



# ASTRONEWS

*To our skies and beyond!*

January 2015 edition

'TIS THE SEASON!



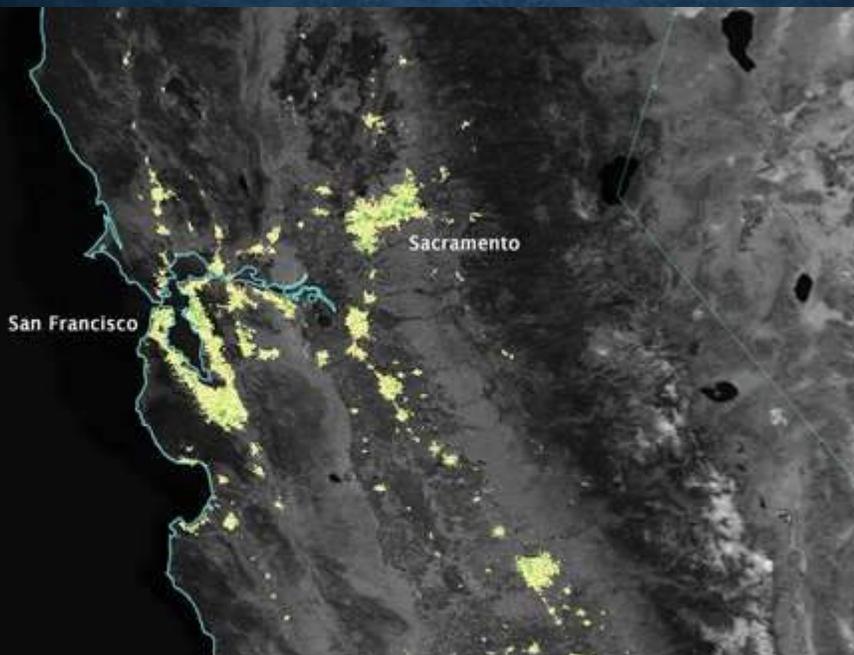
## ❖ Light it up!

Around the world people celebrate holidays in different ways: some through prayer and others through festivities. According to some, Christmas is the second most widely celebrated holiday, after New Year's Eve. For a very astronomy-related view on how Americans celebrate this holiday, NASA has come up with unique images.

These images capture our Christmas lights from a creative location: space. City lights in the US increase by 20 to 50% during December. Scientists attribute the increase to not only Christmas lights but also to people leaving work earlier, going home, and naturally turning on their lights.

And the brightness increase is not caused by Christmas alone. During Ramadan, many Muslim countries "light up" as well 60% to 100% higher. And on another interesting note about how lights detected from space are equal to actions on Earth, lights dropped by 94% in the Syrian city of Aleppo just before a major Arab Spring battle there.

Being an astronaut up in space in the International Space Station is having a first seat view on the events going on down here with an interesting twist. And, who knows, one day we may be able to use the patterns and images of lights on Earth to predict historic events as well as joyous celebrations!



**Light it up!** The large yellow areas are where holiday lights do not increase the usual emissions but stay the same. The interspersed green however is where people have "lit it up" to celebrate the holiday season.

*Courtesy of Jesse Allen, NASA Earth Observatory.*



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## YEAR IN REVIEW: 2014

Here are 2014's top 3 milestones in the field of astronomy. What have our researchers and scientists really been up to?

### 1. Astronomical Advances: Philae

**"This is a big step for human civilization... [and] terrestrial intelligence" – Jean-Jacques Dordain, Director of European Space Agency.**

The first probe to touch down on a comet will lead to historic findings on the makeup of comets and our distant, mysterious origins. On Nov. 12<sup>th</sup>, the Rosetta probe lander Philae successfully landed on Comet Churyumov–Gerasimenko in the Asteroid Belt and as of now has already made initial images and observations.



*Courtesy of European Space Agency*

### 2. Spaceship Setback: Virgin Galactic

**"Space is hard, and today was a tough day" – George Whitesides, Virgin Galactic CEO**

On October 31<sup>st</sup> in the Mojave Desert in California, a weird spaceship crashed but it was not a UFO. The Virgin Galactic SpaceShip Two suffered from "a serious anomaly" soon after its motor ignited for a suborbital test flight. This crash led to the death of one pilot and injured the other pilot who had to be rushed to a nearby hospital. Though perturbed by the setback, the company has decided to "move forward".



