Snake River Skies

The Newsletter of the Magic Valley Astronomical Society

www.mvastro.org

Membership Meeting

Saturday, November 14th 2015
7:00pm at the
Herrett Center for Arts & Science
College of Southern Idaho.

Public Star Party Follows at the Centennial Observatory

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Magic Valley Astronomical Society is a member of the Astronomical League

M-51 imaged by
Rick Widmer &
Ken Thomason
Herrett Telescope
Shotwell Camera

President's Message

Colleagues,

This last month we had a pair of positive events. First, we held elections, ending up with Robert Mayer as President, Paul McClain as Vice-President, Jim Tubbs as Treasurer, and Gary Leavitt as Secretary. We want to thank Terry Wofford for serving as Vice-President this last year, and thank Paul for being willing to take Terry's place this upcoming year. David Olsen (newsletter editor) and Rick Widmer (webmaster) have both graciously accepted invitations to continue on in their positions.

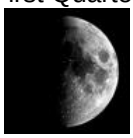
The other event was the annual Year-in-Pictures. As I put the slideshow together, I was surprised at how many photos we had. It was clear that our group has put in a lot of time and energy and is still coming up with positive results. With October behind us, cooler weather is on the way, and that could mean cutting back on your astronomical activities. However, the staff at Hagerman Fossil Beds National Monument is thinking about one more shot at a star party in November -- likely the 7th. Even though we may have cold weather, the folks over at the National Monument are talking cookies and hot chocolate. Combine that with end-of-the year constellations, and there's a possibility.

Next month's general meeting, Nov. 14, will be an annual planning meeting. There we will announce dates for star parties and ask for ideas for future MVAS meetings and activities. Your voice is crucial. We hope to see you there.

Clear Views,
Robert Mayer

Calendars for November

Event Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1 Daylight Saving Time ends 	2	3 Last Quarter  51% Visible	4	5	6	7
8	9	10	11 Veterans Day New Moon Lunation 1149 	12	13	14 MVAS General Mtg. at the Herrett Center Public Star Party follows at the Centennial Observatory
15	16	17	18	19 First Quarter  53% Visible	20	21
22	23	24	25 Full Moon  Frosty Moon	26 Thanksgiving Day (U.S.) 	27	28
29	30					

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November Celestial Calendar

All times are UT (subtract seven hours and, when appropriate, one calendar day)

11/1 Daylight Saving Time (DST) ends; a double Galilean shadow transit begins at 16:34
11/3 Venus is 0.7 degree south of Mars at 16:00
11/6 Jupiter is 2 degrees north of the Moon at 16:00
11/7 Asteroid 39 Letitia (magnitude +9.4) is at opposition at 4:00; Mars is 1.8 degrees north of the Moon at 10:00; Venus is 1.2 degrees north of the Moon at 14:00;
11/13 Saturn is 3 degrees south of the Moon at 1:00
11/15 Mercury is at the descending node today
11/17 Mercury is in superior conjunction at 15:00; asteroid 4 Vesta is stationary at 16:00
11/18 Neptune is stationary at 21:00
11/20 Neptune is 3 degrees south of the Moon at 2:00; asteroid 192 Nausikaa (magnitude +9.0) is at opposition at 21:00; Mars is at aphelion at 23:00
11/23 The Moon is at perigee, subtending 32'55" from a distance of 362,817 kilometers (225,444 miles), at 20:00
11/25 Mercury is at aphelion today; Full Moon, known as the Beaver or Frost Moon, occurs at 22:44
11/26 The Moon is 0.7 degree north of the first-magnitude star Aldebaran (Alpha Tauri), with an occultation taking place in Greenland, Canada, northern United States, eastern Russia, and Japan, at 10:00
11/27 Asteroid 3 Juno is in conjunction with the Sun at 4:00
11/29 Venus is at perihelion today
11/30 Saturn is in conjunction with the Sun today

Edmund Halley, William Herschel, Harlow Shapley, and Edwin Hubble were born this month.

