RCA Comology/Astrophysics

Latest News
October 23, 2013 Meeting

Impact Theory Gets Whacked

- Science October 11, 2013 page 183
- Planetary scientists thought they had explained what made the moon, but ever-better computer models and rock analyses suggest reality was messier than anyone expected
- Oxygen isotopes...

Super-luminous supernovae on the rise

- Nature: October 17, 2013 pages7 310 & 346
- New observations suggest that certain extremely bright supernovae are not the nuclear explosions of very massive stars. Instead, they may ordinary – mass events lit up by a potent fountain of magnetic energy

India Aims a Probe at Mars – And At Earhly Prestige

- Science: September 20, 2013, page 1328
- Mangalyaan – Mass spectrometer to see methane, Infrared spectromoter, Camera, photometer – hydrogen/deuterium ratio
- Launch as early as Oct 21, 2013
- Leave Earth orbit November 30, 2013
- To reach Mars late September 2014
- Might see comet collision in late 2013

A strong magnetic field around the supermassive black hole at the center of the Galaxy

- Nature: September 19, 2013 page 391
- Fast rotating pulsar with strong magnetic field close to black hole – explains emissions

Linear Structures in the Core of the Coma Cluster of Galaxies

- Science: September 20, 2013 page 1365
- Chandra X-ray Observatory observations of the Coma cluster core show the presence of quasi-linear high-density arms spanning 150 kiloparsecs...magnetic fields are presumably responsible...

Europe's Star Power: The Gaia spacecraft will soon launch on a mission to chart the heavens in unprecedented detail

- Nature: October 3, 2013, page 22
- High prescision maps from 2.5 million stars near Earth, and at least 1 billion to the edge of the Milky Way and beyond.
- Will measure distance accurate to 1% for 2.5 million stars
- 900 megapixel camera, 60 micro-arc-seconds
- May discover some planets from star wobble
- Launch ~ November 20, 2013, 5 year mission

An Ear to the Big Bang

- Scientific American: October 2013, page 41
- Gravitational waves to be detected
- Might be able to “see” inside black holes
- LIGO and LISA

Cold Atom Cosmology

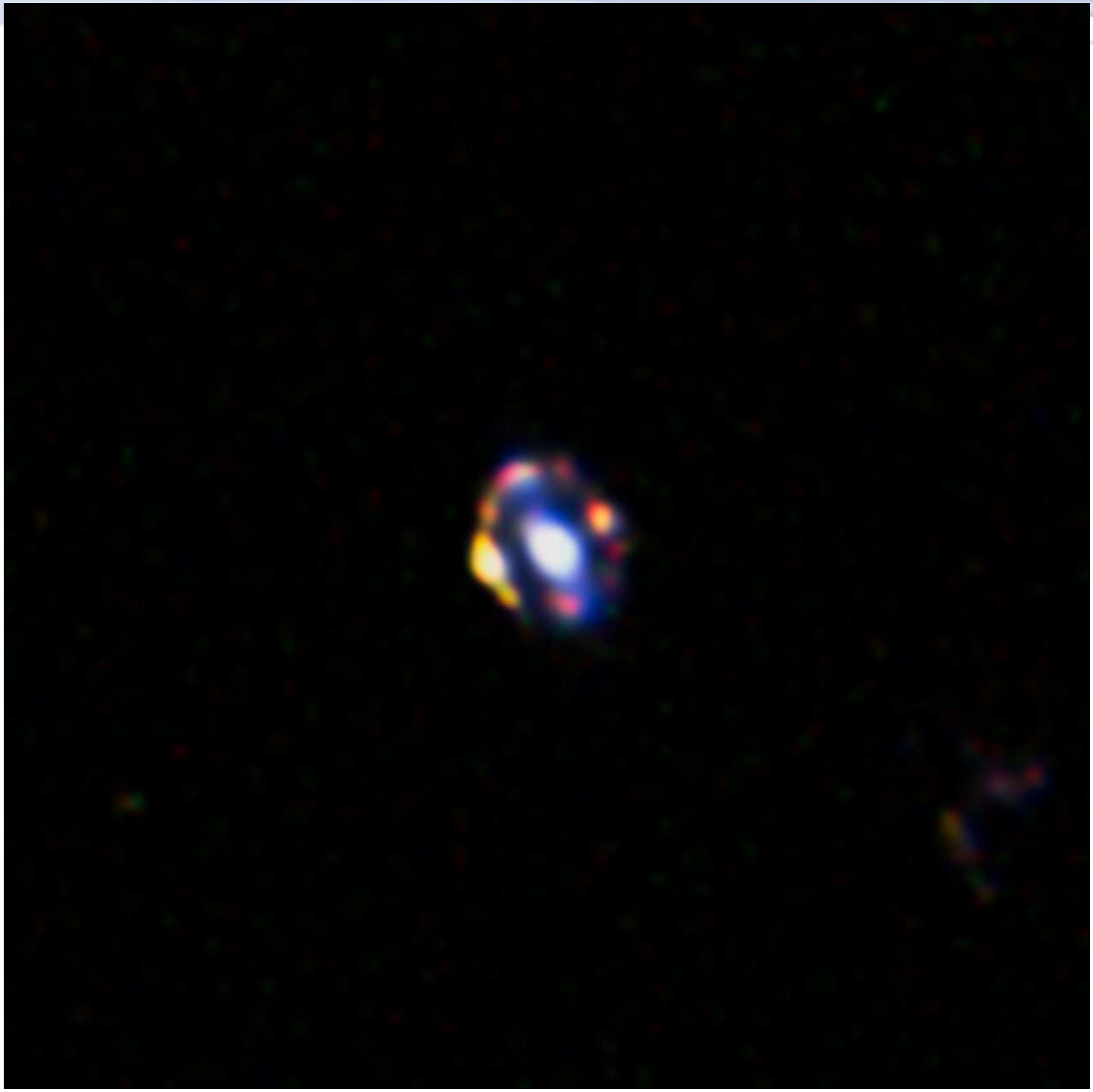
- Science: September 13, 2013 pages 1188&1213
- Acoustic oscillations in ultracold quantum degenerate gas
- Sakharov oscillations – in primordial plasma

