



ASTRONOMY NEWS

To our skies and beyond!

December 2014 edition



NEW HORIZONS

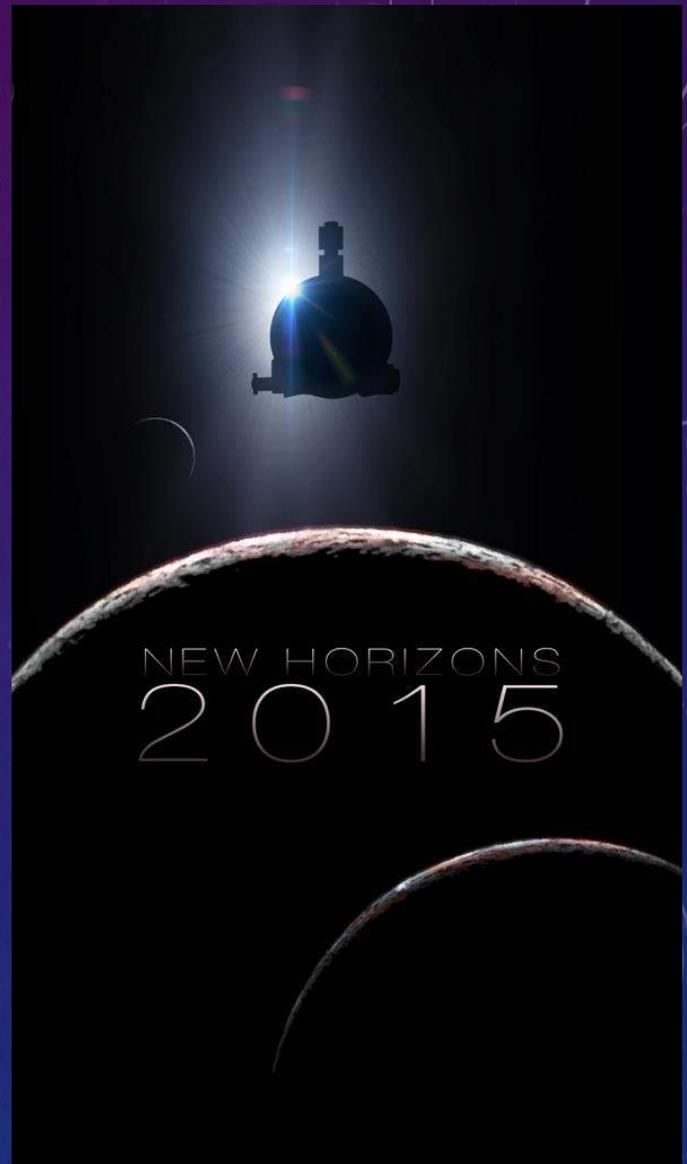
Even with all our knowledge of the Universe, it is still an unknown mystery. Thus according to our scientific explorations, Pluto once the ninth planet in our Solar System is still such a mystery as well. No satellite has ever approached it or studied it – Until now.

NASA's New Horizons is making a move towards the progress of science and astronomy. Launched in 2006, the satellite will reach Pluto in 2015 and is preparing to come out of hibernation for the last time on December 6th to transmit signals back to Earth.

Since launching, the New Horizons has spent roughly two-thirds of its time in deep sleep to reserve its facilities for observing Pluto. On December 6th, the craft will awaken at 3 pm EST and transmit to Earth its new active status 90 minutes later. As it will be only 162 miles from Pluto and 2.9 billion miles from Earth, even with NASA's high-tech equipment the message will take almost 4.5 hours to arrive here at 9:30 EST.

After awakening, scientists at NASA will guide New Horizons towards a safe approach to Pluto over the next few months. Distant observations will begin as early as January 15th of next year and continue until its closest approach on July 14th 2015....that is if everything goes as planned.

According to the Principal Investigator of the satellite, Alan Stern, "The final hibernation wake-up Dec. 6 signifies the end of a historic cruise across the entirety of our planetary system." He excitedly added that "We are almost on Pluto's doorstep." That we are almost about to open the door to the study of yet another planet and the uncovering of yet another astronomical mystery. JM



Fun Fact:

On Venus, it snows metal and rains sulfuric acid.

Quote of the Month:

"Keep your face to the sun and you will never see the shadows." - Helen Keller



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SAN JOSE STARGAZING JM

❖ December 13th to 14th - Geminids Meteor Shower

What - There will be about 50 visible meteors per hour at the peak.

When - Between late evening and dawn but the shower will intensify at midnight and peak at 2:00pm.

❖ December 21st to 22nd - Ursids Meteor Shower

What - There will be about 10 visible meteors per hour at the peak however the peak will not be visible as it occurs during daytime.

When - Dawn and overnight on the 21st. The peak of the shower is unfortunately during the day on the 22nd.

DISCOVERING THE DECEMBER SOUTHERN SKIES CB

Orion is 40 - 50 degrees to your left. You can easily make out a couple of well-known asterisms: the Orion's Belt and the Orion's Sword.

The brightest star in the sky, Sirius, is the powerhouse on the left, close to the horizon with the faint companion, Sirius B.

Heading up from Sirius using Orion as a guiding landmark, Taurus has a v-shaped head with its bright and yellow bull's eye, Aldebaran.

Near the top of the photo, the Seven Sisters are a cluster of relatively young stars consisting of hundreds of members.

Procyon is rising in the east and together with Sirius and Betelgeuse (the orange star on Orion's shoulder) they form the Winter Triangle.





