Hello friends! I hope you are all having a good summer and getting some chances to enjoy the balmy night sky. This month is your last chance to see Saturn for a while, as it is slipping into the sunset. Also, some of the loveliest deep sky objects are visible in the summer sky, including globular clusters, planetary nebulae, and galaxies. The twice-monthly star gazes at Stonelick Lake Park are a great place to view these fascinating and beautiful celestial objects and to enjoy the company of other amateur astronomers. You do not have to have a telescope, as other people are happy to share views through theirs.

Remember, instead of the regular monthly FOTO meeting, we will have the annual FOTO picnic on Sunday, July 13. This is a great time to relax and socialize with fellow members. The picnic will start at 6 pm, at COC. Drinks, ice, and condiments will be provided; please bring your own meat to grill or other main course, and a salad, dessert or other yummy side dish to share. If it is raining, come anyway; we’ll have an indoor picnic!

Planning is well underway for ScopeOut this September. Dale Zoller and the ScopeOut Planning Committee have some great new ideas for this year’s event. Many FOTO volunteers are needed to make this event a fun and educational experience for everyone.

If you would like to help, please contact Dale Zoller or come to the ScopeOut planning meeting (see announcement later in this newsletter).

See you at the picnic!

Planning Meeting

By Michelle Gainey

The next FOTO Planning Meeting is scheduled for Thursday, July 24, 6 pm at the Observatory. The planning meetings are open to all FOTO members. We encourage your participation in the discussion of future FOTO activities.
Celestial Sips Wine Tasting
By Lyn Marsteller

The clouds parted, the sunset was beautiful and a happy crowd of 80 people celebrated a birthday, an anniversary and Father’s Day among the toasts during Celestial Sips on June 20. Our fabulous volunteers Peggy Bustamante, Jenny O’Donnell, Aashi Mital, Pat McDevitt, Valeria Niemi and John Pinney helped to make our fundraiser a great success! We received very generous contributions from the following companies that made Sips a very tasty event:

- Shannon Depenbrock of D.E.P.’s Fine Wines
- Pamela & Jay Ashmore from Dutch’s Larder
- Haute Chocolate
- Cooper’s Hawk

Our guests enjoyed a John Ventre tour, had all their science questions answered, and experienced spectacular views of Saturn and its Rings.

Planning has already started for Celestial Sips 2015 – if you want to be part of the fun, please let us know.

Welcome
New & Renewing Members!

Sajid Ali
Aine Baldwin
Philip Breen
Larry Brown and
Cristina Gutierrez
William and Lesley Bunn
David E. Burcham
Michael and Minnie Clements
Lily Concannon
Leslie Demoret
Jeanne E Dietrick
Chris and Jeanette Duncan
Anne and Eric Eifrig
Danny and Lynette Faulkner
Mike and Jeanine Flick
Stephen & Patricia Frey
Julie Glassmeyer
Michael Hamel
Mike and Aileen Helfen
Lee Hite
Bill and Mary Hopple
Jeff and Kathleen Howe
Tim Hunsche
Sam and Marie Kocohis
Marilyn A. Kroll
Linda Lee Magee
Marilyn and Robert Mallow
Melissa and David McGowan
Linnea Woodward and
Norbert Nadel

Did You Know. . .

The super massive black hole in the center of our galaxy is spinning at the rate of about one rotation every 11 minutes.

Museums and Historic Sites of Greater Cincinnati

By Craig Niemi

MHS is comprised of over 30 participating sites across Greater Cincinnati. Each site offers a unique perspective on local history and culture through public programs, exhibits, lectures, and tours.

www.historicgreatercincinnati.org

Did You Know. . .

IC1011 is the biggest galaxy ever found. It’s six million light years across! Our Milky Way galaxy is a mere 100,000 light years across.
Sun Sunday Sundae
Sunday, July 13 1-4 pm

Sun Prominence image by Observatory member Steve Rismiller

Astronomy AND ice cream! What could be better?

The Sun is the star attraction today. You can learn all about our nearest stellar neighbor. Sun-day Sunday Sundae includes hourly programs about the Sun, tours of the historic buildings, and safe solar viewing of sunspots and solar flares out of our 1845 telescope (weather permitting). Great for all ages!

As a special treat we will also have free ice cream sundaes for those in attendance.

Cost: $7.00 per person. No reservations are needed.

