SNAKE RIVER SKIES

November 2009

Monthly Newsletter

November Events:

13-Astronomy Talk-Telescope viewing, 8:15 pm in the Rick Allen room

14-Board Meeting: 6:00 pm in the Frost Learning Lab Herrett Center.

14-Meeting: 7:00 pm in the Rick Allen room, Herrett Center for Arts & Science, College of Southern Idaho campus. Elections will be held and the current board will run again if nominated.

14– MVAS Star Party: Will be following the public meeting and co-hosted with the Centennial Observatory at the Herrett Center. Note: the Public Star party for the Herrett Center begins at 5:45 pm.

Calendar found on pg. 3

To the Limits

by David Dearborn

Few would doubt that Native American groups employed lunar calendars recognizing that some years contained 12 full moons while others had 13. This requires a recognition of the synodic month, 29.5 days, and the length of the year, 365 days. The Maya, with their interest in astronomy, determined a great deal more. The eclipse table of the Dresden Codex contains the number 177 in a long series, with an occasional 148 and 178.

Simply averaging this series results in a value of 173.31, the number of days between eclipse seasons, or half the Eclipse year. As eclipses occur only at new or full moon, the 177's (and occasional 178) are easily understood as the number of days between 6 full (or new) moons, or the time between a pair of eclipses. As this period is 4 days longer than the 173 days separating the eclipse seasons, a series of eclipses beginning near the start of an eclipse season will advance through subsequent seasons until it occurs near the end. When this happens, the next eclipse will occur after only 5 synodic months (148 days), at the beginning of the next eclipse season.

The time between eclipse seasons results from the 18.61 year precession of the moon's orbit. This precession advances the locations where the moon's orbit crosses the ecliptic (the nodes). Eclipses will occur on the new or full moon nearest the time that the sun passes one of the nodes. Because of precession, the time for the sun to move from one node to another is only 173.31 days.

One must consider how the Maya determined this 173.31 day period. It can be derived from a long-term record of eclipse data, but such data would certainly be incomplete, as not all eclipses would have been visible to the Maya. A directly related observation that could have provided the Maya with a clue to the precession of the moon's orbit is the dramatic change in the moon's monthly rise (or set) point. As the moon's orbit precesses, its monthly declination range changes from +/- 18 degrees at minor standstill to +/- 28 degrees at major standstill, 9.3 years later. This causes a variation in the azimuth limits of moon rises (and sets) of about 10 degrees in tropical regions (more in temperate ones).

Continued on page 4

A Siksika tipi, always placed to face east, stands in front of the Buffalo Trail, the Siksika name for the Milky Way. The image was taken on the occasion of a First Nations sky lore night (9/16/09) at the Blackfoot Crossing Historical Park in Calgary, Alberta, CA.

Most First Nations stories are stories of morality and teach their children how you should behave and live your life. Unlike the Greek and Roman stories, which are ribald tales of immorality—the misdeeds of Gods behaving badly. Further celebrations marked the beginning of an agreement with authorities in Calgary to reduce light pollution.

Image source unknown: Common use license used

Light All Night Not Alright

A nightlight may keep those monsters under the bed. But it may also open the door to the blues. Because a new study reveals that animals exposed to light all night long show signs of clinical depression.

If you have access to electricity, you no doubt switch on a lamp, maybe even watch a little TV, after the sun goes down. But our bodies use cues about lightness and dark to regulate our hormones and of course our sleep cycles. So what might these extra photons be doing to our health?

To find out, scientists housed mice in a room where the lights were always on. After three weeks, they found that mice who lived in the spotlight showed symptoms of depression, more so than mice who enjoyed eight hours of darkness at night. Interestingly, mice who could escape the light by ducking into a dark tube also escaped the worst of the depression. The findings were presented on October 21st at the Society for Neuroscience meeting in Chicago, and they'll be published in the journal *Behavioural Brain Research* in December.

So flip that light switch at your own risk. Because the artificial brightness that helps keep us up could also bring us down.

