PRIMEFOCUS

Tri-Valley Stargazers

November 2003

Meeting Info:

What
NASA's Mars Exploration

Who
Chuck Marble

When
November 21, 2003
Conversation at 7:00 p.m.
Lecture starts 7:30 p.m.

Where
Unitarian Universalist
Church in Livermore
1893 N. Vasco Road

Inside

November Meeting

NASA's Mars Exploration
Chuck Marble

Artist's conception of the new rover heading to Mars.

Earlier this year Chuck gave us a multi-media "Intro to Astronomy" presentation. This time around he'll be talking about NASA's exploration of Mars. He'll tell us about the past NASA missions to Mars and what those missions have told us about the planet. He'll also tell us about the current crop of NASA missions to Mars.

On June 10th, 2003, NASA launched a spacecraft to Mars bearing the rover Spirit. On July 7th, they launched another carrying Opportunity, the sister rover to Spirit. Spirit is scheduled to arrive at the Gusev Crater on Mars on January 3rd, 2004. Three weeks later, on January 24th, Opportunity will land on the opposite side of the planet, on Meridiani Planum. Both rovers will look for any evidence of water, past or present.

In addition, on June 2nd, the European Space Agency (ESA) also launched their own mission to Mars — the Mars Express. That mission includes an orbiter (Mars Express Orbiter) and a lander (Beagle 2). The Orbiter will study the Martian atmosphere and Beagle 2 will study the geology and climatology. The two are scheduled to arrive at Mars this year, on December 26.

Chuck's presentations are fast paced and entertaining. They feature the use of a wide screen projector, stereo PA system, and multi-media computers utilizing Astronomy and Orbital Plotting programs.

Chuck has produced several astronomy videos under his Marble Productions company. He is a NASA Solar System Ambassador, has hosted a series of astronomy and rocketry events in Patterson, and has been a writer and contributing editor to Space.com. He's also a ham radio operator who has talked with many people far and wide — including shuttle astronauts as they passed overhead.

News & Notes

Welcome

TVS welcomes our newest member to the club: **John Stack**.

2003 TVS Meeting Dates

Below are the TVS meeting dates for the rest of the year. The lecture meetings are held on the third Friday of the month, with the Board meeting on the Monday following the lecture meeting. The *Prime Focus* deadline applies to that month's issue (e.g., the December 7th deadline is for the December issue).

Lecture Meeting	Board Meeting	*Prime Focus* Deadline
Nov. 21	Nov. 24	Nov. 9
Dec. 19	Dec. 15	Dec. 7

Money Matters

At the October Board meeting, Treasurer **Gary Steinhour** gave us the account balances (as of October 20, 2003) of TVS's accounts:

Checking	$1,102.92	
CD #1	$3,918.59	matures 11/17/03
CD #2	$2,418.31	matures 11/27/03
CD #3	$2,063.37	matures 01/16/04

Observer's Handbooks are In!

We've got the 2004 RASC Observer's Handbook and the 2004 RASC Calendar in stock. We'll have them available for purchase at this month's meeting and will continue to bring them to the meetings until we run out. The Handbook is $17 and the Calendar is $10.

Membership Renewal Time

As the end of the year draws closer, membership renewal time approaches. Our membership year runs from January to December. For those who subscribe to *Sky & Telescope* or *Astronomy* magazine through the club, it's better to renew early so that your magazine subscription continues without a gap.

The membership categories remain at Student-$5, Basic-$25, and Regular-$30. The only difference between the latter two is that the Basic membership will access the newsletter online, the Regular membership will get it via the mail.

For the few of you who are Patron Members, your Patron status will be renewed automatically. At this time, since the Marling scope is still unoperative (but we are beginning to make progress in getting it fixed), we will not be collecting a Patron Membership fee.

The Lunar Eclipse That Wasn't

Well, at least around here. On November 8th the Bay Area was covered with clouds, preventing us from viewing the Earth's shadow being cast on the Moon. Fortunately, others around the state and the world were able to view and photograph the eclipse. This image was taken by **Sibylle Fröhlich** at 2:03 UT, November 9th, using an 8" f/5 Newtonian and a Nikon Coolpix 4500 at f/2.9, 1 sec. exposure.

