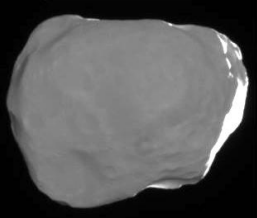
PRIMEFOCUS

Tri-Valley Stargazers

March 2010



Meeting Info
What:

Who: TBD

When:
March 19, 2010
Doors open at 7:00 p.m.
Lecture at 7:30 p.m.

Where
Unitarian Universalist
Church in Livermore
1893 N. Vasco Road

Inside

March Meeting

As the newsletter goes to press, we are still awaiting confirmation of a presenter for this months meeting. Please keep an eye on the club website (http://www.trivalleystargazers.org/) and/or the TVS Yahoo users group for the latest information.

Dues Are Due

TVS' membership year runs from January to December, so now is the time to renew your membership. Our membership rates remain unchanged from last year, and the renewal form can be found on the back of this newsletter or on our web site under the Membership link. Please make our Treasurer's New Year especially wonderful by sending in your renewal today.

Orion is seen rising over the rock mounds of Joshua Tree National Park. This 25 second exposure (ISO-400) was taken in late November 2009 by Ken Sperber. The scene was lit by the first quarter Moon.

News & Notes

2010 TVS Meeting Dates

The following lists the TVS meeting dates for 2010. The lecture meetings are on the third Friday of the month, with the Board meetings on the Monday following the lecture meeting.

Lecture Meeting	Board Meeting	Prime Focus Deadline
Apr. 16	Apr. 19	March 26
May 21	May 24	April 30
June 18	June 21	May 28
July 16	July 19	
Aug. 20	Aug. 23	
Sept. 17	Sept. 20	
Oct. 15	Oct. 18	
Nov. 19	Nov. 22	
Dec. 17	Dec. 20	

Money Matters

Treasurer David Feindel indicates that as of the February 20, 2010 the TVS account balances are:

Checking	$5,862.37	
CD #1	$3,760.50	rolled over 2/17/2010
CD #2	$2,653.02	rolled over 11/27/09

More Volunteers Needed

Vice-President and Secretary Needed

We continue to have no one volunteering for the positions of Vice-President and Secretary. The V-P really doesn't have much in the way of job duties as it is an optional position in terms of our non-profit status.

We do need someone to fill in the Secretary position, as it is a legal requirement to maintain our non-profit status. The Secretary is responsible for taking the minutes of the board meetings and dealing with general correspondence (which is minimal). The amount of time required for the job duties is about an hour and a half to two hours at the most, primarily for attending the monthly board meetings and typing up the minutes.

Board Members Needed

We also need more members to be on the board of directors. With the limited board membership the board meetings are in jeopardy of being cancelled should more than one member or officer be unable to attend. In order to conduct the meeting, one officer and at least two board members need to be present. With such a low number of officer and board members (two officers and two board members), it's getting more difficult to hold meetings. We are very much in need of more members being on the board of directors and taking an active part in setting the future direction of the club.

Meetings are in Livermore on the Monday following the lecture meeting, from 7:30 p.m. to around 8:30 or 9:00.

Should anyone wish to help, please contact any board member or club officer.

Several Volunteer Positions Filled

Several club members have generously offered their time to fill important volunteer positions.

Jim Alves is the new Program Director. We can all help out by providing Jim with suggestions of possible speakers.

Wayne Miller has taken on double duty as the new Web Master and the School Star Party Coordinator. As we move into the spring and summer seasons, requests for star parties are sure to increase dramatically. It's rewarding and fun to bring your scope to star parties to help inspire young minds (and future club members).

Laurie Grefsheim has taken over as Refreshment Coordinator. Be sure to thank her for the time she has taken to shop for all the goodies that we so enjoy while chatting after the featured lecture. Also, please remember to make a monetary contribution to the refreshment piggybank so that we continue to have a diverse spread to suite all tastes.