By: Karen Hopkin-*60-Second Science* Podcast from Scientific American magazine online.

Image: Common household nightlight from the website © http://www.night-lights.net/ permission to use was granted under the fair use policy.

Welcome to the Magic Valley Astronomical Society

Welcome to the club and hello. We hope you have a good time, enjoy the hobby, and bring good skies with you. We hold indoor meetings each month at the Herrett Center for Arts and Science, College of Southern Idaho campus in Twin Falls. Please look for the sign in the lobby as our meeting room may change from time to time.

These club meetings start at 7:00pm 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. We typically have a co-hosted star party each month following the meeting in the Centennial Observatory (also at the Herrett Center) or as soon as it gets dark enough to begin viewing.

The events page of our website at www.mvastro.org has an events list that shows what activities will be presented throughout the year. Most of these events are free and you don't have to bring your own telescope. Everyone with a telescope is more than willing to let you look. This is one of the best ways to see what kinds of telescopes are available if you're thinking of getting one.

Hoping for the very best dark skies and clear nights, the MVAS Board.

The constellation Orion, imaged at left from dark skies (Leamington, UT pop. 271), and at right from the metropolis of Provo-Orem, UT (pop. 400,000) at the heart of Utah County.

There's no beauty in light pollution. Unnecessary, excessive, and misdirected light wastes energy, wastes money, generates air pollution, and is actually detrimental to safety and security since the glare harms dark adaptation and effectively makes shadows deeper. And last but not least, light pollution destroys the beauty of the night sky that has inspired mankind for millennia.

Photograph and story by Jeremy Stanley and is posted in the Wikipedia Common.

Sky Calendar — November 2009

1 **Mars 0.23° NNE from center of Beehive cluster (M44)** (92° from Sun, morning sky) at 15h UT. Mag. +0.4.
Daylight Saving Time officially ended.

2 **Full Moon** at 19:14 UT.

3 **Venus 3.5° NNE from Spica** (17° from Sun, morning sky) at 5h UT. Mags. -3.9 and +1.0.
Family Nights begin at the Herrett Center.

4 **Moon near the Pleiades** (morning sky) at 5h UT.

5 **Taurid (south) meteor shower peaks**. Active between 25 Sept and 25 Nov. Associated with Comet 2P/Encke.
Mercury at superior conjunction with the Sun at 8h UT. The planet passes into the evening sky.

7 **Moon at perigee** (closest to Earth) at 7h UT (368,903 km; 32.9°).

8 **Moon near Beehive cluster (M44)** (99° from Sun, morning sky) at 23h UT.

9 **Moon near Mars** (morning sky) at 14h UT. Mag. +0.3.
Last Quarter Moon at 15:56 UT.

10 **Moon near Regulus** (morning sky) at 13h UT.

12 **Taurid (north) meteor shower peaks**. May produce the occasional bright fireball.
Moon near Saturn (morning sky) at 20h UT. Mag. +1.1.

13 **Astronomy Talk** Introducing Pegasus, the Winged Horse" - The origins, mythology, and interesting targets of this fall constellation.

14 **Moon near Spica** (morning sky) at 12h UT.
Monthly Meeting Rick Allen room, Herrett Center for Arts and Science this is our annual business meeting. We will start at 7:00 pm

16 **New Moon** at 19:13 UT. Start of lunation 1075.

17 **Leonid meteor shower peaks** at 9h UT. Arises from debris ejected by Comet Tempel-Tuttle in 1533. Expect about 25 to 30 meteors per hour under dark skies. Predictions of enhanced activity between 21-22h UT on 17 Nov (favors sky watchers in Asia).

21 **Alpha Monocerotid meteor shower peaks** at 15:25 UT. A usually minor shower active 15-25 Nov. Radiant is near Procyon.

22 **Moon at apogee** (farthest from Earth) at 20h UT (distance 404,733 km; angu lar size 29.7').