FOTO Kids and Teens
By Aashi Mital

We hope that you enjoyed the weather and the sun clocks this past month, but we’ve always got something brewing at the Observatory. What is it this month? Here’s a hint: With names like Hyakutake, Lovejoy and Hale-Bopp, they are the most brilliant and rare objects in the night sky. Composed of loose collections of ice, dust and small rocky particles, they sometimes even have tails. That’s right! Comets!

We are meeting Friday, July 11th at 7:00 pm in the Herget Building. And who knows, we might just create a comet of our own! Remember to dress for the weather, bring water to keep hydrated and don’t forget that sunscreen.

If you have any questions, please email Aashi Mital at aashimital@gmail.com or Aaron Eiben at aaron@cincinnatiobservatory.org.

Astro Evenings at the Observatory

Thursdays July 10, 17, 24, 31
Fridays July 11, 18, 25
8:30 pm-10 pm

A core program of the Observatory are our ongoing Astro Evenings which take place most Thursdays and Fridays year-round.

The evenings are all volunteer staffed and include a short presentation on ever-changing and fascinating topics followed by a guided stargaze through the oldest telescope in the United States (weather permitting).

Also included is plenty of time for Q&A on any astro topic and a historical tour of the observatory, where you’ll not only see how the old telescopes works but also learn about the role that Cincinnati has played in the birth of astronomy in Free for Observatory members!

Stargazing at Stonelick State Park

Saturdays – July 19th & 26th

Need help with your telescope? Bring it for expert tips setting it up and exploring the night sky. Stargazing begins at dusk. Open to all ages.

Stargazes are weather permitting. “Friend” the Stonelick Lake Stargazers Facebook page for weather and schedule updates.

FOTO Movie Night
By Aashi Mital

Come one, come all! FOTO is hosting a movie night in the Herget Building on Monday, August 25th from 7 to 9 p.m. Join us for a showing of In the Shadow of the Moon, a documentary film about America’s manned missions to the Moon during the 1960s and 1970s. This may be the first, and last, time where surviving crew members from every single Apollo Mission that went to the Moon tells their story in their own words, so it’s bound to be a blast! Want to learn more about the film? Visit: http://www.imdb.com/title/tt0925248/
'Magic Island' Possibly Seen in Seas of Saturn's Huge Moon Titan

A mysteriously bright anomaly winked in and out of existence on the seas of Saturn's largest moon, Titan — potentially the first time waves, bubbles or some other unknown features have been seen there, scientists say.

Scientists usually call this spot a "transient feature," but the researchers have playfully dubbed it "Magic Island." Titan, the largest of Saturn's 62 known moons, is 50 percent wider than Earth's moon and 80 percent more massive. You can watch a video about the "Magic Island" on Space.com.

"What I think is really special about Titan is that it has liquid methane and ethane lakes and seas, making it the only other world in the solar system that has stable liquids on its surfaces," lead study author Jason Hofgartner, a planetary scientist at Cornell University, told Space.com. "It not only has lakes and seas, but also rivers and even rain. It has what we call a hydrological cycle, and we can study it as an analog to Earth's hydrological cycle — and it's the only other place we know of where we can do that." http://www.space.com/26325-cassini-titan-waves-magic-island.html

SuperMoon
By Dean Regas

Saturday, August 9th 7-10 pm

Not all Full Moons are created equal. Some are closer to the Earth than others and every 14 months we get a slightly larger Full Moon. These Supermoons make the Moon appear 14% bigger in the sky.

Join us at the Observatory to watch the Supermoon rise above the eastern horizon at 8:20 pm and see if you can tell the difference. Bring lawn chairs, blankets, or even a picnic.

Supermoon includes tours of the two Observatory buildings and viewing through the historic telescopes of Saturn and Mars (weather permitting).

Cost: $5 per person. No reservations needed. For further information, please call 513-321-5186. Note: The rain date for this event will be Sunday, August 10 when the Moon will be just as big!

Highlights of the June FOTO Meeting
By John Barnes

The June 9, 2014 FOTO Meeting, held at the COC, was called to order by President Michelle Gainey at 7:30 pm.

An important announcement was made regarding the July FOTO meeting: it will be the annual picnic! It will take place on Sunday, July 13 at 6:00 pm at the COC. There will be no second Monday FOTO meeting in July.