Leonid Meteor Shower

This year the Leonids will have a double peak. The first takes place on November 13th either at 5:15 a.m. or 9 a.m., depending on who you ask, with less than 12 meteors per hour predicted. The second peak is on November 19th at midnight, with about 12 meteors per hour predicted. Looks like we'll have to wait another 30 years for the next really good shower.

continued page 4

Calendar of Events

Classic Sci-Fi Film Series

Chabot Space & Science Center

The movies are shown in their original theater format at the 60' Tien MegaDome Theater. Tickets are $5 per person and are available at the door, at TicketWeb.com, or the Chabot Box Office, 510-336-7373.

Movies:

Raiders of the Lost Ark, November 28-30
Indiana Jones & the Temple of Doom, December 5-7
The Last Crusade, December 12-14

Showtimes:

Friday – Sunday on the first weekend of each month.
Friday & Saturday – 7:30 p.m., Sunday – 4:00 p.m.

Newsletter header image: NGC 266 in Andromeda.
SBIG ST10XME CCD and a 0.5m, f/8.1, 4,050mm focal length Cassegrain. Exposure times are as follows:
L: 6 at 15min. each; R: 2 at 10min. each; G: 2 at 10min. each; B: 2 at 10min.each.

Photo: Gert Gottschalk, Sibylle Fröhlich, and Adam Block.

Calendar of Events *continued*

November 18, 7:30 p.m.
What: *Taking the Universe's Baby Picture: Results from the Wilkinson Microwave Anisotropy Probe (WMAP)*
Who: Dr. David Spergel (Princeton University)
Where: Morrison Planetarium, San Francisco
Cost: Free

By observing the tiny variations in the microwave background, the left-over heat from the big bang, cosmologists can infer the physical conditions in the early universe. What are the implications of its measurements for the age, composition, and fate of the universe? These observations provide insight into the first moments of the big bang and test the bold speculation that the universe underwent a period of superexpansion called inflation.

November 18, 7:15 p.m.
What: *MDAS Annual Auction*
Who: Mt. Diablo Astronomical Society
Where: Concord
Cost: Free (unless you buy stuff)

The Mt. Diablo Astronomical Society will have its annual sales meeting on Tuesday, November 18th.

Bring items for sale or come and browse for items to purchase. They ask that you donate 5% of the sales price to the club. They welcome all items that are related to amateur astronomy, which is interpreted to include telescope making, photography, CCD and other related materials.

The meeting begins at 7:15 and doors open at 6:45. The meeting site is located at the Concord Police Training Center near the intersection of Route 4 and Willow Pass Road in north Concord. For detailed directions, contact Jim Scala at jscala2@comcast.net or visit the MDAS web site, www.mdas.net.

November 20, 7:30 p.m.
What: *Target Earth: The Search for NEO's*
Who: Ryan Diduck (Chabot Space & Science Center)
Where: Chabot Space & Science Center, Oakland
Cost: $5

Chabot Astronomer Ryan Diduck will speak on NEO's (Near Earth Objects) and why there is now an international effort to search for and track these potential Earth-killers.

November 22, 1:00-5:00 p.m.
What: *Eyes to the Skies: Telescope Buyers Clinic & Product Expo*
Who: Various
Where: Chabot Space & Science Center, Oakland
Cost: See below

Just starting out in astronomy? Have a small telescope but looking to get something bigger? Thinking of buying a telescope as a gift? Want to see what's the latest and greatest in the telescope and accessory market today? This is the event for you!

20 minute clinic sessions will run throughout the day covering telescopes, binoculars, accessories, astrophotography, CCD Imaging and lunar observing techniques.

In addition, **Celestron**, **Meade**, **Coronado Filters**, **Stellarvue**, **Earth & Sky Adventure Products**, and other vendors, will all be on hand to display and demo their products. Equipment will be available to purchase at the booths as well as plenty of take-home catalogues, brochures and hand-outs.

Tickets: $20 non-members, $15 Chabot members, $8 Youth 12 & under and Senior. Price includes general

continued on page 4

Officers

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

Vice-President:
Rich Campbell
r_photo@hotmail.com

Treasurer:
Gary Steinhour
steinhour1@juno.com

Secretary:
Maggie Halberg
925-736-8627

Board of Directors

Alane Alchorn, Jim Alves, Mike Anderson, Rich Campbell, Paul Caswell, Debbie Dyke, Gert Gottschalk, Stan Isakson, Mike Rushford, John Swenson.