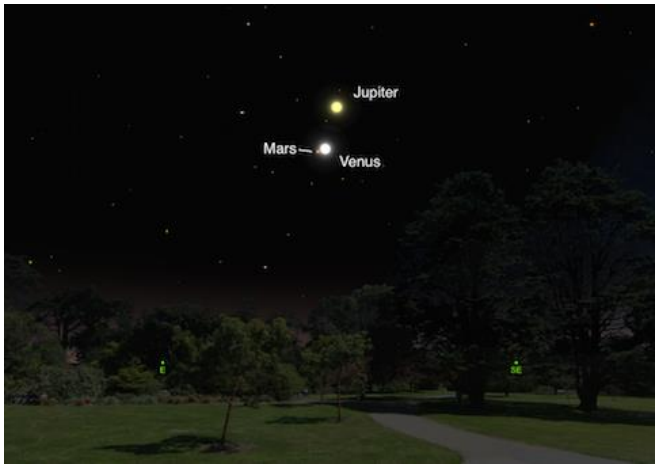
The first photograph of a meteor was taken on November 26, 1885. The minor planet/comet 2060 Chiron or 95P/Chiron was discovered by Charles Kowal on November 1, 1977.

The peaks of the minor Southern and Northern Taurid meteor showers take place on November 5th and November 12th respectively. These streams form part of the complex associated with Comet 2P/Encke. Moonlight compromises the peaks of both of the showers. The Leonid meteor shower occurs on the morning of November 18th. A waxing crescent Moon sets around 10:00 p.m. EST and does not interfere with viewing the shower. Leonid meteors are debris from the periodic comet 55P/Tempel-Tuttle. Due to their high speed (71 kilometers or 44 miles per second), the Leonids produce a greater percentage of fireballs than most meteor showers.

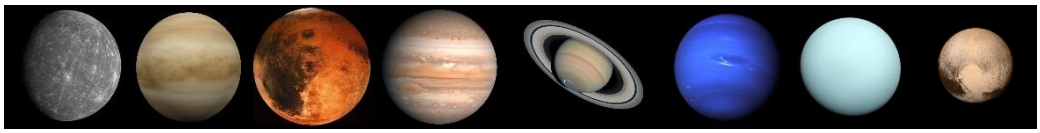
Information on Iridium flares and passes of the ISS, the Tiangong-1, the X-37B, the HST, and other satellites can be found at http://www.heavens-above.com/

The Full Moon occults Aldebaran (magnitude +0.9) from the northern part of the northern hemisphere on November 26th. For more on this occultation, see page 45 of the November issue of Sky & Telescope. Times and dates for the lunar light rays predicted to occur this month are available at http://www.lunar-occ...o/rays/rays.htm

God of War (Mars) and Goddess (Venus) of Love meet in predawn hours with king of the planets, Jupiter looking down upon them on November 1st.



The Planets



At midmonth, Mercury is visible during morning twilight, Venus rises at 3:00 a.m. local time Mars rises at 2:00 a.m. local time, Jupiter rises at 1:00 a.m. local time, and Saturn is visible during evening twilight for observers at latitude 40 degrees north.

Venus, Mars, and Jupiter are all located in Leo on November 1st. The three planets lie within one degree of one another from November 2nd to November to November 5th. Venus is 0.7 degree south-southwest of Mars on the morning of November 3rd. Venus is approximately 275 times brighter than the Red Planet. The 16%-illuminated waning crescent Moon is situated less than two degrees from Venus and Mars on November 7th. Mars and Jupiter brighten during November (magnitude +1.7 to magnitude +1.5 and magnitude -1.8 to magnitude -2.0 respectively) but Venus becomes a bit fainter (magnitude -4.5 to magnitude -4.2).

Mercury is best seen in early November. It shines at magnitude -1 but lies just 4 degrees above the horizon one half hour before sunrise on November 1st. Mercury is in superior conjunction on November 17th and at aphelion on November 25th.

Venus departs Leo and enters Virgo on November 3rd. It reaches its third conjunction of the year with Mars on that date. Venus lies approximately 0.4 degree from the fourth-magnitude star Beta Virginis on the morning of November 6th and 0.2 degree from the fourth-magnitude star Eta Virginis on November 13th. The brilliant planet is situated five degrees from the first-magnitude star Spica (Alpha Virginis) from November 28th to December 2nd. Venus is at perihelion on November 29th.

Mars enters Virgo on November 2nd. It is at aphelion on November 25th.