Dale Zoeller gave us an update on ScopeOut. This year’s event will be held at the COC on Saturday, September 13 starting at noon. Mustard’s Last Stand will be there all day to take care of any hunger pains that hit while you browse the displays. An Italian dinner catered by Bella Luna will be served from 6:00 until 7:30. After dinner, keynote speaker James Albury will take the stage. James, along with our very own Dean Regas, is co-host of the television program Stargazers, seen on PBS stations across the country. After the keynote address, if the skies are clear, we will offer public viewing through one, or both, of the big scopes. If you would like to help with this year’s ScopeOut, please contact Dale.

The speaker for the June meeting was Slawomir Bucki. His talk was titled “How Do You Know? Dealing With the Skeptics.” Bucki addressed questions such as – How far is it; how fast is it; how big and how old?

After the break we conducted the business portion of the meeting:

FOTO Treasurer, JoAnne Pederson reported no activity in May: $3,731.45 in the bank at month’s beginning and at month’s end.

Aashi Mital has arranged for a movie night at the COC, Monday, August 25 starting at 7:00 pm. Dave McBride will provide popcorn! Lyn Marsteller secured a grant for our new, and very comfortable folding chairs. Thank you Lyn!
ScopeOut 2014 Update

By Dale Zoller

ScopeOut 2014 will be held Saturday, September 13, 2014. As in the past, the main event will run from 12-5 pm. We will hold the raffle drawing from 5-6pm and then the dinner and keynote presentation from 6-8:30 pm. This year's keynote speaker is James Albury, co-host of the PBS show "Star Gazers." Mr. Albury's topic will be Engaging the Public in Astronomy." Viewing will follow the keynote presentation from 9-11pm (weather permitting).

Plans to improve the kid’s area are moving along. We are adding more science-related activities including "Galileo" experiments (acceleration ramp, pendulum, tennis ball drop, etc.); AIAA "rocket" build & launch; UC Physics Dept. demos; crater making; paper plate sundials; pinhole solar projector; prism and thermometer infrared light demo. To promote this new emphasis, we have decided to refer to the area as the "Science Adventures" area. We will still have activities the younger kids such as a scavenger hunt, art contest and face painting.

As I mentioned at the June FOTO meeting, we will have a new addition to the raffle this year. In addition to displaying one of their R22 helicopters, Stratus Helicopters (based at Lunken Airport) will assist with a "ball drop" at the end of the day. Chances on the numbered balls will be sold before and during the event. We are still working on the prizes to be awarded. We are in need of a volunteer to head up the door prize/raffle area. If you would be interested in helping organize this important function, please contact Craig Niemi or me as soon as possible.

We also need presenters for the afternoon classroom talks. Potential topics for the talks include: exoplanets; current planetary exploration missions (New Horizons/Dawn/Juno); remote astrophotography; commercial spaceflight; astrology, citizen science (planet hunters, etc.). Please let me know if you would like to do a presentation on one of these topics.

ScopeOut requires a substantial number of dedicated volunteers to make it run smoothly. We will have signup sheets available at the July FOTO picnic/meeting. If you would like to volunteer and cannot make the July FOTO meeting, please email me at dale.zoller@fuse.net. Thanks in advance.

ScopeOut 2014 Planning Committee Meeting

By Dale Zoller

The next ScopeOut 2014 Planning Committee meeting will be on Tuesday, July 22 at 6:00pm at the Observatory. ScopeOut is the Observatory's annual open house and science fair and will be held on Saturday, September 13, 2014. Anyone interested in helping with the planning of the various ScopeOut activities is invited to attend.

Did You Know. . ..

The stars surrounding the center of our galaxy are ancient and crowded with red giant stars.
Craig’s Corner
By Craig Niemi, Executive Director

It’s officially summer; astronomically and meteorologically.

April, May and June were full of astronomy programs for schools, scouts, seniors, members and the general public. The last two months saw school bus after school bus dropping off kids eager for the kind of authentic and inspiring STEM experience that a field trip to the Observatory delivers.

Staff & volunteers gave an increasing number of programs offsite too including outreach visits to schools, CET Action Auction, Museum Center Explorer’s Club, Cincinnati Nature Center and others.

