Snake River Skies

The Monthly Newsletter of the Magic Valley Astronomical Society

In this Issue

Image: Super Nova SN2011fe in M-101 by Jim Tubbs, the nova is located bottom center in this image. © 8/2011 Jim Tubbs.

Membership Message

October brings us to our annual elections and the nominations are now officially open. To be a board member you must be an actual dues paying member in good standing according to the by-laws. The current board has served in this capacity for the longest running time in the history of the club. So if you are interested in a position on the board we will need a nomination by the general meeting on Saturday, the 8th. We will meet just before the Herrett Center presentation and vote for officers.

Following the elections we will then have our program presented by the Herrett Center for International Observe the Moon Night. The Herrett Center for Arts and Science and the CSI Foundation will present Western Shoshoni entertainer and storyteller Shane "Good Bear" Ridley-Stevens. Shane is a CSI graduate, former CSI student body president and Herrett Center Employee. Join us on the 8th for this "not to missed" program. See page 5 for more details.

Following the success of our star party at the Aeromodelers club, we most certainly want to do it again. Though currently no star parties are planned that may change quickly so be sure to check your e-mails and of course our club facebook page for updates on when the next star party will be.

After the Astronomy talk in September; Centennial Observatory manager Chris Anderson mentioned that he may need to do another Telescope Operators class. If you are interested in this knowledge please e-mail Chris and let him know as soon as possible. At this writing there are no confirmed dates and each class will be dependant on Chris Anderson's schedule and availability.

The series of articles "Looking through the Eyepiece" will resume next month.

Until next month-Clear Skies.

David Olsen, VP/Editor

MVAS Memberships

Welcome to the Magic Valley Astronomical Society

Welcome to the society and hello. We hope you have a good time, enjoy the hobby, & bring good skies with you.

We hold indoor meetings each month at the Herrett Center for Arts & Science College of Southern Idaho campus in Twin Falls, ID, USA . Our meetings start at 7:00 pm on the second Saturday of the month. There will always be a very interesting program, class or presentation at these meetings, as well as good fellowship. There is always something new to learn.

Following our meetings we have a star party (weather permitting) at the Centennial Observatory, also at the Herrett Center.

Our star parties are free and you don't have to bring your own telescope. Telescopes are also set up outside on the stargazer's deck. Star Parties are held year round, so please dress accordingly as the Observatory is not heated, nor air conditioned.

Wishing you dark skies and clear nights!