*Courtesy of Quartz.com AP*

### 3. Lucky Launch: Orion

**"The first humans who will set foot on Mars are alive today" – Charles Bolden, NASA Chief Administrator**

On December 4<sup>th</sup> at ~ 7:00 in the morning (ET), Orion lifted off from NASA's Cape Canaveral in Florida. But that moment, however important, was still not as significant as Orion's successful landing in the Pacific Ocean a few days later. Orion was a test capsule able to carry humans and to withstand high temperatures for a futuristic mission that will end with man on Mars. Due to its success, NASA now plans on another test flight in 2018, a manned mission around the moon in 2020, and the final culmination of mission Mars in 2030.



*Courtesy of NASA Mars*

### 4. Planetary Progress: Kepler Mission/K2

**"K2 is uniquely positioned to dramatically refine our understanding of these alien worlds." – Steve Howell, Kepler/K2 scientist**

Kepler has done it again! The Kepler mission (its continuation is known as K2) once again discovered a new world on December 19<sup>th</sup>. The new planet named HIP 116454b is 2.5 times the size of Earth and 180 light years away. It orbits its star in only nine days and is too close to support "life as we know it". However, "life as we do not know it" might just exist.



*Courtesy of NASA Ames/JPL-Caltech/T Pyle*



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## NAME GAME

### FUN FACT

- ❖ The Milky Way spins our solar system around, whirling at more than 800,000 km per hour.

### QUOTE OF THE MONTH

- ❖ Don't lose hope. When the sun goes down, the stars come up!

### PICTURE OF THE YEAR



#### ❖ Aurora over a Glacier Lagoon

© James Woodend (U.K.)

*Winner of the Astronomy Photographer of the year 2014 contest held by the Royal Observatory in Greenwich, UK.*

#### Do you want to name a crater?

Your name could be one of five selected for crater names on Mercury.

All you have to do is pick one of your favorite **artists, composers, or writers** “**who was famous for more than 50 years and has been dead for more than three years**”. You'll need to then sketch out the person's biographical accomplishments and historical significance listing your sources.

Fill out the application by January 15, 2015 at:

<http://namecraters.carnegiescience.edu/enter-now>

Craters to be named:

Crater A (40 km) is located in the elevated “Northern Rise”, a region where all craters are yet to be named.

Crater B (31 km) contains material previously buried under Mercury's surface and unique features known as “hollows”.

Crater C (105 km) contains a wavy cliff running through it and is volcanically important due to a volcanic pit surrounded by yellow-orange deposits.

Crater D (58 km) is located at the edge of a larger crater (Rembrandt crater), is cut through by the longest cliff on the planet (Enterprise Rupes), and was formed during the early history of Mercury.

Crater E (24 km) is in the polar region and is deep/cold enough to contain water ice.



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## ECLIPSES 2015

*Courtesy of Richard Baxter, The Guardian*



- ❖ Partial Lunar Eclipse: April 4, 2015
- ❖ Total Lunar Eclipse: September 27, 2015

## STARGAZING IN SAN JOSE

- ❖ There is nothing to note in January. Unfortunately, the only major event (the Quadrantid meteor shower) will be unable to be seen in San Jose. For those who are still looking for adventures under the stars, you will be able to enjoy the full moon on the 5<sup>th</sup>.

## HOW GOOD ARE YOU AT ASTRONOMY?

1. Olympus Mons is the largest known volcano. Where is it?
2. Which planet is the brightest as seen from Earth?
3. Which type of star has the smallest diameter?
4. What direction do gaseous comet tails point in?
5. Where do the names of Uranus's moons (Ariel, Umbriel, Miranda, Titania, Oberon) come from?
6. What are the most luminous objects in the universe?
7. In which month is the Earth closest to the Sun?
8. Where were the atoms in iron formed originally?
9. What is the most abundant element on Earth by mass?
10. What percent of the moon's surface can be seen from Earth over the course of time?

- 0 – 3 correct answers | **Astronomically Dumb**  
 4 – 7 correct answers | **Just your average person**  
 8 – 10 correct answers | **Stellar Scientist**

**Answers will be in next month's newsletter.**

Answers to last month's puzzle: Mercury; Alan Shepard; Valentina Tereshkova; USA, Russia, India, China

**LOOK IN OUR NEXT NEWSLETTER FOR A SPECIAL ABOUT THE ZODIAC!**

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