Public programs featured
1st Light Night
Astro Thursday & Fridays
Intro to Astronomy Classes
Sunday History Tours
What’s Up at NASA
Stonelick Stargazes
UC Communiversity classes
Late Nights at the Observatory
Marsapalooza
SaturnDays
History of Astronomy Symposium
Weddings and other Life Events
Astro Saturdays
Sun Sundays
John Ruthven Print Signings
Celestial Sips Wine Tasting
Oxford Art Show Stargazes
Kid’s Expo@ Paddlefest

Our thanks to all our wonderful staff for all you’ve done in just the first half of the year. And to all our members and donors who help make it all possible.

And a special thanks to all our volunteers without whom we could not do what we do for the Greater Cincinnati Community. Each of you makes a huge impact!

We hope your volunteer experiences have been rewarding, challenging and fun! And know that we want your suggestions on how we can continue to make the experience better and your ideas on new programs.

Now take a well-deserved break and get ready for the second half of 2014!

Cub Scout Pin Night
Saturday, July 19 1-3 pm

These one-session programs are great for small troops and individual scouts who are looking to completely fulfill their astronomy belt loop requirements (plus they’re on Saturdays). Reservations are required for the program dates listed below. Please note that multiple troops may attend the same program; Individual scouts may sign up as well. Parents or troop leaders are expected to stay and participate. Maximum registration for each date is 35 participants (adults included).

There will be popcorn to munch on, but feel free to bring in snacks for the event. Let Aashi know if you plan on bringing snacks. Email Aashi Mital at aashimal@gmail.com.

Astrophotography Workshop
Third Thursday
February through November

Next Session:
Thursday, July 17th
7:00- 8:30 pm

Free for Cincinnati Observatory members. Space is limited. 513-321-5186

FOTO Board Members
Terms expire Oct. 2014
Except as noted

President: Michelle Gainey
VP: Aashi Mital
Secretary: John Barnes
Treasurer: JoAnne Pedersen
FOTO Rep: Frank Huss (exp Oct 2016)
Trustees
John Blasing (exp. Oct 2015)
Aaron Eiben (exp. Oct 2015)
Al Scheide
Dave McBride

Did You Know...?

Earth’s oceans are 71% of the surface area, but are only 0.02% of the Earth’s mass.
**Teacher Professional Development**

*Measuring Space: Math & Astronomy*

July 28th - August 1st
1 pm - 6 pm

This Xavier workshop will cover hands-on and observation-based astronomy education as a basis for real-world applications of math education. In other words, we want you – and your students – to be able to make your own astronomical observations, collect your own data, and perform mathematical analysis to draw meaningful conclusions from the data. We want to empower you to literally measure the cosmos from the comfort of your classroom and schoolyard, with minimal tools and a whole lot of grade-appropriate math. Recommended for teachers of grades 5-12.

EDXC 637-W1A (58489) One-Three Credit Hours Limit: 25 participants Noncredit fee: $100 EDXC 637-N1D (58490).

To register call the Xavier Graduate School at 513-745-3000.

**“Founders and Famous Families of Cincinnati”**

Aug 30th 7pm

![Founders and Famous Families of Cincinnati](image)

*Founders and Famous Families of Cincinnati* brings to life the founding families’ histories, sharing these intertwined and fascinating tales with readers near and far. Many of those same founding families who made possible the Cincinnati Observatory and many of Cincinnati’s other cultural treasures.

Lecture by Wendy Hart Beckman, Q&A and the book-signing. The Observatory will be open following for tours.

Free, No reservations needed.

**LightSail is Ready For Launch!**

Solar sailing. It has been called the only practical way to reach the stars. But driving spacecraft across the solar system with the pressure of sunlight also offers big advantages over traditional rocket engines. Closer to home, solar sails may give us access to unique orbits for vital Earth science and space weather missions.

LightSail will spread its silver wings once it reaches orbit, becoming visible to nearly everyone on Earth as it demonstrates this promising new technology for space travel.

In order for CubeSat applications to reach the next level, the miniature satellites need a reliable form of propulsion for orbital maneuvers and trips beyond our planet. This is where solar sailing—transferring the momentum of photons to a large reflective sail—comes in. The technology has been successfully demonstrated by Japan’s IKAROS mission, and NASA’s NanoSail-D gathered data on using solar sailing as a method of de-orbiting defunct satellites.

