

# PRIME FOCUS

Tri-Valley Stargazers

July 2008



## Meeting Info:

### What

*Summer BBQ*

### Who

TVS Members

### When

July 18, 2008  
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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## July Meeting

Summer BBQ  
*TVS Members*

It's time for our annual summer BBQ amongst the grape vines at the Unitarian Church. As is the usual routine, TVS will provide the drinks, burgers (meat and veggie), and fixin's. Members are asked to bring a side dish or dessert to share.

General rule of thumb is bring enough to feed five to eight people. As to what to bring, we're going to throw caution to the wind and make it a free for all. Bring whatever you want, and we'll just keep our fingers crossed that we won't end up with 15 potato salads and nothing else. Having said that, 15 desserts would probably be ok.

Feel free to bring friends and family to the potluck—the more the merrier!



A new way of barbecuing, utilizing galactic jets, will be attempted at the potluck.

## Yosemite Star Party - July 25-26

TVS' annual Yosemite star party is coming up at the end of this month—July 25th through July 26th. TVS will host a public star party at Glacier Point in exchange for free camping at the Bridalveil Campgrounds. Once the public leaves, members can view and photograph until the sun comes up. However, equipment can't be left at the site during the day.



View from the 2006 Glacier Point Star Party.  
*Photo: David Feindel*

The Last Quarter Moon will rise at 12:12 a.m. on the 26th, and 12:52 a.m. on the 27th.

Dave Rodrigues will be the coordinator for the trip. If you have any questions, please contact him at [davevrod-at-aol-dot-com](mailto:davevrod-at-aol-dot-com).

## News & Notes

### New Members

TVS would like to welcome our newest members, **Hans de Moor** and **Albert Smith**, both returning members.

### 2008 TVS Meeting Dates

The following lists the TVS meeting dates for the rest of the year. 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 August 3rd deadline is for the August issue).

Lecture Meeting	Board Meeting	Prime Focus Deadline
July 18	July 21	July 6
Aug. 15	Aug. 18	Aug. 3
Sept. 19	Sept. 22	Sept. 7
Oct. 17	Oct. 20	Oct. 5
Nov. 21	Nov. 24	Nov. 9
Dec. 19	Dec. 22	Dec. 7

### Money Matters

At the June board meeting, Treasurer **David Feindel** reported the TVS account balances as of June 21, 2008.

Checking	\$4,177.61	
CD #1	\$3,725.34	matures 08/17/08
CD #2	\$2,628.55	matures 08/27/08

### Camp Shelly Star Party

The LARPD (Livermore Area Recreation and Parks District) Camp Shelly Star Party takes place Friday and Saturday, August 15-16. Camp Shelly is located off of Highway 89 near South Lake Tahoe.

Like the Yosemite trip, TVSers are given free camping in exchange for putting on a star party for the other campers. Rich Combs will be giving a talk on Friday and Saturday evenings, with telescope viewing right after the talk. The campground is full, so we're guaranteed to have many people come to the event.

TVS' camp site is #5 (near the restrooms), which has room for tents and/or a small trailer. The site can hold eight people, more if we squeeze in tight. For more information about the Camp, visit [http://www.larpd.dst.ca.us/cshelly\\_fs.html](http://www.larpd.dst.ca.us/cshelly_fs.html).

If you'd like to participate, please contact Rich at [comb-srichard-at-sbcglobal-dot-net](mailto:comb-srichard-at-sbcglobal-dot-net).

### White Mountain Star Party

This year's high altitude star party will take place the last week of August and first week of September. If you're interested in attending, you can stay for however many days and nights you wish—you're not required to stay for the full two weeks.

For those unfamiliar with our annual White Mountain star party, it takes place at the Barcroft High Altitude Research Station at 12,400' elevation. White Mountain is located east of the Sierras, about due east (and up) from Bishop. It is advised to spend a night at a slightly lower elevation, like at Mammoth Lakes (7-8,000') or the Grandview Campgrounds (9,000') getting acclimated to the higher altitude before heading up to the station.

The skies at Barcroft are very dark, with the Milky Way so bright that it casts shadows. It's the ideal place for photography and general observing.

Cost has not been determined, but it should be similar to last year's cost (about \$63/day). The cost includes a cot in the dormitory, hot showers, and amazingly good food. There's even an oxygen tank in the dining hall in case you are in need of some air. Due to the altitude, only those 16 and over can attend.

