PRIMEFOCUS
Tri-Valley Stargazers

September 2008

Meeting Info:

What
Helioseismology

Who
Phil Scherrer

When
September 19, 2008
Doors open 7:00 p.m.
Lecture at 7:30 p.m.

Where
Unitarian Universalist
Church in Livermore
1893 N. Vasco Road

Inside

September Meeting

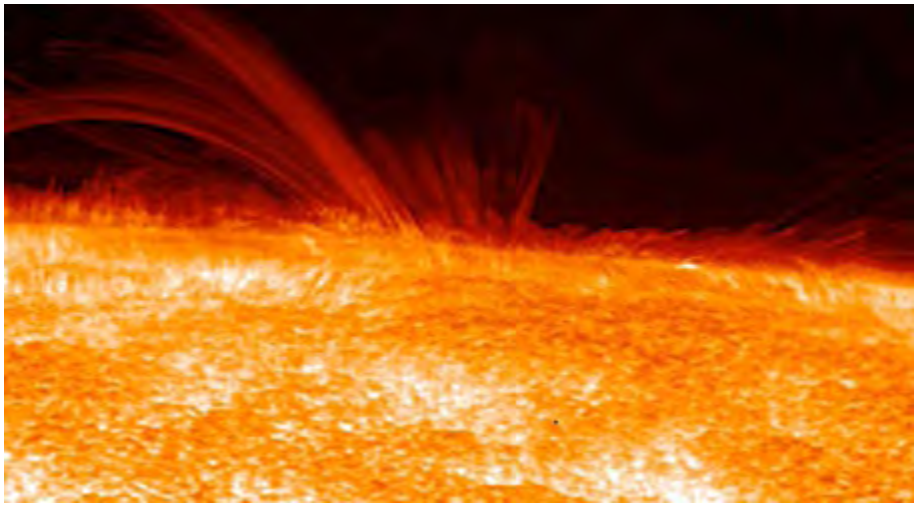
Helioseismology
Phil Scherrer

The term "Helioseismology" suggests the Sun has earthquakes (sun quakes?) much like the earth. But seeing as how the Sun is a giant gas ball and the earth is not, that analogy isn't quite right. Helioseismology is the study of solar pressure waves.

Solar pressure waves are created by turbulence in the convection zone, near the sun's surface. By studying these waves, scientists can learn about the inner structure of the Sun. We've learned that the magnetic field of the Sun is created by the inner radiative zone and outer convective zone rotating at different speeds. We can even "see" sunspots on the far side of the Sun.

Our speaker, Phil Scherrer, has long studied various aspects of the Sun's behavior. He is the Principle Investigator for the Helioseismic and Magnetic Imager (HMI) science team, which is part of the Solar Dynamics Observatory (SDO), scheduled to launch in about a year.

For more information, visit Stanford's solar group web site http://solar-center.stanford.edu. You can read more about the HMI at http://hmi.stanford.edu/Description/HMI_Overview.html.



A view of structure in the chromosphere, taken on November 11, 2006.
Photo: Hinode JAXA/NASA

News & Notes

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 October 5th deadline is for the October issue).

Lecture Meeting	**Board Meeting**	***Prime Focus* Deadline**
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 August board meeting, Treasurer **David Feindel** reported the TVS account balances as of August 18, 2008.

Checking	$3,865.08	
CD #1	$3,740.30	matures 11/17/08
CD #2	$2,628.55	matures 08/27/08

Mountain House Star Party - Nov. 3

TVS will be providing the scopes for a star party in Mountain House (northwest of Tracy). We'll set up at a local park (which we'll have approval to use, at least until 10:00 p.m.) on the evening of November 3rd. Exact location and starting time will be announced at a later date.

TVS Elections

Although our club elections are still two months away, we just thought we'd get the ball rolling by asking members to consider running for an officer or board position.

Our current slate of officers wouldn't mind having someone take over the reins, and the board of directors have plenty of room for more members to participate in the running of the club (not to be confused with the running of the bulls).

Also, if anyone is interested in taking over the refreshments tasks, newsletter, school star party coordinator, or any number of other volunteer positions, just let any officer or board member know of your interest.

You Ought to be in Movies

Kris Koenig and Dan Koehler at the Chico Observatory are involved in the production of a planetarium program called "Two Small Pieces of Glass". This little production will accompany "400 Years of the Telescope," another production for PBS that they've been working on for the last two years. That production will air in early 2009. Both programs are in celebration of the International Year of Astronomy (IYA2009).