Ken Sperber has taken over as editor of the TVS Newsletter. It will be very difficult to match the journalistic expertise of Debbie Dyke, the previous editor. I thank her for helping ease the transition by having provided a comprehensive guide to newsletter assembly. I still have much to learn, so bear with me as I struggle to become her worthy successor. I encourage you to submit astronomy related articles, book reviews, and/or pictures, etc. to share your diverse interests with the rest of our club members.

Newsletter header image: Helene, imaged by Cassini, March 3, 2010

Helene is a 30 km sized moon of Saturn. The nightside of Helene is visible thanks to sunlight that is reflected off of Saturn. Craters and streaks are visible; the latter of which may be due to boulders that have rolled downhill. Even so, the surface has a strange smooth appearance to it. Interestingly, Helene circles Saturn within a Lagrange point of the moon Dione. For more information see: http://blogs.jpl.nasa.gov/?p=64 Image Credit: NASA/JPL/Space Science Institute

Calendar of Events

March 20, 11am - 4pm

What: Sun-Earth Day
Who: Everyone
Where: Chabot Space & Science Center
Cost: Free with General Admission

Join us in a celebration of the annual Sun-Earth Day with fun and illuminating hands-on activities focused on the Sun, the Earth, and the special relationship between these two celestial bodies. This year's theme is "The Magic of Magnetism." Enjoy solar viewing (weather permitting), special magnetic exploration lab activities, and a showing of the film Solarmax. Learn about the Sun's dynamic magnetic forces that are the driving force behind sunspots, solar flares, coronal mass ejections, and the Aurora Borealis.

March 24, 12:00 - 1:00 pm

What: Exploring the Habitability of Icy Worlds: The Europa Jupiter System Mission
Who: Bob Pappalardo, Jet Propulsion Laboratory
Where: SETI in Mountain View
Cost: Free

NASA and ESA have recently selected the Europa Jupiter System Mission (EJSM) as the next Flagship mission to the outer solar system. The mission concept consists of a NASA-led Jupiter Europa Orbiter (JEO) and an ESA-led Jupiter Ganymede Orbiter (JGO), which would execute a choreographed exploration of the Jupiter System before entering orbit around Europa and Ganymede, respectively. The mission's overall theme is: "The emergence of habitable worlds around gas giants," and JEO would focus on Europa with the goal: "Explore Europa to investigate its habitability." While the primary focus of JEO is to orbit Europa, the science return encompasses the entire Jovian system, especially as is relevant to the potential habitability of Europa. EJSM would shed new light on the potential habitability of icy worlds in our solar system and beyond.

This lunchtime talk is part of the SETI Institute Colloquium Series. Location is 515 N. Whisman Road, Mountain View, CA 94043. For more info, visit their web site http://www.seti.org/csc/lectures, e-mail info@seti.org, or phone 650-961-6633.

March 27, 8pm

What: The Structure of the Milky Way
Who: Dr. Constance Rockosi (Lick Observatory)
Where: San Jose Astronomical Association, Houge Park
Cost: Free

Details regarding this talk have not been posted. For directions and additional information please see: http://www.sjaa.net/directions.shtml

March 28, 5:45pm

What: Eastbay Astronomical Society Eighty-sixth Annual Awards Dinner/Kepler: The Search for Earth-sized Planets Around Other Stars
Who: Prof. Gibor Basri, PhD (UC Berkeley)
Where: Chabot Space & Science Center
Cost: $35.00

The doors open at 5:45pm, with dinner being served at 6:30pm. The presentation of awards and the door prizes begins at 8pm, with the lecture thereafter. The dinner will be catered by Harry'€™s Hofbrau featuring Roast Beef, Turkey,

continued page 4

Officers

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

Vice-President:
unfilled

Treasurer:
David Feindel
feindel1@comcast.net

Secretary:
unfilled

Volunteer Positions

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

Newsletter Editor:
Ken Sperber
sperbs13@yahoo.com
925-361-7435

Program Director:
Jim Alves
ajaengr@yahoo.com

Loaner Scope Manager:
John Swenson
johnswenson1@comcast.net

Webmaster:
Wayne Miller

Observatory Director/ Key Master:
Chuck Grant

Public Star Party Chair:
Wayne Miller
starpartytvs@gmail.com

Historian:
unfilled

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

Refreshment Coordinator:
Laurie Grefsheim

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 (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.