### ASP Recordings

The Astronomical Society of the Pacific has released a dozen free audio recordings of lectures from such astronomers as SETI scientists Frank Drake and Jill Tarter, Geoff Marcy, Alex Filippenko, and many others. <http://www.astrosociety.org/education/podcast/index.html>.

## Calendar of Events

### July 19, 1:00 p.m. to 3:00 p.m.

**What:** *Celebrating Science 2008*

**Who:** Everyone

**Where:** SETI Institute

**Cost:** Free, but reservations required

The public is invited to the SETI (Search for Extra-Terrestrial Intelligence) Institute for a celebration of science and the imagination with their interactive science fair for the entire family.

Meet SETI Institute scientists and learn about the Institutes's pioneering exploration for life, both in our solar system and beyond. There will be interactive activities for kids aged 8-15. Sign up on a first-come, first-serve basis for such activities as "Night and Day," "Oil Spill," and "Time Shadows." There will also be a few activities for younger kids. And adults can enjoy virtual tours of the

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**Newsletter header image:** SN 1006 Supernova Remnant

SN 1006 is located 6,850 light years away in the constellation Lupus. This 7.5 hour exposure Hubble image shows a section of what's left of a supernova that occurred more than 1,000 years ago.

*Photo: NASA / ESA / Hubble Heritage Team (STScI / AURA)*

## Calendar of Events *continued*

new Allen Telescope (that is searching for intelligent signals from civilizations among the stars) and the Cassini exploration of the amazing Saturn system.

Meet the father of SETI and author of the Drake Equation, Dr. Frank Drake. Other scientists from the Institute will also be available to talk with visitors.

Andrew Fraknoi will speak at 1:30 p.m. about "What Really Happened with Pluto" (including the latest news on the new category of plutoids!). He will be available between 1:45 - 2:30 to autograph his latest book, *Disney's Wonderful World of Space*, available in the gift shop.

For more information and to register now and reserve your spot, visit: <http://www.seti.org/celebrating-science2008>.

### July 20, 1:30 p.m. to 5:00 p.m.

**What:** *Apollo 11 Moon Landing Anniversary*  
**Who:** Everyone  
**Where:** NASA Ames Research Center  
**Cost:** Free, but e-mail registration required:  
 e-mail: Shirley.Berthold <at> nasa.gov with the subject line = Public Event

On July 20th, 1969, the Eagle landed on the Moon, carrying Neil Armstrong and Buzz Aldrin. In honor of this historic event and to inaugurate its first lunar science conference, the NASA Lunar Science Institute (NLSI) in cooperation with the Lunar and Planetary Institute (LPI) are pleased to announce a public event to be held at the NASA Ames Research Center, Moffett Field, CA. <http://www.nasa.gov/centers/ames/events/index.html>.

- NASA's Exploration Center will be open, featuring historic Apollo documentaries, repeated throughout the afternoon in high definition.

- In the Eagle Room of building 943, additional movies will be shown, including the 1959 documentary, *From the Earth to the Moon*, featuring archival footage of Werner Von Braun, and the 1989 Apollo Associates documentary, *For All Mankind*, featuring the Apollo Astronauts.

- Hands-on lunar science activities will be available for both school children and teachers.

- The Ames Conference Center Ballroom will feature two discussion panels, at 1:30 and at 3:30 on the *Future of the Moon and Lunar Science*.

- Additional activities include a youth robotics demonstration and more.

Note: This is a federal facility and vehicles are subject to inspection. Firearms and controlled substances are not permitted inside the gate.

### August 1, 3:00 a.m. to 5:00 a.m.

**What:** *Total Solar Eclipse Webcast*  
**Who:** Everyone  
**Where:** Chabot Space & Science Center  
**Cost:** Adults \$10, Youth/Student/Senior \$8, Members \$5

In the early morning hours of August 1st while North America sleeps, on the other side of the world an amazing drama will be playing out in the skies above: the New Moon will cross directly in front of the Sun, creating a total solar eclipse. Come to Chabot to enjoy a live viewing of the eclipse from Northwestern China, brought to us via satellite by the NASA/Exploratorium webcast team. Don't miss this rare and beautiful celestial spectacle.

Early bird special until July 20! Call the Box Office at 510.336.7373 for tickets.

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#### Officers

**President:**  
 Chuck Grant  
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Alane Alchorn, Jim Alves,  
 Debbie Dyke, Gert Gottschalk,  
 Mike Rushford, John Swenson.