They will be filming on September 25 through the 28th, and are willing to pay transportation costs as well as make donations to any astronomy club of which you might be a member. If you are interested, please contact Dan Koehler at dan <at> interstellarstudios.com. (Thanks to Richard Ozer for the heads up.)

Volunteers Needed at Cal Academy

You can be a part of the historic reopening of the Academy and the Morrison Planetarium!

The SFAA (San Francisco Sidewalk Astronomers) is supporting the opening with astronomical activities throughout the weekend. They will have their own booth and would like your help!

Please sign up for one or more activity slots listed to help the SFAA: solar observing, telescope demonstration, your specific astronomy club hand out. They're expecting 50 to 60k people, so expect good Bay Area coverage. There will be planet and galaxy distance demonstrations, mirror grinding and general astronomy information. Saturday and or Sunday 8:30 a.m. to 11 a.m. Email: academyevent <at> sfaa-astronomy.org. Thank you for your support!

Calendar of Events

September 18, 25, October 2, 9th
7:30 p.m. to 9:30 p.m.

What: *"Telescope Visions" Telescope Class*
Who: Everyone
Where: Chabot Space & Science Center
Cost: $95, $85 Members
Register at the Box Office: 510-336-7373

This course, running for four consecutive Thursdays, will introduce you to the astronomer's prime tool: the telescope. Gain experience using telescopes as you explore the night sky. Learn the basics of telescopic vision—light gathering power, magnification, and resolution. Find out how to use the sky and its constellations as a roadmap to discovering its hidden treasures—nebulas, star clusters, galaxies, and more—that reside just beyond the reach of the unaided eye.

continued page 3

Newsletter header image: NGC 6992 - the Veil Nebula

The Veil, also known as the Cygnus Loop, is a supernova remnant in the constellation Cygnus. It is thought that the supernova occurred 5-8,000 years ago. It's located about 1,400 to 2,600 light years away.

The image a made of up 73 4 minute shots composited together for a single image of the eastern side of the Veil. Those 73 images were taken at Lake Del Valle and Henry Coe State Park. *Photo: Conrad Jung*

September 22, 7:30 p.m.

What: *Both Eyes Wide Open - The Large Binocular Telescope*
Who: Richard Pogge (Ohio State Univ.)
Where: Jewish Community Center of S.F.
Cost: $5

After more than a decade of construction, the Large Binocular Telescope (LBT) opened both of its massive eyes on the night sky for the first time earlier this year. Located high atop Mount Graham in southeastern Arizona, the LBT is the first of a new generation of extremely large optical telescopes. Its two 8.4-meter diameter primary mirrors are mounted side-by-side on a single mount, giving it a light gathering power equivalent to a single 11.8-meter circular mirror, making it currently the world's most powerful optical telescope. This talk will introduce the LBT and its suite of powerful instruments, highlight some of the early scientific results, and describe its future capabilities.

The Fall Benjamin Dean Lecture Series in Astronomy features exciting information about some of the newest telescopes and spacecraft exploring space. While the California Academy of Sciences is reopening to the public on September 27, the fall Dean Series will still be held at the Jewish Community Center at 3200 California Street (at Presidio Avenue) in San Francisco.

Tickets are $5 each, and are available online at http://www.calacademy.org/events/index.php or at the door. Parking is available across the street in the UCSF Laurel Heights campus parking lot or in the JCCSF garage. 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 stop four to five blocks away.

The lectures will return to Golden Gate Park to take up their permanent home in the new Morrison Planetarium in January with the first lecture of the 20th Anniversary Benjamin Dean Lecture Series. Speakers will be Fellows of the California Academy of Sciences, and will include cosmologist Alex Filippenko, planet hunter Geoff Marcy, SETI Director Jill Tarter, and astrobiologists David Morrison and David Des Marais.

September 27, 9:00 a.m. - 9:00 p.m.

What: *Grand Opening - California Academy of Sciences*
Who: Everyone
Where: Cal Academy of Science in S.F.
Cost: Free

Join Cal Academy for a weekend-long celebration of historic proportions in Golden Gate Park — with family-friendly activities and entertainment from morning to night.