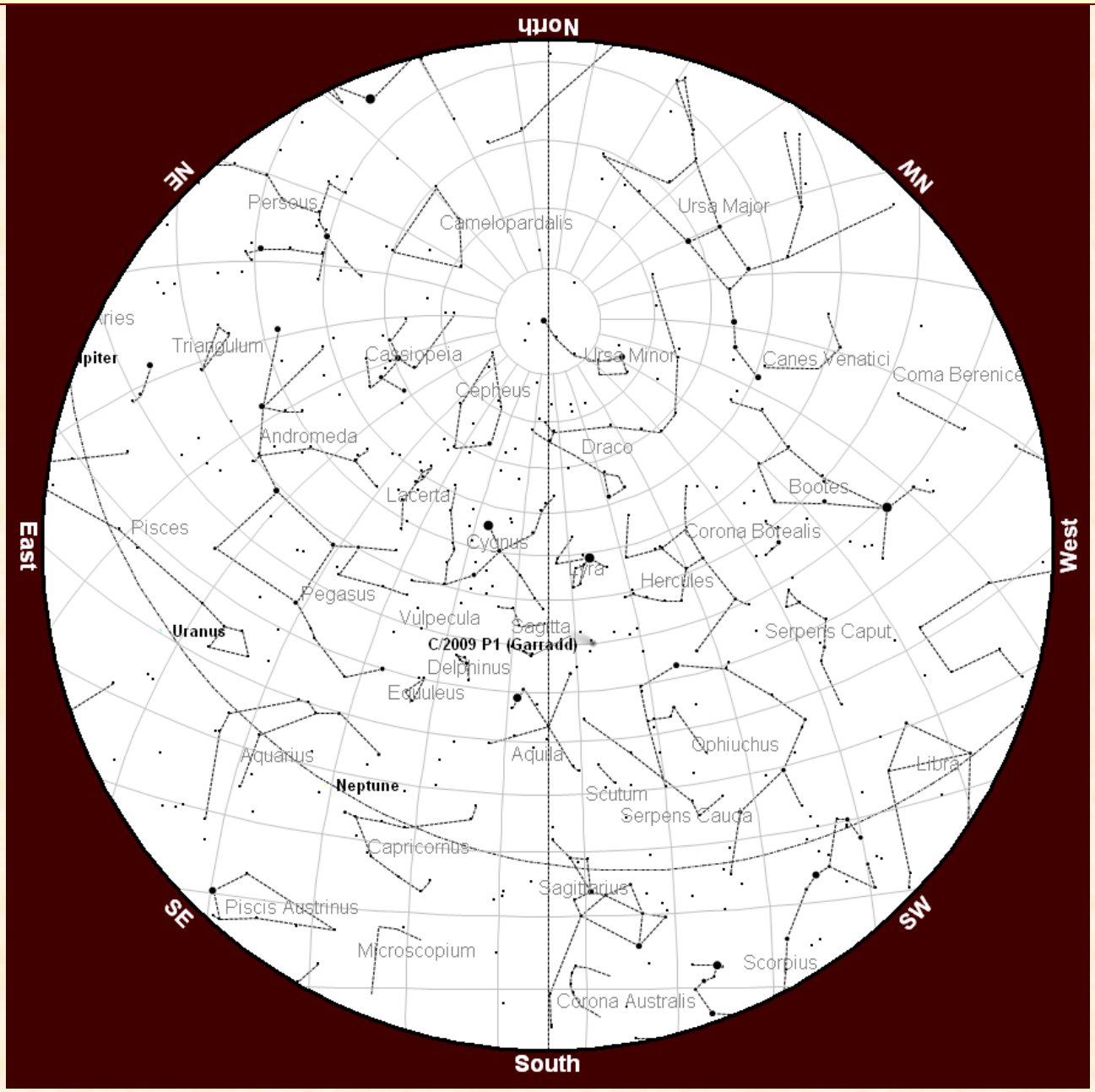
MVAS Board

October Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
Moon at greatest Southern Declination -23.1° 		First Quarter Moon Libration in Longitude eastern Limb most exposed (+7.6°) 				**Monthly Mtg. & Star Party** Herrett Center at 7:00 pm Officers Elections will be held. See page 5 for program Info.
9	10	11	12	13	14	15
Draconid Meteors Peak 	Columbus Day		Full Moon (Hunters Moon) Moon at Apogee 			
16	17	18	19	20	21	22
	Moon at greatest North Declination +23.1° 			Last Quarter Moon 	Orionid Meteor Shower peaks. 	
23	24	25	26	27	28	29
			New Moon 			Moon at greatest Southern Declination -23.1° 
30	Halloween 31					Images: NASA / Faulkner Planetarium CSI Herrett Center TFID

Day	Time	Faulkner Planetarium Show Schedule: October 1st – October 29th, 2011
Tuesdays	7:00	Anthems of Ghoulish Delight
Fridays	7:00	Anthems of Ghoulish Delight
	8:15	Anthems of Ghoulish Delight
Saturdays 	2:00	Two Small Pieces of Glass/Live Sky Tour
	4:00	Here comes the Sun
	7:00	Anthems of Ghoulish Delight
	8:00	Anthems of Ghoulish Delight
	9:005	Anthems of Ghoulish Delight

Planisphere for October Mid-Month



October Mid-Month (approximately) begins at 21:30 (9:30pm) local time, the end of Astronomical twilight.

Did You Know?

Sputnik 1 was launched on October 4th 1957 during the International Geophysical Year from Site No.1/5, at the 5th Tyuratam range, in Kazakh SSR (now at the Baikonur Cosmodrome). The satellite traveled at 29,000 kilometers (18,000 mi) per hour, taking 96.2 minutes to complete an orbit, and emitted radio signals at 20.005 and 40.002 MHz, which were monitored by amateur radio operators throughout the world. The signals continued for 22 days until the transmitter batteries ran out on 26 October 1957. What is thought to be a backup of Sputnik 1 now hangs at The Museum of Flight in Seattle, Washington.