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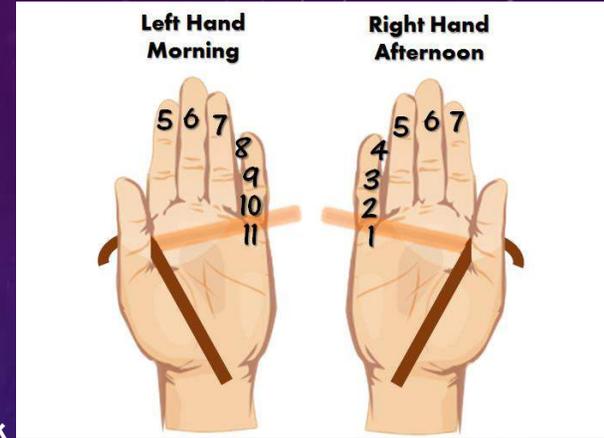


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YOUR HAND, A SUNDIAL? JM

The amazing thing about astronomy is that it starts with each one of us literally. You can make a sundial to tell time using a) your hand and b) a stick.

- Place the stick at the junction of your thumb and pointer finger. Use your left hand in the morning and your right hand in the afternoon.
- Hold the stick off of your hand at the angle of your latitude. (For people in San Jose, that's about 40°. So you'd hold the stick about half way between your palm and an imaginary perpendicular line.)
- Face south so that the stick faces north or towards you.
- Look to see where the shadow falls and use the figure to find the time.



TRIVIA QUIZ

Which of these planets does not have a natural satellite?

- Earth
- Mars
- Mercury
- Neptune

Who was the first American in space?

- Yuri Gagarin
- Alan Shepard
- Neil Armstrong
- John Glenn

Who was the first woman in space?

- Tatyana Kuznetsova
- Valentina Tereshkova
- Sally Ride
- Zhanna Yorkina

Which countries have sent space missions to land/crash on the moon?

- USA, Russia, India, China
- USA, Russia, India, Japan
- USA, Russia, China, UK
- USA, Russia, Japan, UK

Answer to last month's puzzle: The first man on the moon was Neil Armstrong

Please comment at:

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Photo courtesy of Wikipedia Commons, Microsoft, Alex Parker at Spacecoalition.com; Data courtesy of various Internet newspapers/websites



ASTROSPECIAL PHOTOGRAPHY OF THE SKIES



JM

Our sky is beautiful. So beautiful that we yearn to captivate and hold on to its magic forever. And, one of the best ways to do this is through photography. Whether you wish to enter a contest, use it for an assignment, or even boast to your friends, taking photos of the stars is the answer to your problems.

PHOTOS WITH A CELL PHONE OR SIMPLE DIGITAL CAMERA:

Your choices are few. To put it simply, cell phones were not made to be cameras and Simple Digital Cameras were not made to take photos of the sky. But here are some things you can still do:



Photograph the Moon:

1. Aim your camera at the moon.
2. Use the manual adjustment for exposure and reduce the exposure till the moon looks less blurry. If you have ISO or shutter speed settings, set a low ISO of 50 and a fast shutter speed between 1/250 and 1/750 to avoid graininess and blurriness respectively.
3. Take the photo!

Photograph the Stars:

1. Place camera on tripod and aim the camera at the sky.
2. Set the shutter speed to 20 seconds or more. Lock the exposure once you find the right ISO for this shutter speed.
3. Take the photo!

PHOTOS WITH A HIGH-END CAMERA, DIGITAL SLR:

Your choices are endless. You just need a tripod and a remote control or shutter release cable. Digital SLR cameras are what the pros use.



1. Set your camera to bulb.
2. Use a lens with a large aperture. Set the camera at a high ISO of 800 to 1600. To find the shutter speed, divide 600 by the focal length of the lens you are using. Set the shutter speed to the result.
3. Take the photo!



ASTROSPECIAL PHOTOGRAPHY OF THE SKIES



JM

EDITING:

- Stacking: Stack your photos to either a) create star trails by stacking consecutive images or b) make the photo clearer by stacking similar images.
- Clearness:
 - Alternatingly adjust curves and levels. (Adobe Photoshop, Pixlr.com)
 - Increase the boost.
 - Increase the contrast and adjust the brightness (Exposure option).
- Adding color: Adjust the levels of blue, red, and green. One example: you can make the saturation high and the temperature red (Color option). You can then set the Cross Process to green and fade it 50%. Finally, you can Tint the image blue and fade the tint by about 90%.

Before



After

HELPFUL APPS/WEBSITES:

For Apple iPhones, you can download apps such as Manual (\$1.99), Camera Sim (\$1.99), or Night Cap (\$0.99). The IOS 8 included camera app allows you to adjust exposure but not ISO or Shutter Speed.

For phones with Google Play like Samsung Galaxies, you can download apps such as Camera FV-5 Lite (lesser photo quality than full version for \$3.95), Shutter Speed (free), or Google Camera App (free, allows exposure adjustment). The Samsung Galaxy included camera app allows you to adjust exposure and ISO but not Shutter Speed.

For stacking photos, you can download StarStax (free, for computers) or Deep Sky Stacker (free, for computers).

For clearness and adding color, use Adobe Photoshop (if you are lucky enough to already own it) or a free online editor such as www.picmonkey.com, www.ribbet.com, or www.pixlr.com. The example above is using Picmonkey.

NOTE: This list is not comprehensive. We also are not affiliated with these websites/apps or take any responsibility for their quality/malfunctions. If you have any recommendations for other websites/apps, please comment at www.evc-cit.info/astronews or email us at evc.astronews@gmail.com.