Enjoy live music and dance performances. Sample sustainably-sourced food from all over the world. Marvel at Chinese acrobats. Browse the latest in green technologies. Scale the rock-climbing wall. And so much more!

And this is just what's outside the Academy in the Music Concourse. Admission inside the Academy is free on Saturday, September 27th. Paid admission on Sunday, 28th.

Visit the Academy's web site for more information about the event: http://www.calacademy.org/events/openingweekend/.

October 1, 7:00 p.m.

What: *The Black Hole Wars: My Battle with Stephen Hawking*
Who: Leonard Susskind (Stanford University)

continued page 4

Officers

President:
Chuck Grant
cg@fx4m.com
925-422-7278

Vice-President:
unfilled

Treasurer:
David Feindel
feindel1@comcast.net

Secretary:
David Woolsey
fatdawg@comcast.net

Board of Directors

Alane Alchorn, Jim Alves, Debbie Dyke, Gert Gottschalk, Mike Rushford, John Swenson.

Volunteer Positions

Librarian:
Jim Alves
Ajaengr@yahoo.com
209-833-9623

Newsletter Editor:
Debbie Dyke
astrodeb@comcast.net
925-461-3003

Program Director: unfilled

Loaner Scope Manager:
John Swenson
johnswenson1@comcast.net

Webmaster:
Debbie Dyke

Observatory Director/ Key Master:
Chuck Grant

School Star Party Chair:
unfilled

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

trivalleystargazers@gmail.com

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 (trivalleystargazers@gmail.com asking to join the group. Make sure you specify the e-mail address you want to use to read and post to the group.

Where: Smithwick Theater, Foothill College
Cost: Free; parking is $2 in quarters.

Black holes, the collapsed remnants of the largest stars, provide a remarkable laboratory where the frontier concepts of our understanding of nature are tested at their extreme limits. For more than two decades, Professor Susskind and a Dutch colleague have had a running battle with Stephen Hawking of Cambridge University about the implications of black hole theory for our understanding of reality — a battle that he has described in his well-reviewed book *The Black Hole Wars.*

In this popular talk, without mathematics, Dr. Susskind tells the story of these wars, explains the ideas that underlie the conflict, and recounts how he got Hawking to retract some of his claims. What's at stake is nothing less than our understanding of space, time, matter and information!

Leonard Susskind is Felix Bloch Professor of theoretical physics at Stanford University and the author of two popular books and many articles on recent developments in science and their meaning. He teaches a popular "continuing studies" course at Stanford on modern physics and has won the American Institute of Physics science writing prize for an article explaining black holes. His research focuses on particle physics, quantum theory, and the nature of gravity. He has a rare knack for explaining the most advanced scientific ideas in everyday terms.

A unit of credit (Astronomy 36.01) is available from Foothill College for those who attend all six Wednesday evening lectures and write a short paper on an astronomy topic of their choice. You may register in advance at: www.foothill.edu/reg or get the paperwork at the October 1st lecture by coming a little bit early.

Past Silicon Valley Astronomy Lectures are now available in MP3 format at: http://www.astrosociety.org/education/podcast/index.html.

This Silicon Valley Astronomy Lecture is co-sponsored by NASA Ames Research Center, the Foothill College Astronomy Program, the SETI Institute, and the Astronomical Society of the Pacific

Foothill College is located at 12345 S. El Monte Road, Los Altos Hills, right off of Freeway 280. Smithwick Theater is located in the center of campus. Call the series hot-line at 650-949-7888 for more information and driving directions. No background in science will be required for this talk. Seating is first come, first served.

October 4, 7:30 p.m.

What: *The View From the Center of the Universe: Discovering Our Extraordinary Place in the Cosmos*
Who: Dr. Joel Primack & Nancy Abrams (UC Santa Cruz)
Where: Mt. Tamalpais
Cost: Free

A progress report and philosophical reflection on modern views of our place in the cosmos and how ideas of the universe have widespread cultural implications.

Following the lecture, members of the San Francisco Amateur Astronomers will provide telescopes for viewing in the Rock Spring parking lot. 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.

CalStar 2008 Star Party - Sept. 25-27

The SJAA (San Jose Astronomical Association) is pleased to announce that registration for this year's CalStar star party is now open.

CalStar is the traditional fall dark sky party, located at Lake San Antonio County park in San Luis Obispo County (near Paso Robles). By driving the approximately 3 hours to the site you will be rewarded with some of the darkest skies around.