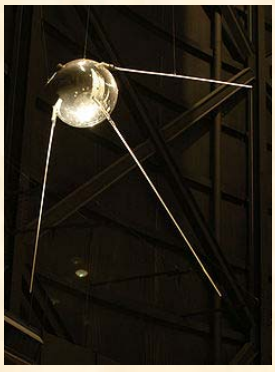
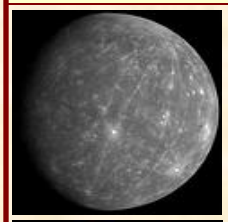


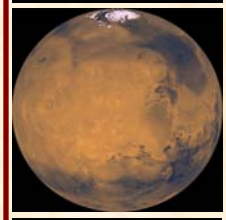
Image of a replica of Sputnik 1 in the National Museum of the U.S. Air Force at Wright-Patterson AFB OH / U.S. Air Force Photo

October Observing Highlights



Mercury will be visible very low on the western twilight horizon late in the month. It will be hard to spot in the glare. It will be near the much brighter Venus. Finding Venus will help find Mercury. Binoculars will help too. Mercury will be about 2º below Venus.

Venus will be low on the western horizon just after sunset at the end of the month. It will be in the twilight glare but because Venus will be so bright at -3.9 magnitude, it will pierce through the glare.



Mars will be above the morning southeastern horizon. It will be shinning at magnitude 1.2 midmonth. The best time to observe it will be when it is still dark a few hours before dawn. Mars' color will set it apart from any stars in the area. It will cross into Leo around midmonth. On the 1st Mars will cut in front of M44, the "Beehive Cluster." This will be stunning through a telescope at low power. Mars' bright red will stand in contrast with M44's hundreds of much dimmer stars. Mars itself will still be too small to be a good target, appearing small through a telescope and not revealing much detail.

Jupiter will be a great target this month. It is at its biggest and brightest for the year. It will reach opposition when it is closest to Earth on the 28th. It will be a great target all month. It will be in Aries but Jupiter will be hard to miss, being the brightest object in that area of the sky. It will be highest in the sky around midnight. Jupiter will be large enough to show detail through even a small telescope. It will be bright at magnitude -2.9. With its banded surface and four easily visible moons, Jupiter is usually a great telescope target.

Saturn will be too close to Sun to be seen most of the month. Saturn will be in conjunction with the Sun on the 13th and reappears in the dawn twilight late in the month.

Uranus will be near at its best for observing this month. It reached opposition late last month so it is still very bright. It will be easy to spot through binoculars and from a dark site it will possible to spot it with just your (good) set of eyes. It will be a good telescope target all month. The best time to observe it will be around 1 AM when it will be high in the sky directly to the south.

Neptune will be in southern Aquarius, around 1.6º northwest of the 4th magnitude star Iota Aquarii. The best time to observe it would be just as the sky gets completely dark. Neptune will be due south, roughly 1/3rd the way up from the horizon. You will need binoculars or a small telescope to spot Neptune. Neptune will shine at magnitude 7.9.

Pluto will be a very tough target this month. It will be above Sagittarius in the thick of the Milky Way.

Comet Garradd is within range of binoculars and telescopes for October. The comet is shining at about magnitude 6 in the constellation Hercules. Look southwest of the keystone shape, where Comet Garradd is slowly approaching the star Rasalgethi and is just above the star Rasalhague in Ophiuchus. The comet has a diffuse cloudy shape that is much wider than any of the background stars. Keen observers may also be able to see the comet's tail.

International Observe the Moon Night - Special Event

The Herrett Center for Arts & Science is proud to welcome
Western Shoshoni entertainer and storyteller

Shane "Good Bear" Ridley-Stevens

presenting

How Coyote Became the Moon

And Other Indigenous Moon Origin Stories

Saturday, October 8th, 7:30 PM
Herrett Center for Arts & Science
College of Southern Idaho

Known far and wide as the Big Friendly Indian, Shane will be sharing tribal stories of how the moon came to be.

International Observe the Moon Night

What Does the Moon Mean to YOU?