Calendar of Events continued

Ham and Spinach Lasagna. This dinner always receives rave reviews every year.

The cost per person will be $35.00. Purchase your attendance online using your PayPal account or credit card by going to the EAS web site: http://www.eastbayastro.org ...or, mail your check, payable to the EAS, as soon as possible to: EAS Treasurer, 2539 Cordova St., Oakland, CA 94602.

The dinner and lectures will be held in the Kepler and Copernicus Rooms of the Chabot Space & Science Center, which is locoated at 10000 Skyline Boulevard, Oakland, California

March 31, 12:00 - 1:00 pm

What: Primordial Ice Reservoirs of the Solar System
Who: David Jewitt (UCLA)
Where: SETI in Mountain View
Cost: Free

We now know that ice in the solar system resides in at least three distinct reservoirs, known as the Oort cloud, the Kuiper belt and the main-belt comets. Dr. Jewitt will discuss the nature, distribution and significance of the ice, highlighting its connection to the formation epoch, in a style intended to be sweeping and broadly accessible.

This lunchtime talk is part of the SETI Institute Colloquium Series. Location is 515 N. Whisman Road, Mountain View, CA 94043. For more info, visit their web site http://www.seti.org/csc/lectures, e-mail info@seti.org, or phone 650-961-6633.

April 12, 7:30 pm

What: The Brightest, Dimmest, Soonest, and Longest: Fascinating New Phenomena in the World of Supernovae
Who: Dr. David Pooley, University of Wisconsin-Madison
Where: California Academy of Science, Golden Gate Park, San Francisco
Cost: Reservations: Adults $12, Seniors $10, Academy members $6. Seating is limited. Purchase advanced tickets online or call 800-794-7576

Supernovae, the explosions of massive stars, have been recorded and studied for thousands of years, but they remained mysterious until the era of modern astronomy in the past century. New search techniques have led to the discovery of the brightest supernovae ever seen, including one that has stayed bright longer than any other known supernova and which may be indicative of a never-before-seen type of explosion that only the most massive stars experience. Dr. Pooley will briefly review the general phenomena of supernovae and then discuss these new, state-of-the-art observations.

Astro Events

Messier Marathon

It's March, so there is the possibility of observing all of the Messier objects in one night. A Messier marathon challenges ones endurance, as it is virtually an all night undertaking. Galaxies, emission nebula, planetary nebula, globular and open clusters rule the night, with the summer Milky Way tempting you in the wee hours of the morning.