23 **Moon near Jupiter** (evening sky) at 19h UT. Mag. -2.3.

24 **First Quarter Moon** at 21:38 UT.

All times Universal Time (UT). USA Eastern Summer Time = UT - 4 hours. All times Universal Time (UT). USA Eastern Summer Time = UT - 4 hours. We are currently – 7 hours behind UT. Astronomical twilight begins in the morning when the sun comes to within 18º below the geometric horizon and ends in the evening when the sun sets 18º below the horizon. This is the traditional transition to and from the darkest sky conditions at a location; barring light pollution or the moon.

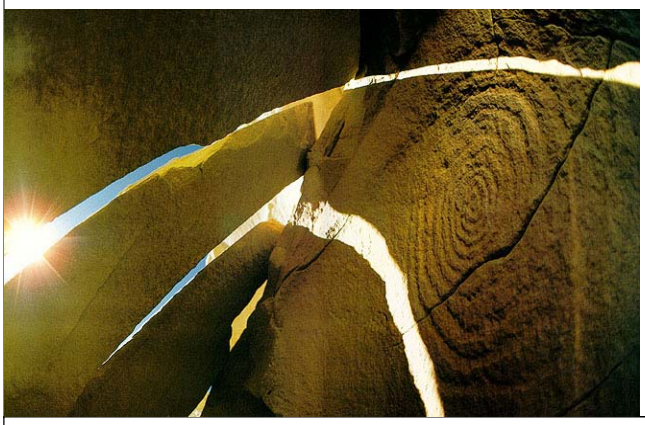
Image: Venus before Sunrise: Saguaro N.P. New Mexico Source: Unknown; Common use license applied.

To the Limits-Continued
by David Dearborn

Evidence is accumulating that Native Americans living in what is now the United States monitored this 18.61 year precession period of the moon. Foremost among this is the work of J. McKim Malville at Chimney Rock published in Archaeoastronomy, no 16 (JHA, xxii(1991). The Chimney Rock Pueblo, 5AA83, is a Chaco outlier located such that the major northern standstill of the moon was observable between the prominent double chimney feature on the horizon. Dendro-dates show occupation and construction activity coincident with standstill dates in 1076 and 1093. This supports the suggestion by Anna Sofaer, Rolf Sinclair, and LeRoy Doggett for a lunar standstill marker at Fajada Butte (in Archaeoastronomy in the New World, 1981, ed. Aveni), and recent work by Anna on the orientation of major Chacoan structures reported at Oxford 3, and as yet unpublished. There would be little question of the significance of these alignments if they were corroborated with ethnographic data from Pueblo cultures. Such ethnographic evidence has been sought, but not found. Steve Mclusky (in World Archaeoastronomy, p. 362) has noted that certain irregularities in the Zuni scheduling of Shalako can be understood if they were influenced by the position of moon rise, but this data do not resolve the question of whether or not they were aware of lunar standstills.

Additional evidence suggesting Native American interest in lunar standstills has been gathered by Bill Romain (see articles listed in new publications). He proposes alignments to lunar standstills in a number of Hopewell earthworks. Unfortunately the current state of most Hopewell sites does not permit great accuracy for individual measurements, but perhaps the growing data base on these sites will permit a statistical investigation to test the hypothesis that the alignments are intentional.

While the present evidence that Native American cultures of the United States were monitoring the 18.61 year cycle of the moon by means of the lunar standstills is not compelling, it is reasonably suggestive. The existence of contact between the Southwest and Mexico adds plausibility to the hypothesis that Southwestern groups knew of lunar standstills, or at least the existence of long-term cycles of the moon. This appears to be a developing area of inquiry, that could benefit from a survey of Mexican and Mayan sites to determine the nature of the lunar observations that they must have made.