After the program, view the moon and other targets in the Centennial Observatory (weather permitting).

Free admission

Made possible by generous donations to the CSI Foundation.

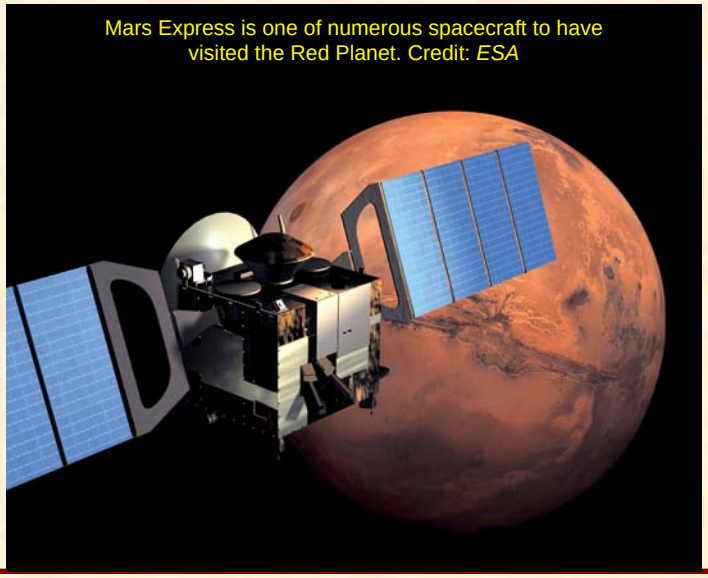
Mars Atmosphere is Supersaturated with Water

New analysis of data sent back by the SPICAM spectrometer on board ESA's Mars Express spacecraft has revealed for the first time that the planet's atmosphere is supersaturated with water vapor. This surprising discovery has major implications for understanding the Martian water cycle and the historical evolution of the atmosphere. This information is valuable in determining weather or not Mars once supported habitable environments for life. Although numerous spacecraft have visited Mars over the past half a century, very few direct measurements of the vertical structure of the planet's atmosphere have been made. Since most of the spacecraft instruments have looked down at the surface, it has only been possible to infer the horizontal distribution of gases in the atmosphere, leaving the question of how water vapor is being mixed into the atmosphere almost unexplored.

This lack of direct measurements has meant that descriptions of the vertical distribution of water vapor – a key factor in the study of Mars' hydrological cycle – has generally been based upon global climate models. This gap in the data has now been addressed by the SPICAM (Spectroscopy for Investigation of Characteristics of the Atmosphere of Mars) imaging spectrometer on Mars Express. The instrument can be used in occultation mode, when it studies light from the Sun that has passed through the planet's atmosphere just after sunrise or before sunset. The measurements can then be analyzed to generate vertical concentration profiles for several atmospheric constituents, including water vapor. Surprising new results, based on SPICAM data obtained during the northern spring and summer, indicate that the vertical distribution of water vapor in the Martian atmosphere is very different from previous assumptions. Writing in this week's issue of the journal Science, an international team led by Luca Maltagliati of the Laboratoire Atmosphères, Milieux, Observations Spatiales (LATMOS) in Guyancourt, France, describe SPICAM observations at infrared wavelengths that for the first time provide evidence for the existence of supersaturated water vapor on Mars.

Supersaturation

The atmosphere of Mars holds 10 000 times less water vapor than that of Earth. However, water vapor is a very dynamic trace gas, and one of the most seasonally variable atmospheric constituents on Mars. Under normal conditions on Earth, water vapor condenses around tiny dust or aerosol particles or salts when the atmospheric temperature drops below a certain "dew point". The atmosphere is then said to be "saturated", since it cannot hold any more moisture at that temperature and pressure. Any water vapor in excess of the "dew point" will normally condense to form droplets or icy crystals. However, supersaturation may occur when some of the water vapor remains in the atmosphere, instead of condensing or freezing. When condensation nuclei (assumed to be dust aerosols on Mars) are too rare, condensation is impeded, leaving substantial amounts of excess vapor. Until now, it was generally assumed that such supersaturation cannot exist in the cold Martian atmosphere: any water vapor in excess of saturation was expected to be converted immediately into ice. However, the SPICAM data have revealed that supersaturation occurs frequently in the middle atmosphere – at altitudes of up to 50 km above the surface – during the aphelion season, the period when Mars is near its farthest point from the Sun. Extremely high levels of supersaturation were found on Mars, up to 10 times greater than those found on Earth. Clearly, there is much more water vapor in the upper Martian atmosphere than anyone ever imagined. It seems that previous models have greatly underestimated the quantities of water vapor at heights of 20–50 km, with as much as 10 to 100 times more water than expected at this altitude.