As November begins, Jupiter rises shortly after 2:00 a.m. local time. Its apparent diameter increases from 33.1 to 35.5 arc seconds this month. Jupiter lies two degrees north of the Moon on November 6th and passes less than one degree south of the fourth-magnitude star Sigma Leonis on November 15th. Click on http://www.skyandtel...watching-tools/ or consult page 51 of the November issue of Sky & Telescope to determine transit times of the central meridian by the Great Red Spot. Data on Galilean satellite events is available at http://www.skyandtel...watching-tools/ and on page 52 of the November issue of Sky & Telescope.

Saturn sets less than 90 minutes after the Sun at the start of the month. Saturn is three degrees south of the Moon on November 13th and is in conjunction with the Sun on November 30th. It departs Scorpius and enters Ophiuchus on November 30th.

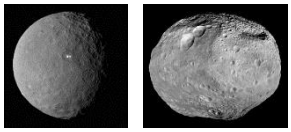
Uranus retrogrades through Pisces this month. The seventh planet is located less than two degrees south of Epsilon Piscium (magnitude +4.3) throughout November.

Neptune resumes prograde or direct motion on November 18th. It can be found 1.5 degrees northeast of the fifth-magnitude star Sigma Aquarii.

Pluto is a difficult target this month. It's located in the southwest in northern Sagittarius and passes 1.1 arc minutes north of Xi2 Sagittarii (magnitude +3.5) on November 16th and November 17th. Finder charts for Pluto are available on pages 52 and 53 of the July issue of Sky & Telescope and page 47 of the July issue of Astronomy and online at http://www.skyandtel...2015_Pluto.pdf and http://www.bluewater...luto_2015_1.pdf

For more on the planets and how to locate them, see http://www.nakedeyeplanets.com/

Asteroids



Asteroid/dwarf planet 1 Ceres travels from far eastern Sagittarius to southern Capricornus this month. The ninth-magnitude object passes 0.3 degree north of the fourth-magnitude star Omega Capricorni on November 27th. Asteroid 4 Vesta shines at seventh magnitude as it heads northwestward and then northeastward through Cetus. The second-most-massive minor planet lies less than two degrees west of Iota Ceti (magnitude +3.5) at the end of November. For information on this year's bright asteroids and upcoming asteroid occultation events respectively, consult http://www.curtrenz.com/asteroids and http://asteroidoccultation.com/

Comets

Comet C/2013 US10 (Catalina) may reach fourth magnitude by the end of November as it glides northward through Virgo. Your first opportunity to view C/2013 US10 comes around November 23, when it just clears the southeastern horizon by the onset of morning twilight. The comet then lies in Virgo, near that constellation's border with Libra. Use magnitude +4.5 Lambda Virginis as a guide; Catalina passes just 0.1° east of this star on the morning of November 27. Astronomers predict Comet Catalina could reach 5th magnitude around that time, bringing it within naked eye visibility. On the other hand, its brightness evolution has stopped in September, so nothing is certain.

As November begins, **Comet PanSTARRS (C/2014 S2)**, appears 15° south of Polaris and just 15' away from 5th-magnitude Eta Ursae Minoris, the faintest star of the Little Dipper's seven. Around mid-month, the comet crosses into neighboring Draco. By month's end, PanSTARRS skims past Zeta Draconis, also known as Nodus III (the third of the twists or "nodes" in the tail of the Dragon). It will continue to move south from this point, getting slightly brighter as it heads toward its mid-December perihelion.

Comet 22P/Kopff begins the month in southeastern Ophiuchus, 3° northeast of 3rd-magnitude Theta Ophiuchi. From there, it heads east through Sagittarius, passing 15' south of the Trifid Nebula (M20) on the evening of November 11, and 45' north of the globular star cluster M22 on November 21. Make sure the comet is near the top of your observing list because it sinks quickly into the southwestern horizon haze after darkness falls. Once you track it down, boost your telescope's power past 100x to darken the sky further and increase the contrast.

Meteors

Each year, from mid-September to late November, the Earth plows through the meteoroid cloud left behind by periodic comet 2P/Encke and this produces the **Taurid shower**. There are two radiants to this stream, one 8° north of the other. The southern radiant peaks before dawn on October 10, and its northern cousin on November 12. Both radiants first appear in Cetus, drift across Aries, and move into Taurus in late October.

