 Sutter, and #43 Masonic MUNI lines stop directly in front of the building. The #38 Geary and #24 Divisadero buses stop only a few blocks away.

June 6, 7:30 p.m.

What: *Sun-Earth Connections—Scientific, Cultural, and Historical Perspectives*

Who: Dr. Isabel Hawkins (U.C. Berkeley)

Where: S.F. Jewish Community Center

Cost: \$4

19 June

“The First Stars in the Universe”

Dr. Aparna Venkatesan, University of Colorado

Modern cosmological observations imply that the first stars in the universe were unique objects that strongly influenced their environment, despite their brief existence. This talk will present the current data and theoretical ideas on these stars, and how future telescopes can detect them.

This lecture is part of the Morrison Planetarium Benjamin Dean Lecture Series. For more information, call 415-750-7141. Ticket purchase in advance of lecture date recommended.

2006 MT TAM ASTRONOMY PROGRAMS

9/23 8:00pm Dr. Chris McKay (NASA-Ames Research Center)
“Latest results from the Huygens’ Mission to Titan”
Last year the Huygens Probe landed successfully on Titan, the largest moon of Saturn. What we saw was not what we expected. Hear the latest results from the analysis of the data from the Probe.

Telephone:
(415) 388-2070 (Pantoll Ranger Station)
(415) 455-5370 (taped message, after 4:00pm)

San Francisco Amateur Astronomers:
415-289-6636 (415-289-NOFOG)

San Francisco Sidewalk Astronomers:
<http://www.sfsidewalkastronomers.org/>
info@sfsidewalkastronomers.org

Parking: Parking is free but limited. Please Car Pool. When you approach the Rock Springs Parking Area, you will find the lot has been divided into two sections by a string of orange cones. Astronomers with telescopes park to the left of the cones, while the general public is asked to park to the right. There will be signs and volunteers to assist you. If the lot is filled, there will be a sign directing you to the upper parking lot. Go past the entrance to the Mountain Theater for about another 1/4 mile. The road will be closed by a gate, and there will be a sign directing you to park in the lot to your right. There is a short trail from the lot to the Mountain Theater. It is recommended that if you wish to observe after the program and you are in the upper lot, that you take the trail back to your car then drive down to Rock Springs for the observing. Some patrons do not stay for the observing, so you should find a parking space.

Directions:
From Highway 101 take the Highway 1, Stinson Beach exit. At Tam Junction (the first stop light), turn left onto the Shoreline Highway (also called Highway 1). In about 2 miles turn right onto Panoramic Highway. In another 3/4 miles the road splits 3 ways. Take the middle fork. In about 5 miles the Pan Toll Ranger Station will be on your left. Turn right through the gates across the road from the station and continue for about another 1 1/2 miles to the Rock Springs parking area.

Mountain Theater:

The programs, held in the outdoor amphitheater, are about a three minute walk from the parking area. We gather at the end of evening twilight, and when visibility is adequate. But, by the time the program is concluded (45 minute to 1 hour) it will be dark. Bring Flashlights. There are lanterns along the path and on the stairs at the theater, but if you feel that you need any assistance please do not hesitate to ask one of the State Park Volunteers to help you. There are also a few flashlights available for loan at the Mountain Theater which can be returned at Rock Spring when you are finished with them. (Or for a \$5.00 donation you can take the flashlight as a memento of the evening.)

Silicon Valley Lecture Series

Glimpsing the Edge of the Universe: Recent Results from the Hubble Space Telescope
January 24, 2007
7 p.m.

As part of the eighth annual Silicon Valley Astronomy Lecture Series, UCSC Scientist Dr. Bruce Margon will present Glimpsing the Edge of the Universe: Recent Results from the Hubble Space Telescope Wednesday, Jan. 24, at 7 p.m. in the Smithwick Theater at Foothill College in Los Altos Hills.

Dr. Margon recently retired as the associate director for science for the Hubble Telescope Program, and has joined the administration at the University of California, Santa Cruz.
Phone us at: (650) 949-7888
[Click here for more information.](#)
Special Notice: Parking is \$2 (eight quarters). Arrive early to locate parking and seating.