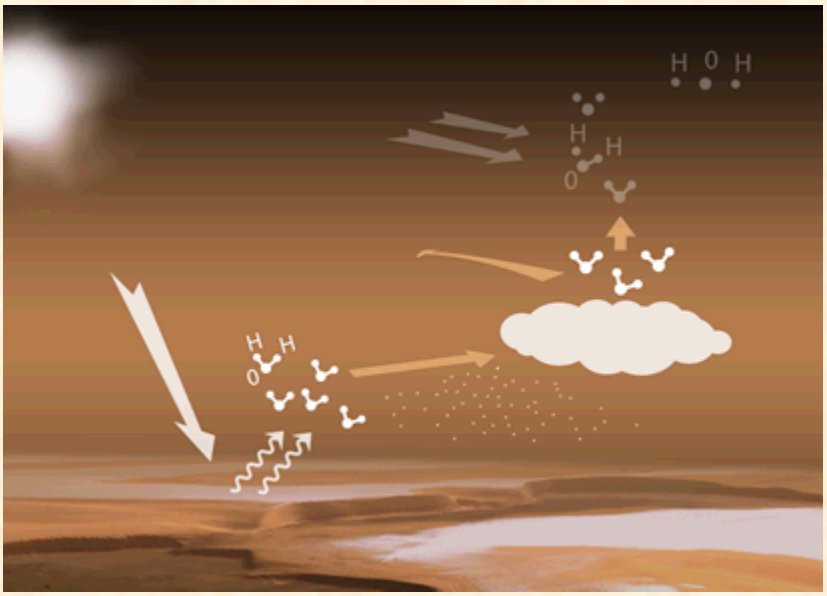


Mars Express is one of numerous spacecraft to have visited the Red Planet. Credit: *ESA*

Mars Atmosphere is Supersaturated with Water

"The vertical distribution of water vapor is a key factor in the study of Mars' hydrological cycle, and the old paradigm that it is mainly controlled by saturation physics now needs to be revised," said Luca Maltagliati. "Our finding has major implications for understanding the planet's global climate and the transport of water from one hemisphere to the other." "The data suggest that much more water vapor is being carried high enough in the atmosphere to be affected by photo dissociation," added Franck Montmessin, also from LATMOS, who is the Principal Investigator for SPICAM and a co-author of the paper. "Solar radiation can split the water molecules into oxygen and hydrogen atoms, which can then escape into space. This has implications for the rate at which water has been lost from the planet and for the long-term evolution of the Martian surface and atmosphere." The new paper analyses SPICAM data obtained when the Martian atmosphere is relatively dust-free. The absence of dust enables the instrument to measure the vertical profile to within 10 km of the planet's surface. The supersaturation levels are likely to plummet in the southern summer, when dust storms inject large amounts of aerosols into the atmosphere, increasing the supply of condensation nuclei.

Image caption. 1997 Pathfinder image of Mars clouds and pink sky. Credit: *JPL/NASA*



This illustration shows the water cycle on Mars. Image Credit: *ESA/AOES Medialab*

Tiangong-1 space module blasts off

Article by: Xin Dingding, China Daily

JIUQUAN, Gansu - China's space dream took a step closer to reality as the Tiangong-1 module blasted off into the night sky on Thursday from the Gobi Desert. The Long March II-F T1 rocket, under the unmanned module, Tiangong-1, lifted off from the Jiuquan Satellite Launch Center at 9:16 pm as planned. Ten minutes later Tiangong-1 separated from the rocket on its way to orbit, 350 kilometers above Earth. The module deployed its two solar panels, which provide power, at 9:28 pm. At 9:39 pm, Chang Wanquan, chief commander of the manned space program, declared the launch a success as cheers and applause echoed around the command and control center in Beijing.