The **Leonids** are renowned for their periodic storms – outbursts of very high activity lasting less than an hour but during which the observed meteor rate climbs to thousands per minute. The shower's apparent radiant point is within the Sickle of Leo at Right Ascension $10^h\ 12^m$, Declination +22°. This is not necessarily where to watch – the best direction to watch is simply the darkest part of your sky, perhaps 40° to 60° from the radiant.

Carbon Star

Notable carbon star for November: Z Piscium: Right Ascension: $1^h\ 16^m\ 05^s$ Declination: +25° 46' 09"

The Deep Sky

M34, (Perseus; Right Ascension 2^h 42.1^m Declination +42° 46′) this month's deep sky highlight, is easy to find with binoculars and can be glimpsed with the naked eye under ideal sky conditions. The open cluster makes an isosceles triangle with Kappa Persei and Beta Persei, or Algol, the remarkable eclipsing binary star whose brightness fades for a few hours every 2.87 days.

Glowing at magnitude +5.5, M34 holds well over 60 stars within its gravitational grip. About a dozen of these suns shine brighter than 9th magnitude and can be resolved with 7×35 binoculars; several are white giants. What looks like the brightest star of the cluster shines at magnitude +7.3, but this star is in the foreground, not a true cluster member. One of the brightest true members is a double star known as Struve 44, whose 8.4- and 9.1-magnitude components are separated by 1.4". M34 spreads out over an area roughly 35' across, a bit bigger than the Full Moon. It has a diameter of about 10 light years and its stars rotate at rates that are midway between those in the younger Pleiades Cluster (100 million years old) and the older Hyades Cluster (600 million years old).

Two stars with exoplanetary systems, Upsilon Andromedae (magnitude +4.1) and 51 Andromedae (magnitude +5.5), can be seen this month without optical aid.

The famous eclipsing variable star Algol (Beta Persei) is at a minimum, decreasing in brightness from magnitude +2.1 to magnitude +3.4, on November 2nd, 5th, 8th, 10th, 13th, 16th, 19th, 22nd, 25th, 28th, and 30th. It's at minimum brightness for about two hours early in the night for observers in North America on November 4th, November 7th, November 24th, and November 27th. Consult http://www.skyandtel...watching-tools/ and page 51 of the November issue of Sky & Telescope for the eclipse times. For more on Algol, see http://stars.astro.i.../sow/Algol.html and http://www.solstatio...ars2/algol3.htm

Top ten binocular deep-sky objects for November: M31, M33, M103, NGC 225, NGC 288, NGC 253, NGC 457, NGC 654, NGC 663, NGC 752

Top ten deep-sky objects for November: M31, M32, M33, M76, M103, M110, NGC 40, NGC 253, NGC 457, NGC 752