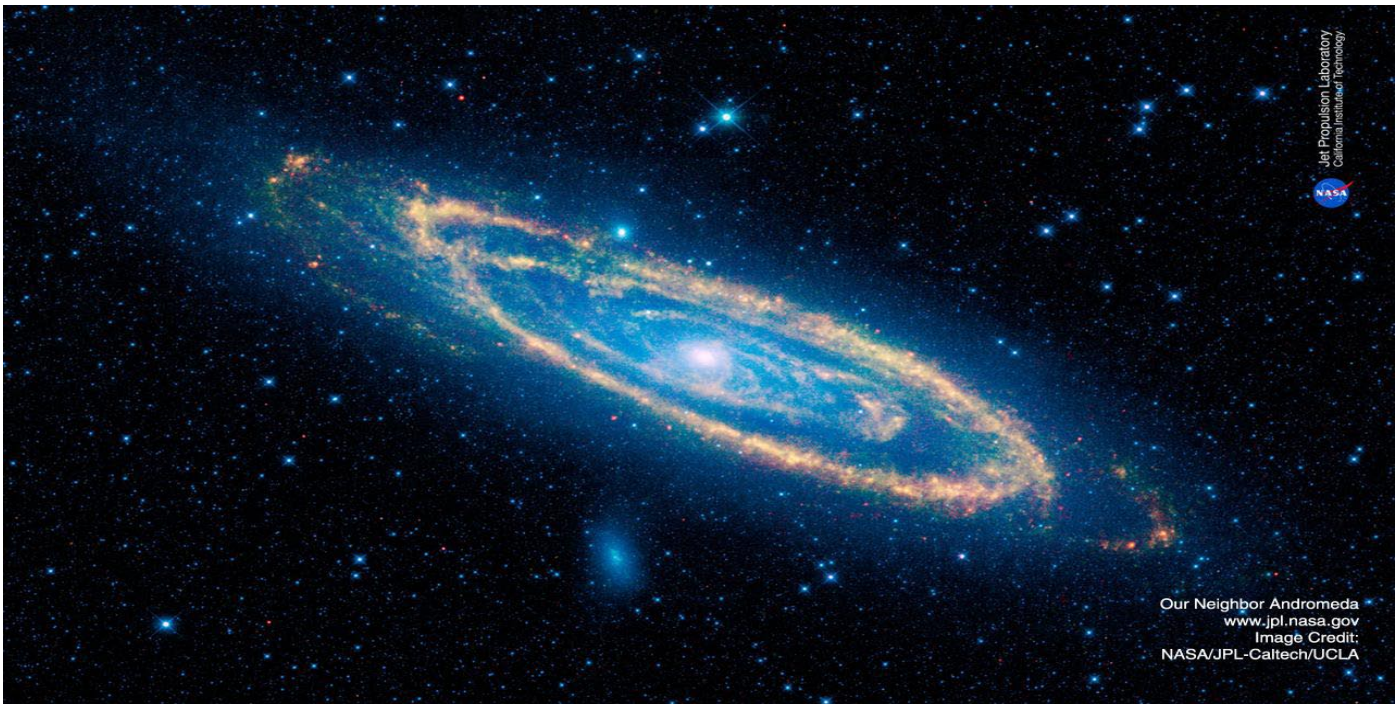
Richard Bell has a nice webpage (http://www.richardbell.net/marathon.html) that gives a bit of history behind the compilation of the Messier list, the equipment that is needed to observe all 110 objects (you can do a significant portion of the list with binoculars), and a lisiting of the best dates to do a Messier Marathon during the remainder of this decade. A downloadable PDF document indicates the order that the Messier objects should be observed to give you the best chance for observing all in one night. He also provides links to additional resources for those with who want more comprehensive information.

An excellent web-based guide to the Messier list, including strategies on how to approach the marathon, is http://www.universetoday.com/guide-to-space/messier-objects/ The information includes finder charts and detailed historical information on the discovery of each object.

Below is one of our our nearest neighbors, M31, the Andromeda galaxy, along with two of its satellite galaxies, M32 and M110. If our eyes could see in infrared light, this is how we might perceive these distant galaxies. This image was taken with one of NASA's newest space observatories, the Wide-Field infrared Survey Explorer. WISE was launced on December 14, 2009 with a mission lifetime of approximately 10 months, which is duration that the frozen hydrogen cryogen is expected to last. The cryogen is needed to cool the detectors, which image at 3.4, 4.6, 12, and 22 microns, to 17 degrees Kelvin. In six months WISE will image the entire sky, and then make repeat observations of selected regions to investigate transient variability.

WISE will provide a census of asteroids and comets, including those that have the potential to cross Earth's orbit. It will also study brown dwarfs, young stars and their forming solar systems, and star formation in distant galaxies. Of special interst are ultraluminous infrared galaxies (ULIRG's), whose star formation rates greatly exceed those of the Milky Way.