#### Volunteer Positions

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**Observatory Director/  
 Key Master:**  
 Chuck Grant

**School Star Party Chair:**  
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#### Public Star Party Chair:

unfilled

**Historian:**  
 Debbie Dyke

**Mentor:**  
 Mike Rushford  
 rushford@eyes-on-the-skies.org

#### Addresses

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

**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](http://www.trivalleystargazers.org)  
[tvts@trivalleystargazers.org](mailto:tvts@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](mailto:rushford@eyes-on-the-skies.org)). You may access it by visiting [www.eyes-on-the-skies.org](http://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 ([tvts@trivalleystargazers.org](mailto:tvts@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 Daylight Saving Time.

### July

- 11 Fri Venus at perihelion.
- 13 Sun Moon at apogee (251,380 miles). 9:00 p.m.  
The Moon is 4° from Antares. 10:00 p.m.
- 14 Mon 1965 Mariner 4 makes first flyby of Mars and takes pictures.
- 16 Wed The thin crescent Moon, Venus, and Saturn group together low in the west. 9:00 p.m.  
The Moon is 5° from Jupiter. 11:00 p.m.  
1994 Comet Shoemaker-Levy 9 begins plunging into Jupiter. The plunging continues through the 20th.
- 17 Thur 1850 First photo of a star (Vega).
- 18 Fri **Tri-Valley Stargazers general meeting.** 7:30 p.m. at the Unitarian Universalist Church,  
1893 N. Vasco Road, Livermore.  
**Full Moon.** 12:59 a.m.  
1984 Svetlana Savitskaya becomes the first woman to take a walk in space.
- 20 Sun Neptune just 1° from the Moon. 5:00 a.m.  
**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.  
1969 Apollo 11 lands at Tranquillity, placing the first men on the Moon.  
1976 Viking 1 makes first robotic landing at Chryse Planitia on Mars.
- 21 Mon **Tri-Valley Stargazers Board meeting.** 7:30 p.m. at the Round Table Pizza in Livermore.
- 22 Tue 1972 Venera 8 makes the first soft landing on Venus.
- 23 Wed 1995 Alan Hale discovers his half of Comet Hale-Bopp.
- 25 Fri **Last Quarter Moon.** 11:42 a.m.
- 27 Sun The crescent Moon 2° from the Pleiades (M45). 5:00 a.m.
- 28 Mon S. Delta-Aquarid meteor shower peaks. 1:00 p.m.  
1851 First photo taken of a solar eclipse—the corona is discovered.
- 29 Tue Mercury in superior conjunction. 1:00 p.m.  
Moon at perigee (225,607 miles). 4:00 p.m.
- 30 Wed 1971 Apollo 15 lands on the Moon. The next day, the astronauts Scott and Irwin take a little spin in the  
Lunar Roving Vehicle.
- 31 Thur Mercury at greatest heliocentric latitude north.  
Stellafane Convention in Springfield VT begins and goes through August 3rd.  
1774 Oxygen is discovered. Everyone takes a deep breath of relief.  
1964 Ranger 7 impacts Moon, taking the first close-up views of the Lunar surface.

### August

- 1 Fri **New Moon.** 3:12 a.m. Total Solar Eclipse visible in the Arctic regions of Canada and Greenland.  
1818 Maria Mitchell born. She receives a gold medal from the king of Denmark for being the first to  
use a telescope to discover a comet.
- 2 Sat Venus at greatest heliocentric latitude north.
- 8 Fri **First Quarter Moon.** 1:20 p.m.  
St. Dominic - patron saint of astronomers.
- 10 Sun Moon at apogee (250,824 miles). 1:00 p.m.
- 11 Mon 1877 Asaph Hall Sr. discovers Mars' moon Deimos.
- 12 Tue Perseid meteors shower peaks. 4:00 a.m.

## Space Buoys

By Dr. Tony Phillips

Congratulations! You're an oceanographer and you've just received a big grant to investigate the Pacific Ocean. Your task: Map the mighty Pacific's wind and waves, monitor its deep currents, and keep track of continent-sized temperature oscillations that shape weather around the world. Funds are available and you may start immediately.

Oh, there's just one problem: You've got to do this work using no more than one ocean buoy.

"That would be impossible," says Dr. Guan Le of the Goddard Space Flight Center. "The Pacific's too big to understand by studying just one location."