Volunteer Positions

Librarian:
Jim Alves
jim_alves_engr@yahoo.com
925-634-0220

Newsletter Editor:
Debbie Dyke
ddfam@pacbell.net
925-461-3003

Program Director: unfilled

Loaner Scope Manager:
John Swenson
johnswenson1@comcast.net

Webmaster:
Chuck Grant

Observatory Director/ Key Master:
Chuck Grant

School Star Party Chair:
Rich Campbell
r_photo@hotmail.com
209-834-1324 (evenings)

Public Star Party Chair:
Rich Campbell

Historians:
Paul Caswell & Debbie Dyke

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
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.

Calendar of Events *continued*

admission to the Science Center and the planetarium program *Ringworld*

Just want to visit the vendors? General Admission is $11 adults, $8 Youth & Senior. Price includes the planetarium program *Ringworld*.

Center & vendor hours are 10 am to 10 pm. Telescope viewing and product demos after sunset (weather permitting, of course).

Tickets may be purchased at the Chabot Box Office: 510-336-7373. Chabot Space & Science Center is located at 10000 Skyline Blvd., Oakland. For directions go to www.chabotspace.org or call 510-336-7300.

News & Notes *continued*

Leonids, continued

Dr. Peter Jenniskens, our local Leonid expert, is organizing an observing effort at Fremont Peak Observatory (http://www.fpoa.net) on the night of November 18/19 – that is, Tuesday night, November 18th until Wednesday morning on the 19th. People with telescopes (and CCD imagers) are invited. The goal is to try and look at highly magnified persistent trains.

Dave Holman is going to provide a second site from a location north of Los Banos on that same night for stereoscopic imaging. The radiant does not rise until after 11:00 p.m. If you'd like to bring telescopes or cameras or just participate at either location, please contact Mike Koop at koopm@best.com.

NGC 7139 Planetary Nebula in Cepheus.

Last month, **Gert Gottschalk** and **Sibylle Fröhlich** took part in the Kitt Peak Advanced Observing program. With the help of **Adam Block**, they were able to capture this image using an SBIG ST10XME CCD and a 0.5m f/8.1 4,050mm fl, cassegrain. The exposures were as follows:
L: 5 at 15min. each; R: 2 at 10min. each; G: 2 at 10min. each; B: 2 at 10min. each.

TVS Elections This Month

If it's November, it must be election time. TVS will hold its annual election at this month's meeting. If you wish to run for any position, come to the November meeting and make your wishes known.

The elected positions are:

President
Nominee: Chuck Grant
Write In: _____
The President conducts the lecture and board meetings, and is responsible for getting everything done (usually by delegating it to others).

Vice President
Nominee: Richard Campbell
Write In: _____
The Vice President does the President's job when the President is unavailable.

Secretary
Nominee: Maggie Halberg
Write In: _____
The Secretary takes the minutes at the board meetings and takes care of general correspondence.

Treasurer
Nominee: Gary Steinhour
Write In: _____
The Treasurer handles the memberships and reimbursements, maintains the financial records, prepares the club's budget, pays the rent and insurance. The Treasurer also works with the newsletter editor by providing the mailing label file and sending out the *Prime Focus* e-mail notification messages each month.

Board of Directors
The following people are candidates for the 2004 Board of Directors. If you'd like to be on the Board, let any TVS officer know and we'll add you to the ballot list.

Alane Alchorn	Stan Isakson
Jim Alves	Frank Rogue
Mike Anderson	Mike Rushford
Rich Campbell	John Swenson
Paul Caswell	_____
Debbie Dyke	_____
Gert Gottschalk	_____

All these positions (Officer & Board) require attendance at the majority of the board meetings.

We're also looking for someone to fill the volunteer position of Program Director. The Program Director is responsible for getting speakers for our monthly lectures.

Astronomical Insights

by David Feindel

The eclipse that wasn't. Or rather, the eclipse we couldn't see. Complete, 100% cloud cover and rain locally forced me to watch the eclipse through the net via a webcam in Norway (www.astro.uio.no/ita). Still interesting, but *not quite* the same as seeing it live. The pictures clearly conveyed that the moon was at the southern edge of the shadow area and that color fringing and signal gain are issues in webcam optics. But for one amateur to be able to watch another amateur's efforts live from half-way around the world is spectacular in and of itself. We now pin our hopes on the October 27, 2004 lunar eclipse, the next one visible from California.