Sun Dagger" by which the Chacoans (Puebloan) were able to read the harvesting and planting seasons and recorded time's passage. At the winter solstice, rays of sunlight fell between the 2 huge stone slabs, neatly bracketing the spiral petroglyph on 443 foot Fajada Butte at the south entrance to Chaco Canyon. At the summer solstice, a single band of light bisects the center of the spiral. The spring and fall equinoxes were heralded by an additional light that fell on the smaller petroglyph, the Puebloan's were some of the most advanced Native American astronomers in the region of the Four Corners area, USA.

Image source unknown: Fair use policy applied.

Wakini—Native Shoshone Oral History of the Milky Way

No one can remember any more exactly how it came about that the black bear Wakini overpowered the strong gray grizzly Wakini. The black bears say that Wakini was just feeding on the contents of an ant hill when Wakini came up to him and quite rudely stuck his paw in as well. A great fight ensued, with gray and black hairs flying on every side. Wakini was, of course, in the right, for no animal may ever touch another's prey. Wakini thus received a just punishment; but that was by no means all - like a defeated warrior, he had to leave his tribe forever.

Wakini wailed and lamented, but the Indian laws are inexorable. And so he had to go, wading through familiar streams, taking a last look at the familiar pines, and saying farewell to the valley he had lived in all of his life.

He could not see for tears, and so he failed to notice that he was making straight for the Snow Country. Suddenly he fell into a deep snowdrift. Clambering out with difficulty, he wiped his eyes and took a look round.

There was nothing but white, unblemished snow everywhere. "I'm sure to find a trail soon," the bear said to himself, and set out on his way once more. His gray coat had turned completely white with the snow, ice, and bitter wind.

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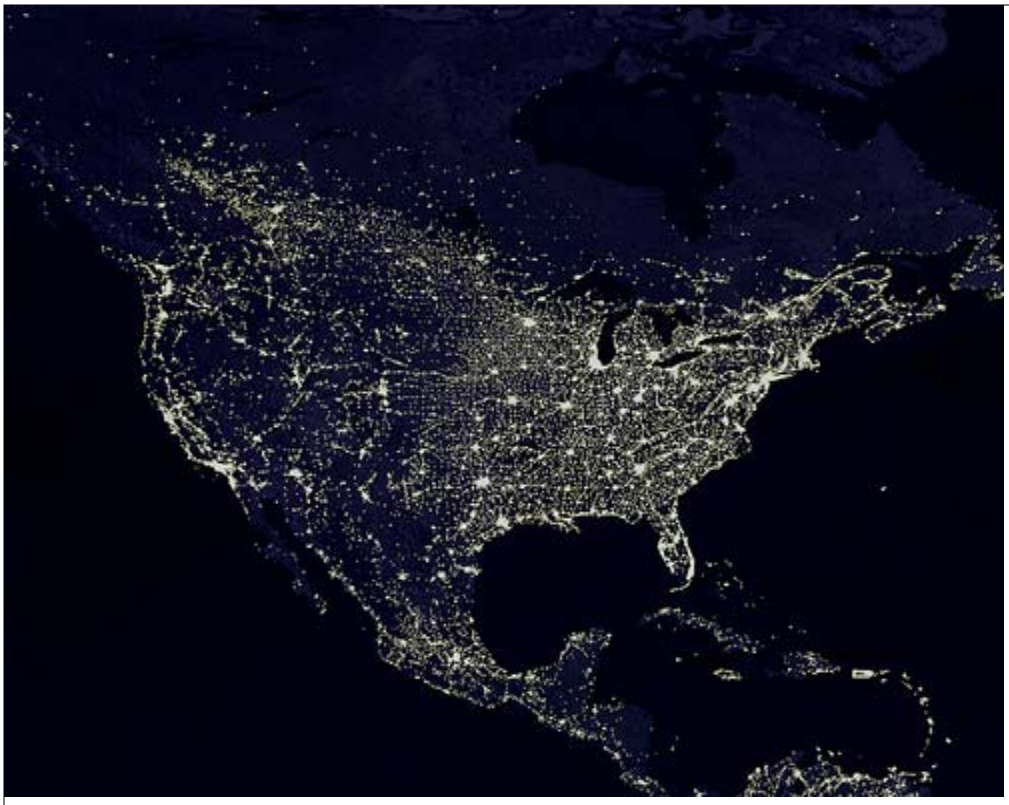

Light Pollution Map of the Americas

This remarkable image is actually a composite of hundreds of images created using satellite data collected at night.