President Hu Jintao and other members of the Standing Committee of the Political Bureau of the Communist Party of China Central Committee went to the center to witness the launch. Premier Wen Jiabao watched at the Jiuquan Satellite Launch Center as the Long March rocket, carrying the space lab, blazed into the night sky. The launch paves the way for China's first rendezvous and docking mission. An unmanned Shenzhou VIII spaceship will be launched in November to dock with Tiangong-1. Two more missions are scheduled for next year and astronauts will board Tiangong-1, which can also function as a space lab. If the mission succeeds, China will become the third country to master spacecraft rendezvous and docking technology following the then Soviet Union and the United States, experts said. Wu Ping, the space program's spokeswoman, said that the ability to rendezvous and dock is vital for building a space station, which China has scheduled for around 2020. "A space station cannot be launched in one shot. The modules must be launched separately and then assembled in space," she said.

China has invested 35 billion yuan ($5.47 billion) in total on its manned space program since 1992, when it was approved, she told China Daily. The first phase, from 1992 to 2005, accounted for 20 billion yuan. During this period, China launched six Shenzhou spaceships to set up a system transporting astronauts between Earth and space.
In the second phase, from 2005, 15 billion yuan has been spent on projects, including Shenzhou VII and the first rendezvous and docking mission, she explained. Zhou Jianping, chief designer of China's manned space program, said that the space lab and future space station provide a rare platform for conducting experiments that could lead to breakthroughs in the study of materials and biological pharmacy. "Experiments made in the microgravity of space can lead to unexpected results," he said. For example, gas and liquid are unable to mix on Earth, but in space they mix naturally, he said. "The primary purpose of China's manned space station is to peacefully explore space, and through it, serve mankind," he said. Some have questioned the participation of the military in the program. However, the military has experience in coordinating large-scale requirements that are vital for the program and their involvement reflects international norms, Ministry of National Defense spokesman Geng Yansheng said on Wednesday. He reiterated that China is firmly opposed to the weaponization of space and the program is peaceful. China is now in the second phase of its manned space program. The goal of the program, which has three steps, is to build a 60-ton space station around 2020. The second phase focuses on mastering four key technologies for assembling a space station.

The first of these, extravehicular activity, was completed successfully in 2008 after Shenzhou VII was launched. Rendezvous and docking is what is being experimented with. The third technology involves cargo spaceships ferrying supplies to a space lab. The fourth tackles problems concerning the prolonged sustaining of life on a space lab, especially recycling air and water. Besides the manned space program, China launched two lunar orbiters in 2007 and 2010. It plans an unmanned lunar landing around 2013, and returning moon samples in 2017.

Image: Tiangong-1, or Heavenly Palace, blasts off from the Jiuquan Satellite Launch Center in Gansu province at 9:16 pm on Thursday, adding a high-tech sheen to National Day celebrations on Oct 1. [Photo by Su Dong/for China Daily]

Dark Clues to the Universe

By Dr. Marc Rayman

Urban astronomers are always wishing for darker skies. But that complaint is due to light from Earth. What about the light coming from the night sky itself? When you think about it, why is the sky dark at all?

Of course, space appears dark at night because that is when our side of Earth faces away from the Sun. But what about all those other suns? Our own Milky Way galaxy contains over 200 billion stars, and the entire universe probably contains over 100 billion galaxies. You might suppose that that many stars would light up the night like daytime!

Until the 20th century, astronomers didn't think it was even possible to count all the stars in the universe. They thought the universe was infinite and unchanging.

Besides being very hard to imagine, the trouble with an infinite universe is that no matter where you look in the night sky, you should see a star. Stars should overlap each other in the sky like tree trunks in the middle of a very thick forest. But, if this were the case, the sky would be blazing with light. This problem greatly troubled astronomers and became known as “Olbers’ Paradox” after the 19th century astronomer Heinrich Olbers who wrote about it, although he was not the first to raise this astronomical mystery.

To try to explain the paradox, some 19th century scientists thought that dust clouds between the stars must be absorbing a lot of the starlight so it wouldn’t shine through to us. But later scientists realized that the dust itself would absorb so much energy from the starlight that eventually it would glow as hot and bright as the stars themselves.