Aside from the research that WISE will directly spawn, the results of its survey will be used to task observations by other orbiting infrared spacecraft, including Spitzer and Herschel (see p.7 for a discussion of Herschel). For more details see the WISE website (http://www.nasa.gov/mission_pages/WISE/



The immense Andromeda galaxy, also known as Messier 31 or simply M31, is captured in full in this new image from NASA's Wide-field Infrared Survey Explorer, or WISE. The mosaic covers an area equivalent to more than 100 full moons, or five degrees across the sky. WISE used all four of its infrared detectors to capture this picture (3.4- and 4.6-micron light is colored blue; 12-micron light is green; and 22-micron light is red). Blue highlights mature stars, while yellow and red show dust heated by newborn, massive stars. Andromeda is the closest large galaxy to our Milky Way galaxy, and is located 2.5 million light-years from our sun. It is close enough for telescopes to spy the details of its ringed arms of new stars and hazy blue backbone of older stars. Also seen in the mosaic are two satellite galaxies, known as M32, located just a bit above Andromeda to the left of center, and the fuzzy blue M110, located below the center of the great spiral arms. These satellites are the largest of several that are gravitationally bound to Andromeda. Image Credit: NASA/JPL-Caltech/UCLA.

What's Up by Ken Sperber

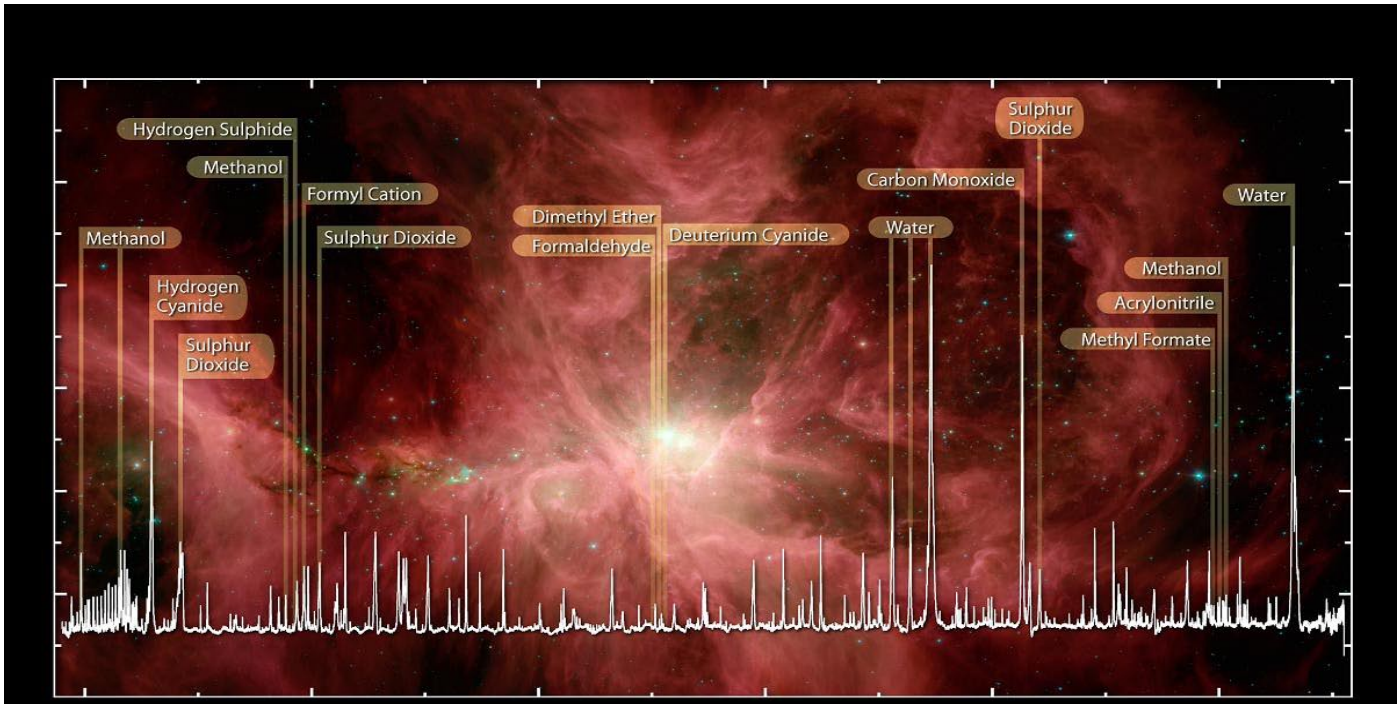
All times Pacific Daylight unless otherwise noted.