The brightest areas of the Earth are the most urbanized, but not necessarily the most populated. (Compare western Europe with China and India.) Cities tend to grow along coastlines and transportation networks. Even without the underlying map, the outlines of many continents would still be visible. The United States interstate highway system appears as a lattice connecting the brighter dots of city centers. In Russia, the Trans-Siberian railroad is a thin line stretching from Moscow through the center of Asia to Vladivostok. The Nile River, from the Aswan Dam to the Mediterranean Sea, is another bright thread through an otherwise dark region. Even more than 100 years after the invention of the electric light, some regions remain thinly populated and unlit. Antarctica is entirely dark. The interior jungles of Africa and South America are mostly dark, but lights are beginning to appear there. Deserts in Africa, Arabia, Australia, Mongolia, and the United States are poorly lit as well (except along the coast), along with the boreal forests of Canada and Russia, and the great mountains of the Himalaya.

This image of Earth's city lights was created with data from the Defense Meteorological Satellite Program (DMSP) Operational Linescan System (OLS). Originally designed to view clouds by moonlight, the OLS is also used to map the locations of permanent lights on the Earth's surface.

The Earth Observatory article Bright Lights, Big City describes how NASA scientists use city light data to map urbanization. earthobservatory.nasa.gov/Study/Lights/

To see the location of the Magic Valley please see this image on the last page.

But Wakini took no notice of anything and walked on and on, until he reached a strange land in which a deep, frosty night reigned supreme. Somewhere in the far distance the gale could still be heard, yet here there was no but that made by his own footfalls on the frozen snow. Above him glowed the night sky, while not far away, on the very fringe of the Snow Country and the heavens, a broad white trail could be seen ascending the sky.

Wakini ran, hardly touching the ground, mesmerized by that gleaming trail. Another leap, and he found himself in the air, shaking the snow from his coat; light as a feather, he soared up and up. The animals who were awake that night saw, for the first time, a wide white trail in the sky, and on it - a gray bear.

"Wakini has found the Bridge of the Dead Souls and is on his way to the Eternal Hunting-grounds," said the wise black bear Wakinu.

And the grizzly really did go to the Eternal Hunting-grounds. The only thing he left behind was the snow he had shaken from his coat. And that white snow is there in the sky to this day. Just look and see!

The pale-faces speak about the Milky Way, but every Indian knows that that is the way to the Eternal Hunting-grounds, the path taken by the gray grizzly Wakini.

SNAKE RIVER SKIES
A Publication of the
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http://www.mvastro.org/

Membership Information

Since 1976, MVAS has promoted Astronomy education in Southern Idaho to continue to do so we need your support. Annual Membership will be:

$20.00 for individuals,
$20.00 for families,
$10.00 for students.

Contact Treasurer Jim Tubbs for more information and benefits information.
E-mail: jtubbs015@msn.com,
Telephone: 736-1989

Facts About the Night

Nyctophobia (fear of the dark) is a real condition that usually manifests in early childhood (toddler-preteen) and may continue into adulthood. Very little is understood about this affliction.