One of the things I like about amateur astronomy is that you are always learning. This month's lesson learned is that your choice of telescopes does indeed have a major influence on what you choose to observe. My scope, an 8" SCT, is described by many as a good "all purpose" 'scope. But I never found open clusters (OCs) terribly interesting. Oh there were a couple of exceptions, like the Wild Duck (M11) and ET (NGC 457). But with the standard 26mm eyepiece, my 'scope provides 78X and a 40' field of view, hardly enough to cover many OCs. I was much more of a "globular guy", where magnification takes precedence over FOV. So when I stumbled across a great deal on a 2" diagonal and a 40mm wide-field eyepiece that would expand my FOV to 75', I figured "why not?" If the results weren't that great, I could always resell it on Astromart, and break even on the deal.

Shock and awe. The Double Cluster (NGC 869 and 874) is superb. As are a whole slew of other, less famous OCs in Cassiopeia (the current constellation of choice given the sight lines in my backyard). Whereas before I viewed each half of the Double Cluster separately, they now comfortably fit into a single FOV. I am now starting to appreciate the beauty in OCs, being able to see them in their entirety against a surrounding sea of black. Take a look at some of the other Cass open clusters — NGCs 7789, 7654 (aka M52), and 663 among others. The Pleiades, M45, is more impressive. I suspect M31 will look completely different, too, once I get to a dark sky site with this setup.

As always, my discoveries lead to new questions and issues. And likely more hardware (ouch). The weight of a 2" diagonal and a 40mm 2 inch eyepiece unbalances my scope. This at least has a cheap and easy fix — add a home-made counterweight. But the wider FOV also highlighted the puzzle of where optical distortion around the edges is coming from. Certainly my 45+ year-old eyes are a prime suspect; astigmatism and spherical distortion are very common degradations as your eyes age. SCTs are also known for optical aberrations around the edges. It can't be a coincidence that both major SCT manufacturers have a component called a reducer/corrector in their product lines, can it? And of course, the eyepiece itself may cause some of this; getting a 75' FOV out of a SCT is pushing the limit. But the next star party camped out next to someone else's SCT will help identify the main culprit(s). Now if the clouds would just clear…

First Light: Beginners' Astronomy

by Richard Campbell

Cosmic Holiday Gifts

Our holiday gifts can come from our hands, the department store, or the far reaches of the cosmos. After wrapping presents, why not step outside on a crisp winter night, and gaze upon a gift we all share — the night sky.

First, you'll be rewarded with more bright stars than usual. The major winter constellations, Orion, Taurus, Canis Major, and Auriga sport bold, bright suns of many colors. Betelgeuse and Rigel in Orion are examples of the mighty extremes some stars represent: fiery red Betelgeuse is so massive it could swallow much of our inner solar system, and steely blue Rigel is brighter than most stars in our Milky Way Galaxy. Both are stunning sights with the unaided eye. If you own binoculars or a telescope, train your optic on the brightest star of them all, Sirius in the constellation Canis Major. Not only will its azure fire captivate you, its explosive shimmering will surprise as it dances across the entire field of view of your eyepiece. This effect is most extreme when Sirius is rising in the evening. *De*focus on it, and you'll be rewarded with a show of sparkling, iridescent color as its light waves are shifted all over the visual spectrum by Earth's turbulent atmosphere.

Second, as you rub your hands to create warmth here on winter Earth, consider the temperature on the bodies you're observing. Say you choose Saturn, the hypnotic ringed planet. Its temperature is a bone-chilling -292°F! Suddenly, it's not so cold here on Earth, is it? If you are observing from your backyard, look back at your house, and picture it as a giant ice cube. That's what a typical *particle* of Saturn's rings looks like, close up. Still craving a little warmth? Consider the temperature of a typical star. It runs in the *millions* of degrees fahrenheit.

Finally, when you get back inside, look around at your loved ones, the decorations, the shining lights, and consider that all of it is made of *atoms* created from stellar supernova explosions that happened billions of years before there was such a thing as Christmas, Hanukkah, or the month of December. Realizing this, you find the stars are much more than tiny curiosities — they are your distant ancestors. Include them in your holiday celebration!