Astronomers now realize that the universe is not infinite. A finite universe—that is, a universe of limited size—even one with trillions of stars, just wouldn't have enough stars to light up all of space.

Although the idea of a finite universe explains why Earth's sky is dark at night, other factors work to make it even darker.

The universe is expanding. As a result, the light that leaves a distant galaxy today will have much farther to travel to our eyes than the light that left it a million years ago or even one year ago. That means the amount of light energy reaching us from distant stars dwindles all the time. And the farther away the star, the less bright it will look to us.

Also, because space is expanding, the wavelengths of the light passing through it are expanding. Thus, the farther the light has traveled, the more red-shifted (and lower in energy) it becomes, perhaps red-shifting right out of the visible range. So, even darker skies prevail. This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Image information: This Hubble Space Telescope image of Galaxy NGC 4414 was used to help calculate the expansion rate of the universe. The galaxy is about 60 million light-years away. Credit: NASA and The Hubble Heritage Team (STScI/AURA)

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Snake River Skies is the Newsletter of the Magic Valley Astronomical Society and is published electronically once a month.

Images on the front page: 1. Centennial Observatory courtesy of Chris Anderson, Observatory Manager. The Centennial Observatory is located at the Herrett Center for Arts and Science, College of Southern Idaho, Twin Falls, ID, USA. Chris Anderson also provides the Planispheres usually on page 3.
2. Shoshone Falls is a major attraction to the Magic Valley and a prominent landmark on the Snake River. Falls image is used under “public domain;” unknown photographer.
3. M-51 on the front page was imaged with the Shotwell Camera and the Herrett Telescope at the Centennial Observatory by club members Rick Widmer & Ken Thomason.

Membership Information

Membership is not just about personal benefits. Your membership dues support the work that the Magic Valley Astronomical Society does in the community to promote the enjoyment and science of astronomy.

Speakers, public star parties, classes and support for astronomy in schoolrooms, and outreach programs just to name a few of the programs that your membership dues support. Annual Membership dues will be $20.00 for individuals, families, $10.00 for students.

Contact Treasurer Jim Tubbs for dues information via e-mail: jtubbs015@msn.com or home telephone: 736-1989 or mail directly to the treasurer at his home address. 550 Sparks Twin Falls, ID 83301

Donations to our club are always welcome and are even tax deductible. Please contact a board member for details.

About the Magic Valley Astronomical Society

The Magic Valley Astronomical Society (MVAS) was founded in 1976. The Society is a non-profit [501(c) 3] educational and scientific organization dedicated to bringing together people with an interest in astronomy.

In partnership with the Centennial Observatory, Herrett Center, College of Southern Idaho - Twin Falls; we hold regularly scheduled monthly meetings and observation sessions, at which we share information on current astronomical events, tools and techniques for observation, astrophotography, astronomical computer software, and other topics concerning general astronomy. Members enthusiastically share their telescopes and knowledge of the night sky with all who are interested. In addition to our monthly public star parties we hold members only star parties at various locations throughout the Magic Valley.

MVAS promotes the education of astronomy and the exploration of the night sky along with safe solar observing through our public outreach programs. We provide two types of outreach; public star parties and events open to anyone interested in astronomy, and outreach programs for individual groups and organizations (e.g. schools, churches, scout troops, company events, etc.), setting up at your location. All of our outreach programs are provided by MVAS volunteers at no cost. However, MVAS will gladly accept donations. Donations enable us to continue and improve our public outreach programs.

A moon just past full as seen from Earth's northern hemisphere. Credit NASA

Membership Benefits

Sky and Telescope group rates. Subscriptions to this excellent periodical are available through the MVAS at a reduced price of $32.95.

Astronomy Magazine group rates. Subscriptions to this excellent periodical are available through the MVAS at a reduced price of $34.00

Receive 10% discounts on other selected Astronomy Publications.

For periodical info. and subscriptions Contact Jim Tubbs, Treasurer

Lending Library: Contact, the current board for information.

Lending Telescopes: The society currently has two telescopes for loan and would gladly accept others. Contact Rick Widmer, Secretary for more information.

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