The CalStar website will give you up-to-date information on the event such as food, suggestions for first time attendees, directions, a tour of the various areas, things to do during the day, and even allow you to tour the site so you can select were you want to set up at: http://www.sjaa.net/calstar.

CalStar offers two options that allow you to tailor your experience:

The serious observers prefer the dark enforced area where stricter light rules preserve everyone's eyes so you can see that elusive glob.

Or a less formal Casual area is also available with somewhat less rigorous rules.

One big change in 2008 will be food. We decided not to contract with the caterer this year. The meals were simply too expensive and less than 1/4 of the attendees participated previously. We are currently considering alternatives. I hope we can find something that preserves an important social event.

Roads in the dark and casual areas will be closed to all traffic after 8 p.m. We ask you to respect the road closures and use the Late Arrival Entrance we provide (or arrive before 8).

Showers and flush toilets are available at the nearby campground.

I hope you decide to join us. - Rob Hawley, President, SJAA.

NightFall 2008 Star Party - Oct 30 to Nov 2

NightFall takes place October 30 through November 2, 2008, at the Palm Canyon Resort in Borrego Springs, California.

In addition to the Memorial Day weekend event, RTMC also produces an early autumn star party called Nightfall.

Nightfall is unique because it takes place at a desert resort that cooperates in creating a dark, red-light only environment throughout its sprawling property.

This is a great opportunity to bring family and friends to a star party with amenities such as pools, high-speed Internet access, and air conditioned rooms, as well as dark, steady skies. In the daytime, the nearby Anza Borrego Park is a terrific place for hiking or off-roading.

How to Attend

Nightfall is hosted by the Palm Canyon Resort. You can make reservations to stay there by going online — www.pcresort.com — or calling (800) 242-0044. Be sure to mention that you are with the "astronomy event."

Special Note for RV'ers

Many people come to Nightfall in an RV, or bring a camper trailer. There is a large RV park at the Palm Canyon Resort with power, water and septic hook-ups, along with public restrooms and showers; reservations can be made through the resort.

For more information, including directions, map of the RV park, PDF flyer, preliminary activity schedule, etc., visit their web site: http://rtmcastronomyexpo.org/nightfall.htm. You may also e-mail the event committee at nightfall {at} jamiesongroup {dot} us.

Astro Events

Jupiter Transits

The following are a few listings of transit times for various Jupiter related objects. The abbreviations are fairly straight forward: G=Ganymede, C=Callisto, I=Io, E=Europa, GRS=Great Red Spot, and if you see a 's' next to one of the moons, it means its shadow (e.g., Cs=Callisto's shadow); na means Jupiter is below the horizon or it is daylight at that time. We're getting towards the end of the Jupiter viewing season, with it setting around midnight at the beginning of the month, to 11:30 p.m. at the end.

September

Fri 12	I	11:27p	12:30a	na
	Is	12:39a	na	na
Sat 13	GRS	10:05p	11:45p	na
Sun 14	I	na	7:00p	8:10p
	GRS	na	7:34p	9:40p
	Is	7:07p	8:03p	9:21p
Mon 15	E	10:33p	11:53p	na
	GRS	11:32p	na	na
	Es	1:01a	na	na
Tue 16	GRS	7:35p	9:15p	11:25p
	Gs	7:41p	9:03p	11:00p
Thur 18	GRS	9:05p	10:50p	na
Fri 19	GRS	na	na	8:50p
Sun 21	GRS	na	8:26p	10:28p
	I	7:47p	8:53p	10:02p
	Is	9:03p	9:58p	11:16p
Tue 23	G	na	8:05p	9:49p
	C	7:42p	9:25p	11:33p
	GRS	8:05p	10:05p	12:08a
	G	11:42p	na	na
Thur 25	GRS	9:58p	11:45p	na
Fri 26	E	na	na	7:40p
	GRS	na	7:40p	9:30p
Sun 28	GRS	7:30p	9:15p	11:15p
	I	9:42p	10:45p	11:56p
	Is	10:58p	11:52p	na
Tue 30	Is	na	na	7:40p
	GRS	9:00p	10:55p	na
	G	10:32p	12:00a	na

October

Thur 2	GRS	10:35p	na	na
Fri 3	E	na	na	7:42p
	GRS	na	8:23p	10:15p
	Es	7:32p	8:36p	10:18p
Sun 5	GRS	8:20p	10:00p	11:55p
	I	11:36p	na	na
Tue 7	I	na	7:12p	8:21p
	Is	7:22p	8:18p	9:33p
	GRS	10:00p	na	na
Wed 8	GRS	na	7:38p	9:32p
Fri 10	GRS	7:25p	9:06p	11:00p
	E	7:34p	8:51p	10:19p
	Es	10:10p	11:15p	na
Mon 13	GRS	na	6:40p	8:45p
Tue 14	Io	8:01p	9:06p	10:16p

What's Up *by Debbie Dyke*

All times Pacific Daylight Saving Time.