What's Up *by Debbie Dyke*

All times Pacific Standard Time unless otherwise noted.

November

12 Wed 1782 John Goodricke discovers the variability of Algol.
1949 The 5-meter Hale Telescope begins operation on Mt. Palomar.
1980 Voyager 1 flies by Saturn.

13 Thur First peak of the **Leonid meteor** shower at either 5:15 a.m. or 9:00 a.m.
N. Taurid meteors peak at 12:00 p.m.
The Moon less than 6° from Saturn in the early morning sky.
1790 Wilhelm Herschel discovers a planetary nebula.
1577 Tycho Brahe discovers a comet.
1971 Mariner 9 becomes the first spacecraft to orbit Mars.

14 Fri Saturn occults a mag 8.4 star - TCY1343-1615-1. The star sneaks behind the rings at 8:32 p.m. and reappears at 3:34 a.m.

15 Sat 1738 Wilhelm Herschel born.

16 Sun **Last Quarter Moon** 8:15 p.m.

17 Mon 1970 Luna 17 becomes the first wheeled vehicle on Moon.

18 Tues Look for the Moon just 4.5° from Jupiter in the early morning.

19 Wed 1969 Apollo 12 lands at Oceanus Procellarum on the Moon.
Second peak of the **Leonid meteor** shower at midnight.

20 Thurs 1889 Edwin Powell Hubble born.

21 Fri **Tri-Valley Stargazers general meeting**. 7:30 p.m. at the Unitarian Universalist Church, 1893 N. Vasco Road, Livermore.

23 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.
New Moon 2:59 p.m. Total eclipse of the Sun visible from Antartica. Brrrrr.
Moon at perigee – large tides expected (221,222 mi/356,811 km) 3:00 p.m.

24 Mon **Tri-Valley Stargazers Board meeting**. 7:00 p.m. at the Round Table Pizza in Livermore.
Mercury 0.3° north of the Moon 7:00 p.m.

25 Tues Saturn occults an 8th mag star - TCY1343-1900-1. The star makes "contact" with the rings at 2:23 a.m. and exits at 5:42 a.m. Look for the star to blink in and out as it passes through the ring structure.
Venus 2° north of the Moon 10:00 a.m.

27 Thurs **Thanksgiving Day**.

28 Fri 1964 Mariner 4 launched toward Mars.

30 Sun **First Quarter Moon** 9:16 a.m.

December

1 Mon The Moon is less than 6° from Mars.

2 Tues 1993 Hubble Space Telescope gets glasses, so to speak.

3 Wed 1973 Pioneer 10 becomes the first spacecraft to fly by Jupiter.

7 Sun Moon at apogee (251,893 mi/406,279 km) 4:00 a.m.
1995 Galileo arrives at Jupiter.

8 Mon **Full Moon** 12:37 p.m.
Mercury at greatest elongation east (21°) 10:00 p.m.

NASA's Space Place

Hurricane Team Work

by Dr. Tony Phillips

On a gray breezy day last month thousands of people got in their cars and reluctantly left home. U.S. east coast highways were thick with traffic. Schools were closed. Businesses shut down.

Perfect!

When powerful Hurricane Isabel arrived some 38 hours later nearly everyone in the storm's path had fled to safety.

Days later Vice Admiral Lautenbacher, in a briefing to President Bush, praised the National Atmospheric and Oceanic Administration (NOAA): "Without NOAA's excellent track forecasts, hurricane Isabel's toll on lives and property would have been even more devastating. This is NOAA's first year of providing 5-day forecasts — and the 5-day forecast for Isabel was as good as our 2-day forecasts have been over the last decade."

Many people in NOAA played a role. A team of pilots, for instance, flew Gulfstream-IV High Altitude Surveillance jets right up to the approaching hurricane, logging 25,000 miles in the days before landfall. Their jets deployed devices called dropsondes — little weather stations that fall toward the sea, measuring pressure, humidity, temperature and wind velocity as they plummet. The data were radioed back to the aircraft and transmitted to forecasters on shore.

While two Gulfstream-IV crews flew night and day around the storm, a NOAA satellite named GOES-EAST monitored Isabel from above. (GOES is short for Geostationary Operational Environmental Satellite.)