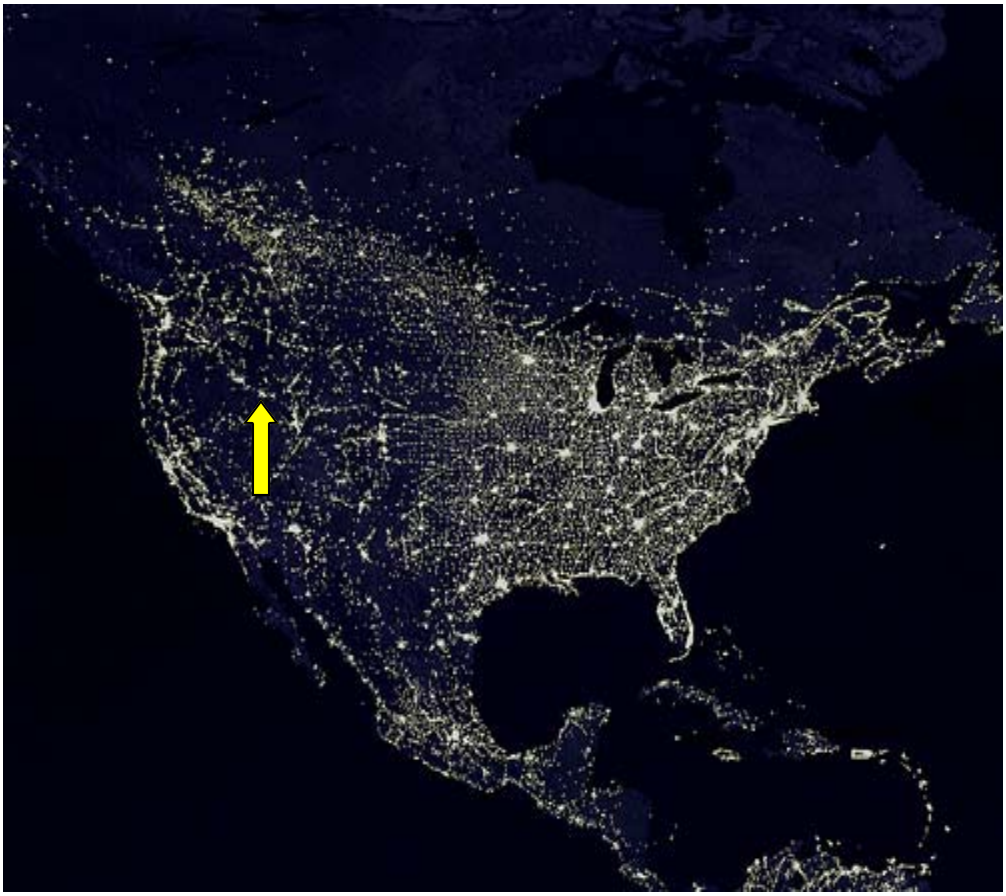
The night is young refers to the period when the sun is below the horizon and not the period before midnight.

Nocturnal is a French word meaning “active during the night.” A person who is nocturnal has a “eveningness chronotype.” This makes these people night-owls. Your DNA may actually be to blame for this phenomenon. Scientists revealed this discovery of the “after-hours” gene in the May 2007 issue of Science Magazine.

Nótt is the Norse Goddess of the night in Norse mythology, she has a son, Dagr (Day), together they ride around the Earth on Chariots with dark and light colored horses. Nótt will always proceed Dagr, or literally “Night comes before Day.”

Graveyard Shift– People have the lowest risk of cancer and some other illnesses, but may be at risk for other diseases. These include psychological distress, sleep disorders, cardiovascular disease, and gastrointestinal problems.

The Brain– Researcher’s at The University of Adelaide (Australia) have found that the time of day influences your brain's ability to learn - and the human brain learns more effectively in the evening and late at night. Guess this gives a whole new meaning to “cramming the night before a test” as opposed to the “day-of.”



The location of the Magic Valley as seen on this image is shown where the yellow arrow is pointing. The arrow is actually showing Twin Falls, the break to the right (east) is Burley.

The Boise-Nampa-Caldwell Metroplex is to the upper-left (west) of where the arrow is pointing.

To the east of the USA is the Bermuda Islands, which is the little speck all alone in the Atlantic Ocean. The capitol is Hamilton.

The cities in Canada due north, almost, of Twin Falls is Calgary and Edmonton respectfully. They are noted by their “larger” print. This image shows a dramatic increase since it was first published in 2000.

Image: credit previously given