March

12-18	Fri-	Messier Marathon week (see article on page 5).
14	Sun	Daylight Savings Time begins at 2am.
15	Mon	New Moon 2:01pm
16	Tue	Just after sunset look for crescent Moon ~7 degrees below Venus.
17	Wed	Just after sunset look for crescent Moon ~10 degrees above Venus.
20	Sat	Spring begins at 10:32am PDT.
		The Moon partially occults the Pleiades at 6:30pm.
22	Mon	Saturn at opposition, visible all night long!
23	Tue	First Quarter Moon 4:00am.
29	Mon	Full Moon 7:25pm.

April

1-15	Thur-	Mercury is visible to lower-right of Venus at dusk.
1-15	Thur-	Zodiacal light visible in the west, extending from Venus to the Pleiades.
6	Tue	Last Quarter Moon 2:37am.
13-20	Tue-	Mars and the Beehive Cluster (M44) are within 2 degrees of each other. A good binocular sight!
14	Mon	New Moon 5:29am.
21	Wed	First Quarter Moon 11:20am.



The strange brew that makes up the Orion Nebula has been revealed by the infrared heterodyne instrument onboard the Herschel Space Observatory. Every molecule has unique vibrational and rotational frequencies at which they are preferentially excited. By comparing the Herschel spectrum with laboratory data many of the constiuents of the Orion Nebula have been identified. Some of the indicated organics are precursors to more complex molecules that are essential for life as we know it. For more information see: http://www.jpl.nasa.gov/news/news.cfm?release=2010-077&icid=NewsFeaturesHome Image credit: ESA/NASA/JPL-Caltech.

Flipping the Lights on Cosmic Darkness

Exploring the universe is a bit like groping around a dark room. Aside from the occasional pinprick of starlight, most objects lurk in pitch darkness. But with the recent launch of the largest-ever infrared space telescope, it's like someone walked into the room and flipped on the lights.

Suddenly, those dark spaces between stars don't appear quite so empty. Reflected in the Herschel Space Observatory's 3.5-meter primary mirror, astronomers can now see colder, darker celestial objects than ever before—from the faint outer arms of distant galaxies to the stealthy "dark asteroids" of our own solar system.

Many celestial objects are too cold to emit visible light, but they do shine at much longer infrared wavelengths. And Herschel can observe much longer infrared wavelengths than any space telescope before (up to 672 microns). Herschel also has 16 times the collecting area, and hence 16 times better resolution, than previous infrared space telescopes. That lets it resolve details with unprecedented clarity. Together, these abilities open a new window onto the universe.

"The sky looks much more crowded when you look in infrared wavelengths," says George Helou, director of the NASA Herschel Science Center at Caltech. "We can't observe the infrared universe from the ground because our atmosphere blocks infrared light, and emits infrared itself. Once you get above the atmosphere, all of this goes away and suddenly you can look without obstruction."

Herschel launched in May from the Guiana Space Centre in French Guiana aboard a European Space Agency Ariane 5 rocket. Since then, it has expanded the number of distant galaxies observed at far infrared wavelengths from a few hundred to more than 28,000. And with the instrument testing and system check-out phases finally completed, the discoveries are only now beginning.