September

7 Sun **First Quarter Moon**. 7:04 a.m.

10 Wed Mercury at greatest elongation east (27°). 9:00 p.m.

11 Thur 1816 Carl Zeiss born.

12 Fri Uranus at opposition. 7:00 p.m.
1758 Messier sees the Crab Nebula, making it the first item in his list of fuzzy comet-like objects.
1959 Luna 2 becomes first spacecraft to impact the Moon.

14 Sun The Moon 3° from Uranus. 9:00 p.m.
1915 John Dobson born in China.

15 Mon **Full Moon**. 2:13 a.m.

18 Thur 1819 Léon Foucault (Mr. Pendulum) born.

19 Fri **Tri-Valley Stargazers general meeting**. 7:30 p.m. at the Unitarian Universalist Church, 1893 N. Vasco Road, Livermore.
Moon at perigee (228,709 miles). 8:00 p.m.

21 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.
Last Quarter Moon. 10:04 p.m.

22 Mon **Tri-Valley Stargazers Board meeting**. 7:30 p.m. at the Round Table Pizza in Livermore.
Autumnal Equinox. 8:45 a.m.

23 Tue Mercury at greatest heliocentric latitude south. Mercury stationary at 10:00 p.m.
1791 Johann Franz Encke born.
1846 Gale and d'Arrest discover Neptune near the locations predicated by Adams and Le Verrier.

26 Fri The Moon 1.5° from Regulus. 5:00 a.m.

27 Sat Look for the Zodiacal Light in the east before morning twilight for the next two weeks.

29 Mon **New Moon**. 1:12 a.m.
Rosh Hashanah begins at sundown and starts the Jewish year 5769.

30 Tue 1880 Using an 11-inch Alvan Clark, Henry Draper takes the first photograph of the Orion Nebula.

October

1 Wed Ramadan ends at sundown.
1958 NASA established by an act of Congress.

2 Thur 1608 J. Lippershey patents the telescope.

4 Sat 1957 Sputnik 1 is launched by the Soviet Union, becoming the first artificial satellite to orbit the Earth.

5 Sun Moon at apogee (250,927 miles). 4:00 a.m.

6 Mon The Moon 4° from Jupiter. 9:00 p.m.
1923 Edwin Hubble discovers a Cepheid Variable in the Andromeda Galaxy.
1995 Discovery of the first extrasolar planet (orbiting 51 Pegasi) announced.

7 Tue **First Quarter Moon**. 2:04 a.m.
Draconid meteor shower peaks. 6:00 p.m.
1959 First photo of the "dark side" of the Moon taken by the Soviet Luna 3.

8 Wed Yom Kippur begins at sundown.
1873 Elindr Hertzsprung born.

9 Thur The Moon 2.5° from Neptune. 11:00 p.m.
1604 A supernova appears between Jupiter and Saturn. Kepler notices it on the 17th and studies it.

A Google for Satellites: Sensor Web 2.0

If you could see every satellite passing overhead each day, it would look like a chaotic meteor shower in slow motion.

Hundreds of satellites now swarm over the Earth in a spherical shell of high technology. Many of these satellites gaze at the planet's surface, gathering torrents of scientific data using a dizzying array of advanced sensors — an extraordinary record of our dynamic planet.

To help people tap into this resource, NASA researchers such as Daniel Mandl are developing a "Google for satellites," a web portal that would make requesting data from Earth-observing satellites almost as easy as typing a search into Google.

"You just click on it and it takes care of all the details for you across many sensors," Mandl explains.

Currently, most satellites are each controlled separately from the others, each one dauntingly complex to use. But starting with NASA's Earth Observing-1 (EO-1) satellite, part of the agency's New Millennium Program, Mandl and his team are building a prototype that stitches these satellites together into a seamless, easy-to-use network called "Sensor Web 2.0."