Yet, for Le and her space scientist colleagues, this was exactly what they have been expected to accomplish in their own studies of Earth's magnetosphere. The magnetosphere is an "ocean" of magnetism and plasma surrounding our planet. Its shores are defined by the outer bounds of Earth's magnetic field and it contains a bewildering mix of matter-energy waves, electrical currents and plasma oscillations spread across a volume billions of times greater than the Pacific Ocean itself.

"For many years we've struggled to understand the magnetosphere using mostly single spacecraft," says Le. "To really make progress, we need many spacecraft spread through the magnetosphere, working together to understand the whole."

Enter Space Technology 5.

In March 2006 NASA launched a trio of experimental satellites to see what three "buoys" could accomplish. Because they weighed only 55 lbs. apiece and measured not much larger than a birthday cake, the three ST5

"micro-satellites" fit onboard a single Pegasus rocket. Above Earth's atmosphere, the three were flung like Frisbees from the rocket's body into the magnetosphere by a revolutionary micro-satellite launcher.

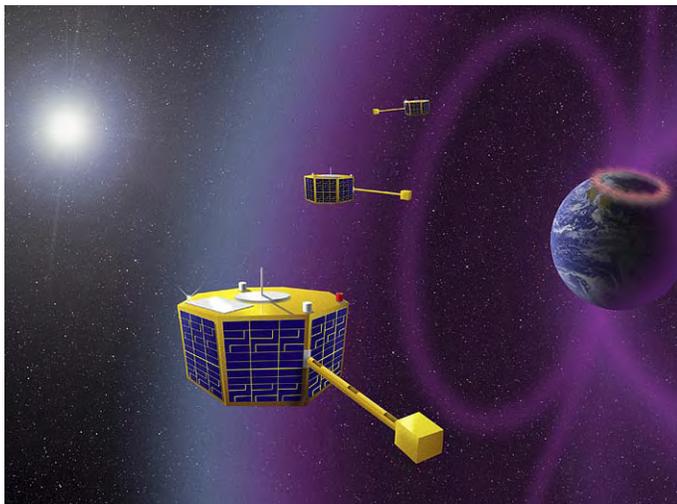
Space Technology 5 is a mission of NASA's New Millennium Program, which tests innovative technologies for use on future space missions. The 90-day flight of ST5 validated several devices crucial to space buoys: miniature magnetometers, high-efficiency solar arrays, and some strange-looking but effective micro-antennas designed from principles of Darwinian evolution. Also, ST5 showed that three satellites could maneuver together as a "constellation," spreading out to measure complex fields and currents.

"ST5 was able to measure the motion and thickness of current sheets in the magnetosphere," says Le, the mission's project scientist at Goddard. "This could not have been done with a single spacecraft, no matter how capable."

The ST5 mission is finished but the technology it tested will key future studies of the magnetosphere. Thanks to ST5, hopes Le, lonely buoys will soon be a thing of the past.

Learn more about ST5's miniaturized technologies at [nmp.nasa.gov/st5](http://nmp.nasa.gov/st5). Kids (and grownups) can get a better understanding of the artificial evolutionary process used to design ST5's antennas at [spaceplace.nasa.gov/en/kids/st5/emoticon](http://spaceplace.nasa.gov/en/kids/st5/emoticon).

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



The Space Technology 5 micro-satellites proved the feasibility of using a constellation of small spacecraft with miniature magnetometers to study Earth's magnetosphere.

## Calendar of Events *continued*

**August 8, 8:30 p.m.**

**What:** *Astrobiology, Planetary Protection and the Search for ET Life*

**Who:** Dr. Margaret S. Race (SETI Institute)

**Where:** Mt. Tamalpais

**Cost:** Free

A down to Earth view of preparations for space missions—it takes more than just rocket scientists. Following the lecture, members of the San Francisco Amateur Astronomers will provide telescopes for viewing in the Rock Spring parking lot. June is the time to take a good look at the beautiful summer sky with objects in the Milky Way. Viewing continues until about 11:00 p.m., weather permitting.

For driving directions and additional information call the hotline: 415-455-5370 or check out [www.mttam.net](http://www.mttam.net).

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.  
\_\_\_\_\_ \$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.  
\_\_\_\_\_ \$34 One year subscription to *Astronomy* magazine.  
\_\_\_\_\_ \$60 Two year subscription to *Astronomy* magazine.  
\_\_\_\_\_ \$32.95 One year subscription to *Sky & Telescope* magazine. **Note:** Subscription to *S&T* is for new subscribers only. Existing subscribers please renew directly through *S&T*.  
\$ \_\_\_\_\_ 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.