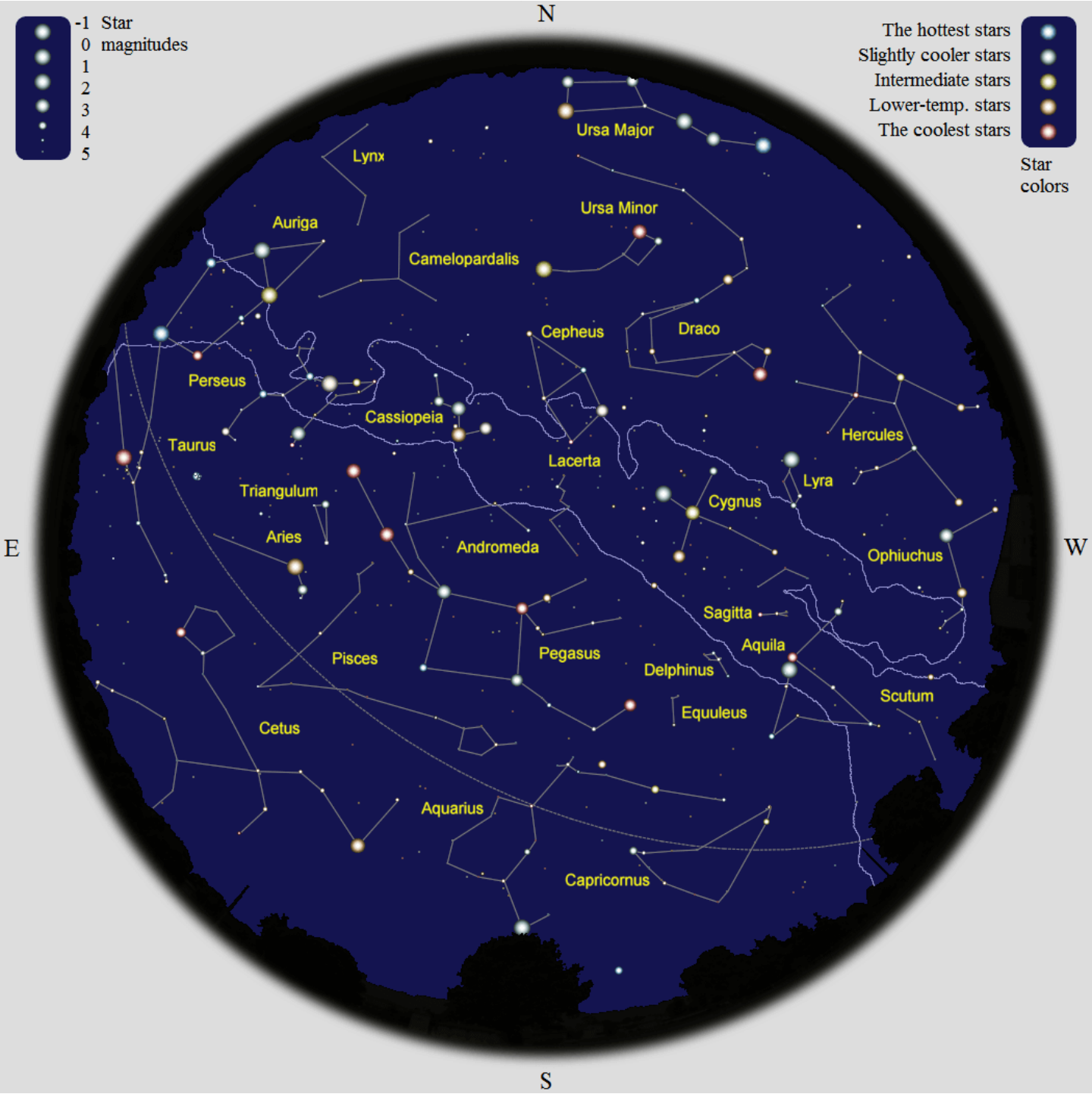
Challenge deep-sky object for November: IC 59 and IC 63 (Cassiopeia).

The objects listed above are located between 0:00 and 2:00 hours of right ascension.

A wealth of information on solar system celestial bodies is posted at http://www.curtrenz.com/astronomical

IC 59 (left) and IC 63 © 2011 Nov. 3, NASA APOD, Ken Crawford, Rancho Del Sol Observatory

Planisphere for November



Be Safe – Get Out There – Explore Your Universe

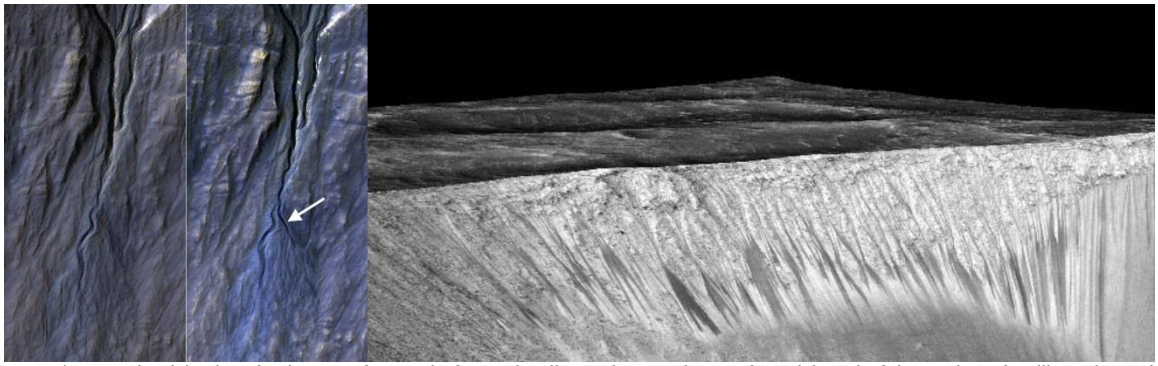
How we know Mars has liquid water on its surface
by Ethan Siegel

Of all the planets in the solar system other than our own, Mars is the one place with the most Earth-like past. Geological features on the surface such as dried up riverbeds, sedimentary patterns, mineral spherules nicknamed "blueberries," and evidence of liquid-based erosion all tell the same story: that of a wet, watery past. But although we've found plenty of evidence for molecular water on Mars in the solid (ice) and gaseous (vapor) states, including in icecaps, clouds and subsurface ices exposed (and sublimated) by digging, that in no way meant there'd be water in its liquid phase today.