From an orbit 22,300 miles above the Atlantic Ocean, GOES-EAST had a unique view. "It could see the entire hurricane at once," says Ron Gird of NOAA. "Scientists used infrared spectrometers onboard the satellite to estimate the height of the storm clouds, their temperature and water content. GOES can also measure the temperature of the ocean surface-the source of power for hurricanes."

Constant streams of data from GOES and the Gulfstream aircraft were fed to supercomputers at NOAA's Environmental Modeling Center in Maryland where sophisticated programs, developed over the years by meteorologists and programmers, calculated the storm's most likely path.

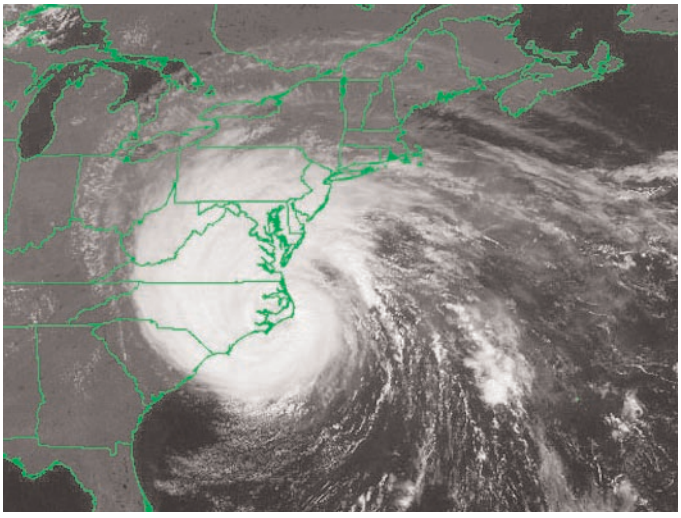
Supercomputers. Satellites. Jet airplanes. Scientists. Programmers. Pilots. It took a big team using a lot of tools to predict where Isabel would go-accurately and with time to spare.

Says Vice Admiral Lautenbacher: "I hope everyone at NOAA shares the pride of being part of a team effort that so effectively warned the public of impending danger and enabled citizens to take action to protect themselves and their loved ones."

Well done, indeed.

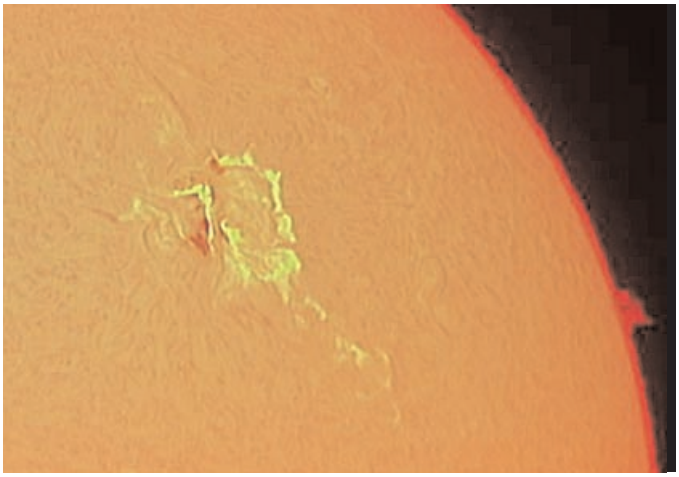
To learn more about the GOES, see www.oso.noaa.gov/goes/. For kids, the SciJinks Weather Laboratory at scijinks.nasa.gov has lots of fun activities and fascinating facts about the wild world of weather.

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



GOES-East satellite image of hurricane Isabel as it makes landfall on September 18, 2003 at 1715 UTC.

Astro Events



Sunspot 484 during a flare event on 26 Oct 2003 beginning at 18:49UT. This image taken by TVSer *Ken Sperber*. Ken's set up: 4" Takahashi, Coronado SM60mm H-alpha filter, ToUCam Pro, Stack of 240 images processed in Registax.

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.
_____ $25 Basic. You will receive e-mail notification when the PDF version of *Prime Focus* is available for download off the TVS web site.
_____ $30 Regular. You will receive a paper version of *Prime Focus* in the mail.
_____ $32.95 One year subscription to *Sky & Telescope* magazine.
_____ $29 One year subscription to *Astronomy* magazine.
_____ $55 Two year subscription to *Astronomy* magazine.
_____ $20 Hidden Hill Observatory (H2O) refundable key deposit (key property of TVS).
$_____ 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.