The Planetary Society’s LightSail program will take the technology a step further. The LightSail-A spacecraft will go on a shake-down cruise to test sail deployment and spacecraft operations. LightSail-B will attempt to demonstrate controlled solar sailing.

http://www.planetary.org/exploration/projects/lightsail-solar-sailing/

**Did You Know...**

Go on a rocket and travel close to an event horizon, and for every minute you spend there, a thousand years will pass on Earth. Gravity trumps time.

**Vintage Baseball & Astronomy**

Thanks to John, Valerie and all our volunteers for putting together a great symposium. We’ll have more details next month.
Anniversaries for July 2014

By Fred Bowman

July 2014 marks the 45th anniversary of the first Moon landing. Only twelve men have had the privilege of walking on the Moon between 1969 and 1972. How many of the following twelve do you recognize: Armstrong, Aldrin, Conrad, Bean, Shepard, Mitchell, Scott, Irwin, Young, Duke, Cernan, and Schmitt?

Once we landed on the Moon other countries (USSR) abandoned their programs in favor of an orbiting laboratory – Salyut series, Mir and the ISS. Presently, only the Chinese are talking about the prospects of returning to the Moon. Must we wait another 45 years to repeat the feat of landing a man (or woman) on the Moon and returning them safely back to the Earth? It has been a long time since the first Moon landing, how many people reading this were alive in 1969?

I would venture to guess that none of the twelve men, who had the privilege of walking on the Moon, could have imagined at the time that it would be over 45 years before anyone else would be thinking of following in their footsteps to leave boot prints on the Moon. Robotic missions are fine for surveys, but we need to put boots on the ground. First go back to the Moon and then onto Mars.

Sending men to Mars is a bold vision for the future in space exploration, but it would be a waste of time and energy if we didn’t return to the Moon for at least a dress rehearsal.

The second anniversary for July 2014 is the 20th anniversary of the greatest set of explosions to occur on any planet in the past 400 years. I’m talking about the collision of Comet Shoemaker-Levy 9 with the planet Jupiter in 1994. From July 16th to the 22nd Jupiter was hit 22 times.

The resulting impacts left huge, black scars visible in Jupiter’s atmosphere for months. Each caused by the collision of 22 separate particles of a comet that had ventured within the Roche limit of Jupiter two years prior on July 7th, 1992. The tidal forces broke up the progenitor into smaller pieces and strung them out like a string of pearls. The largest of these chunks was more than 1500 meters across. Some of the impacts were observed directly by the, much delayed, Galileo spacecraft while en route to Jupiter.

Comet Shoemaker-Levy 9 had been captured during a previous close encounter at the end of August 1970, beginning its ill-fated journey as a temporary satellite of Jupiter. It made 10 complete orbits of the giant planet in the intervening 24 years. Its orbit is being shaped by the combined gravitational attractions of Jupiter and the Sun.

David Levy, one of the discoverers, is a member of the Cincinnati Observatory’s Advisory Board.

Did You Know...

Clouds on Neptune can travel up to 1260 mph.

Are Ultra-Luminous Galaxies Colliding?

Ultra-luminous infrared galaxies (ULIRGs) are galaxies whose luminosity exceeds that of a trillion suns. By way of comparison, our Milky Way galaxy has a typical modest luminosity of only about ten billion suns. ULIRGs were discovered by an all-sky infrared survey satellite in the 1980’s, and since then the origin(s) of their powerful emission has been widely debated. Extreme infrared activity is known to be associated with interacting galaxies, and optical imaging shows that many ULIRGs are indeed in collision.

The two primary known sources of global energy production in galaxies are star formation and accretion activity around a massive black hole in the nucleus. Mergers might result in intense infrared emission because they help to drive this kind of active star formation.

Do Gravitational Waves Actually Exist?

When Albert Einstein proposed the existence of gravitational waves as part of his theory of relativity, he set in motion a pursuit for knowledge that continues nearly a century later. These ripples in the space-time continuum exert a powerful appeal because it is believed they carry information that will allow us to look back into the very beginnings of the universe. But although the weight of evidence continues to build, undisputed confirmation of their existence still eludes scientists. Researchers have now provided another piece of the puzzle with their precise measurements of a rapidly rotating neutron star: one of the smallest, densest stars in the universe.