The vision is to simply enter a location anywhere on Earth into the website's search field along with the desired information types — wildfire maps, vegetation types, floodwater salinity, oil spill extent — and software written by the team goes to work.

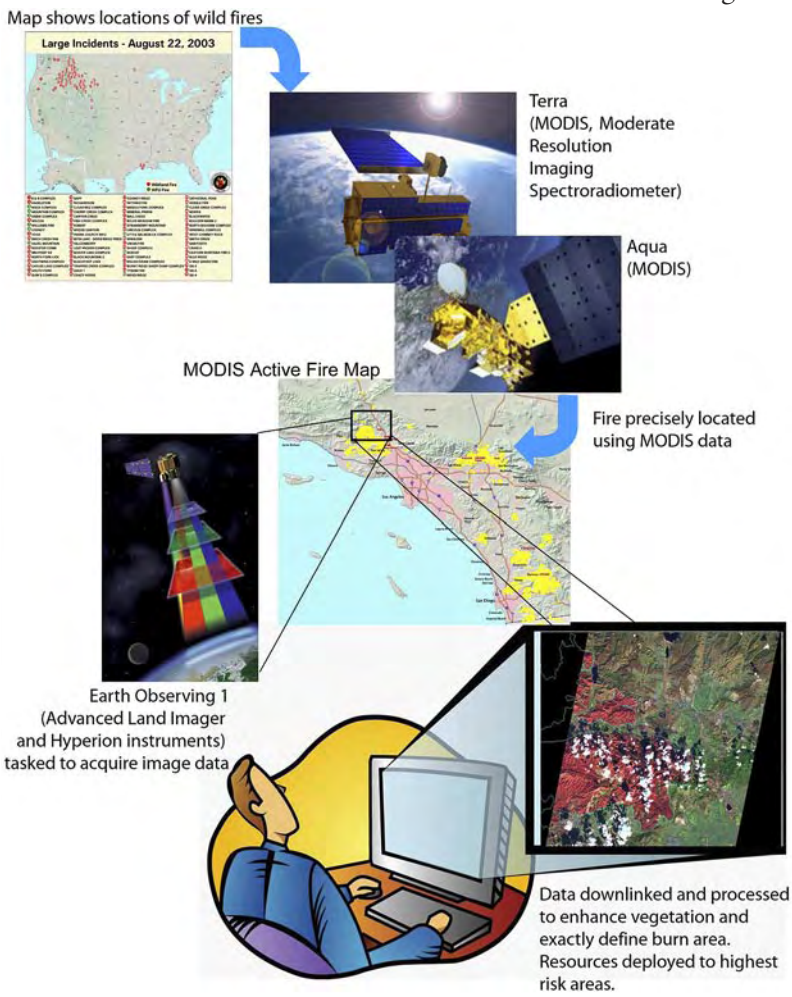
"Not only will it find the best sensor, but with proper access rights, you could actually trigger a satellite to take an image in the area of interest," Mandl says. Within hours, the software will send messages to satellites instructing them to gather the needed data, and then download and crunch that raw data to produce easy-to-read maps.

For example, during the recent crisis in Myanmar (Burma) caused by Cyclone Nargis, an experimental gathering of data was triggered through Sensor Web 2.0 using a variety of NASA satellites including EO-1. "One thing we might wish to map is the salinity of flood waters in order to help rescue workers plan their relief efforts," Mandl says. If the floodwater in an area was salty, aid workers would need to bring in bottled water, but if flood water was fresh, water purifiers would suffice. An early and correct decision could save lives.

Thus far, Mandl and his team have expanded Sensor Web 2.0 beyond EO-1 to include three other satellites and an unmanned aircraft. He hopes to double the number of satellites in the network every 18 months, eventually weaving the jumble of satellites circling overhead into a web of sensors with unprecedented power to observe and understand our ever-changing planet.

To learn more about the EO-1 sensor web initiatives, go to http://eo1.gsfc.nasa.gov/new/extended/sensorWeb/sensorWeb.html. Kids (and grown-ups) can get an idea of the resolution of EO-1's Hyperion Imager and how it can distinguish among species of trees—from space at http://spaceplace.nasa.gov/en/kids/eo1_1.shtml.

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



A "Google for satellites" type of web portal will allow users to request real-time data from Earth observing satellites.

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.