Sure, water flowed on the surface of Mars during the first billion years of the solar system, perhaps producing an ocean a mile deep, though the ocean presence is still much debated. Given that life on Earth took hold well within that time, it's conceivable that Mars was once a rich, living planet as well. But unlike Earth, Mars is small: small enough that its interior cooled and lost its protective magnetic field, enabling the sun's solar wind to strip its atmosphere away. Without a significant atmosphere, the liquid phase of water became a virtual impossibility, and Mars became the arid world we know it to be today.

But certain ions—potassium, calcium, sodium, magnesium, chloride and fluoride, among others—get left behind when the liquid water disappears, leaving a "salt" residue of mineral salts (that may include table salt, sodium chloride) on the surface. While pure liquid water may not persist at standard Martian pressures and temperatures, extremely salty, briny water can indeed stay in a liquid state for extended periods under the conditions on the Red Planet. It's more of a "sandy crust" like you'd experience on the shore when the tide goes out than the flowing waters we're used to in rivers on Earth, but it means that under the right temperature conditions, liquid water does exist on Mars today, at least in small amounts.

The measured presence and concentration of these salts, found in the dark streaks that come and go on steep crater walls, combined with our knowledge of how water behaves under certain physical and chemical conditions and the observations of changing features on the Martian surface supports the idea that this is the action of liquid water. Short of taking a sample and analyzing it in situ on Mars, this is the best current evidence we have for liquid water on our red neighbor. Next up? Finding out if there are any single-celled organisms hardy enough to survive and thrive under those conditions, possibly even native to Mars itself!



Images credit: NASA/JPL-Caltech/Univ. of Arizona, of a newly-formed gully on the Martian surface (L) and of the series of gullies where the salt deposits were found (R).

Observatories

Bruneau Dunes Observatory – Bruneau, ID

The Observatory is now closed for the winter.

Centennial Observatory at the Herrett Center
College of Southern Idaho – Twin Falls, ID
www.herrett.csi.edu

Event	Place	Date	Time	Admission
Solar Viewing	Centennial Observatory	Saturday, October 24th, 2015	1:00 to 4:00 PM	FREE
Telescope Tuesday	Centennial Observatory	Tuesday, November 10th, 2015	6:30 to 9:00 PM	$1.50 or free with Faulkner Planetarium admission
Bimonthly Astronomy Talk: "Ceres, King of the Asteroids"	Faulkner Planetarium	Thursday, November 12th, 2015	6:00 to 7:00 PM	Adults: $2.50 Children (7-17) & CSI students: $1.50 Ages 0-6: FREE
Astronomy Talk Night Telescope Viewing	Centennial Observatory	Thursday, November 12th, 2015	7:00 to 9:00 PM	$1.50 or free with Astronomy Talk admission
Monthly Free Star Party	Centennial Observatory	Saturday, November 14th, 2015	6:15 PM to 12:00 AM	FREE
Telescope Tuesday	Centennial Observatory	Tuesday, November 24th, 2015	6:15 to 9:00 PM	$1.50 or free with Faulkner Planetarium admission

Herrett Telescope / Centennial Observatory
Herrett Center for Arts and Science
College of Southern Idaho
Twin Falls, Idaho, USA

About the Magic Valley Astronomical Society

Magic Valley Astronomical Society
P.O. Box 445
Kimberly, ID, USA 83341

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.

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

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

Membership Benefits:
Lending Telescopes: The society currently has three telescopes for loan and would gladly accept others please contact President Robert Mayer, for more information on these and other benefits.

Telescopes are an individual thing and not practical for public use. However, everyone should have the experience of a good look at the moon for at least 5 minutes in their life time. It is a dimension and feeling that is unexplainable. Pictures or TV can't give this feeling, awareness, or experience of true dimension. A person will not forget seeing our closest neighbor, the moon. Norman Herrett in a letter to Dr. J. L. Taylor, president of the College of Southern Idaho, Twin Falls, ID, USA circa 1980.