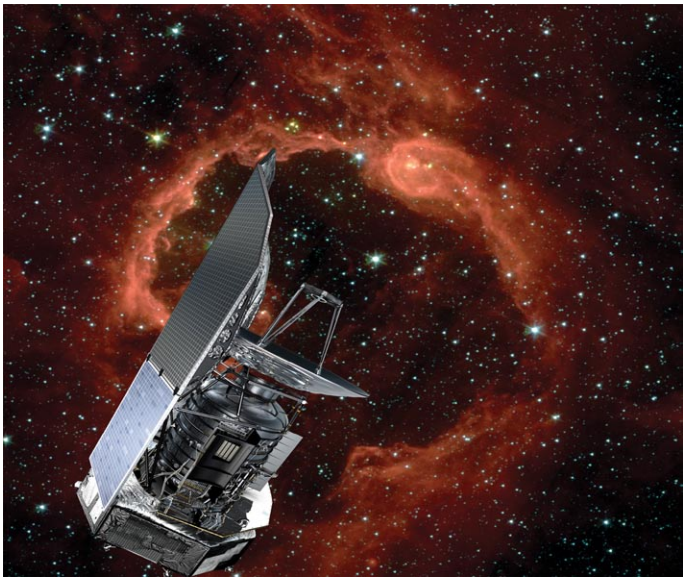
Beyond simply imaging these dark objects, Herschel can identify the presence of chemicals such as carbon monoxide and water based on their spectral fingerprints. "We will be able to decipher the chemistry of what's going on during the beginnings of star formation, in the discs of dust and gas that form planets, and in the lingering aftermath of stellar explosions," Helou says.

And those are just the expected things. Who knows what unexpected discoveries may come from "flipping on the lights?" Helou says "we can't wait to find out."

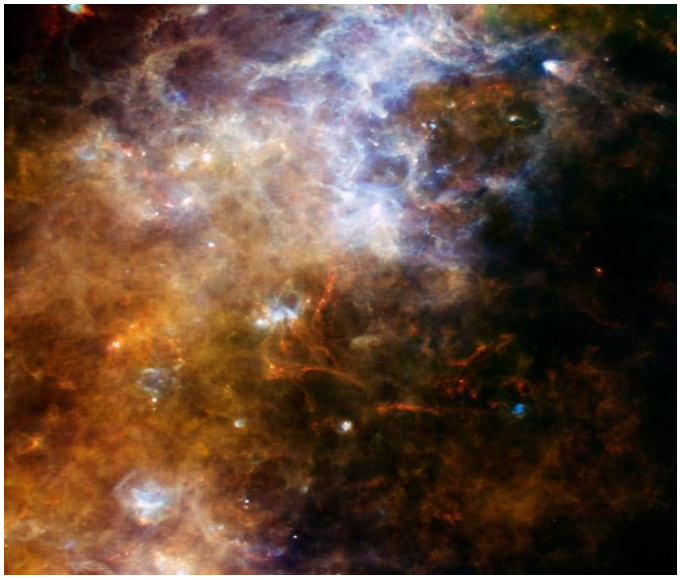
Herschel is a European Space Agency mission, with science instruments provided by a consortium of European-led institutes and with important participation by NASA. See the ESA Herschel site at sci.esa.int/science-e/www/area/index.cfm?fareaid=16. Also, see the NASA sites at herschel.jpl.nasa.gov, www.herschel.caltech.edu, and www.nasa.gov/mission_pages/herschel. Kids can learn about infrared light by browsing through the Infrared Photo Album at The Space Place, spaceplace.nasa.gov/en/kids/sirtf1/sirtf_action.shtml.

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

For more Herschel results, see page 6.



Artist's rendering of the Herschel Space Observatory. The Herschel Space Observatory has 3.5-meter primary mirror, allowing astronomers to see colder, darker celestial objects than ever before.



Herschel image of the plane of the Milky Way. The image spans approximatley 2x2 degrees, and is located 60 degrees from the galaxy center. This is a star forming region, with red representing the coldest temperatures. Image credit: ESA/NASA/JPL-Caltech.

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.