http://www.sciencedaily.com/releases/2014/06/140627112714.htm

NASA's STEREO Maps Much Larger Solar Atmosphere Than Previously Observed

Surrounding the sun is a vast atmosphere of solar particles, through which magnetic fields swarm, solar flares erupt, and gigantic columns of material rise, fall and jostle each other around. Now, using NASA’s Solar Terrestrial Relations Observatory, scientists have found that this atmosphere, called the corona, is even larger than thought, extending out some 5 million miles above the sun’s surface -- the equivalent of 12 solar radii.

http://www.sciencedaily.com/releases/2014/06/140625122350.htm

Giant Telescopes Pair Up to Image Near-Earth Asteroid

Earth-based radar has produced sharp views of a recently discovered asteroid as it slid past Earth on June 8, 2014. The new views of the object designated "2014 HQ124" are some of the most detailed radar images of a near-Earth asteroid ever obtained. http://www.astronomynow.com/news/n1406/16asteroid/

Aluminum-Bearing Site on Mars Draws NASA Visitor

With its solar panels their cleanest in years, NASA's decade-old Mars Exploration Rover Opportunity is inspecting a section of crater-rim ridgeline chosen as a priority target due to evidence of a water-related mineral.

http://www.sciencedaily.com/releases/2014/06/140625121826.htm

Late Night at the Observatory

Saturday, July 19
10:30 pm-12:00 am

Can’t sleep? Looking for a unique Friday night out? Get a sneak preview of the next season’s planets and stars a month or two ahead of everyone else. Recommended for adults only.

Admission is $10 per person
To make reservations please call 513-321-5186 or go online!

www.formstack.com

Eyes of the Night

Mr. John Ruthven is offering signed, limited edition giclee' prints of his "Eyes of the Night" which features the Observatory!
Each signed 14"x 20" print is on sale for $150. The total run will be limited to 250 prints.
Proceeds support the Observatory’s programs.
To order contact Craig Niemi at 513-321-5186 or craig@cincinnatiosbervatory.org
History of the Observatory
July 27th 1-4 pm

The Moon
From the Sidereal Messenger
Published by Observatory
Founder Ormsby MacKnight Mitchel

Drop in anytime between 1-4 pm.
$5 per person suggested donation.
Free for members. Group tours by appointment.

For Sale - Giant Right-Angle Prism Binocular System

FOTO member Graham Davis has a giant 5-inch VIXEN right angle binocular system for sale.

A recent review in Astronomy magazine rated these as probably the best available today in the price range.

Included is a custom manufactured yoke and tripod; green laser pointer finder and three pairs of matched Televue Nagler oculars.

The views are stunning, not only wide field, but planets too! All in fitted aluminum cases for storage and transportation! Comes with three sets of Nagler matched oculars and a special right angle finder.

New value $6,200. Will accept best offer around $4,300!

Contact Graham Davis at 513-667-8637.

UC Communiversity
Enrich Your Life With Quality Courses

July 7th 7:30-9:30p
Behind the Scenes
July 16th 8-10p
Stargazing 101
Aug 4th 8-10p
Echoes of the Ancient Skies

All classes $22 per person (+ any materials fees.) To register contact UC Communiversity at 513-556-6932 or www.uc.edu/ce/commu.html

New Star Gazers

Star Gazers airs locally on channels 14 and 48 and you can watch each month’s episodes on our website: http://www.cincinnatiobservatory.org/stargazer.html Keep Looking Up!

Heaven and Hell
By Eric and Josephone Africa

Heaven and Hell is the title of the Vangelis piece that was the opening theme of the original version of Carl Sagan's Cosmos. That title feels appropriate for this wide-field view of M78 and LDN 1622 with Barnard's Loop in between. M78 provides a look of Heaven with its bright blue reflection nebulosity, while LDN 1622 broods in its darkness (many renditions of LDN 1622 show it as a dark, foreboding entity, and it is appropriately called the Boogeyman Nebula). A river of fire (Barnard's Loop) separates the two and keeps the Boogeyman from ever leaving its Hell and invading M78's Heaven.

Where Did Earth’s Water Come From?

We may have another "ocean" to add to the world map -- only this one is hidden hundreds of miles beneath our planet's surface.

A new study suggests that a hidden "ocean" is nestled in the Earth's mantle some 400 miles beneath North America.

http://www.huffingtonpost.com/2014/06/13/hidden-ocean-earth-core-underground

Did You Know. . .

From just 50 light years away, our Sun would not be visible.