Supervolcanoes within an ancient volcanic province in Arabia Terra, Mars

- Nature: October 3, 2013 page 47
- Other eroded topographic basins in the ancient Martian highlands that have been dismissed as degraded impact craters should be reconsidered as possible volcanic constructs formed in an early phase of widespread, disseminated magmatism on Mars

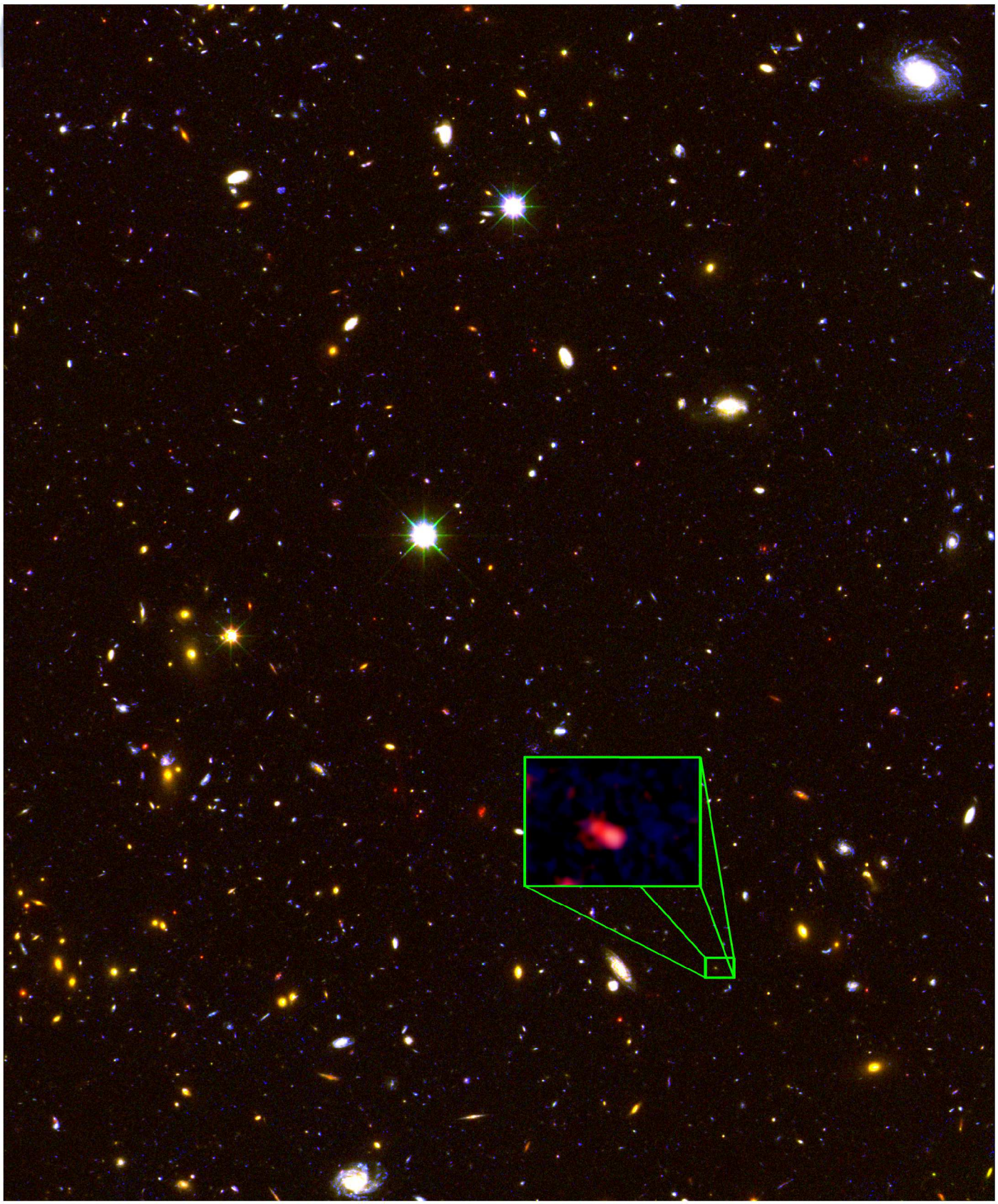
Most Distant Gravitational Lens Helps Weigh Galaxies and Deepens a Galactic Mystery

- hubblesite.org
- October 17, 2013: An international team of astronomers has found the most distant gravitational lens yet a galaxy that, as predicted by Albert Einstein's general theory of relativity, deflects and intensifies the light of an even more distant object. The discovery provides a rare opportunity to directly measure the mass of a distant galaxy. The observation also poses a mystery: lenses of this kind should be exceedingly rare. Given this and other recent finds, astronomers either have been phenomenally lucky or, more likely, they have underestimated substantially the number of small, very young galaxies in the early universe.



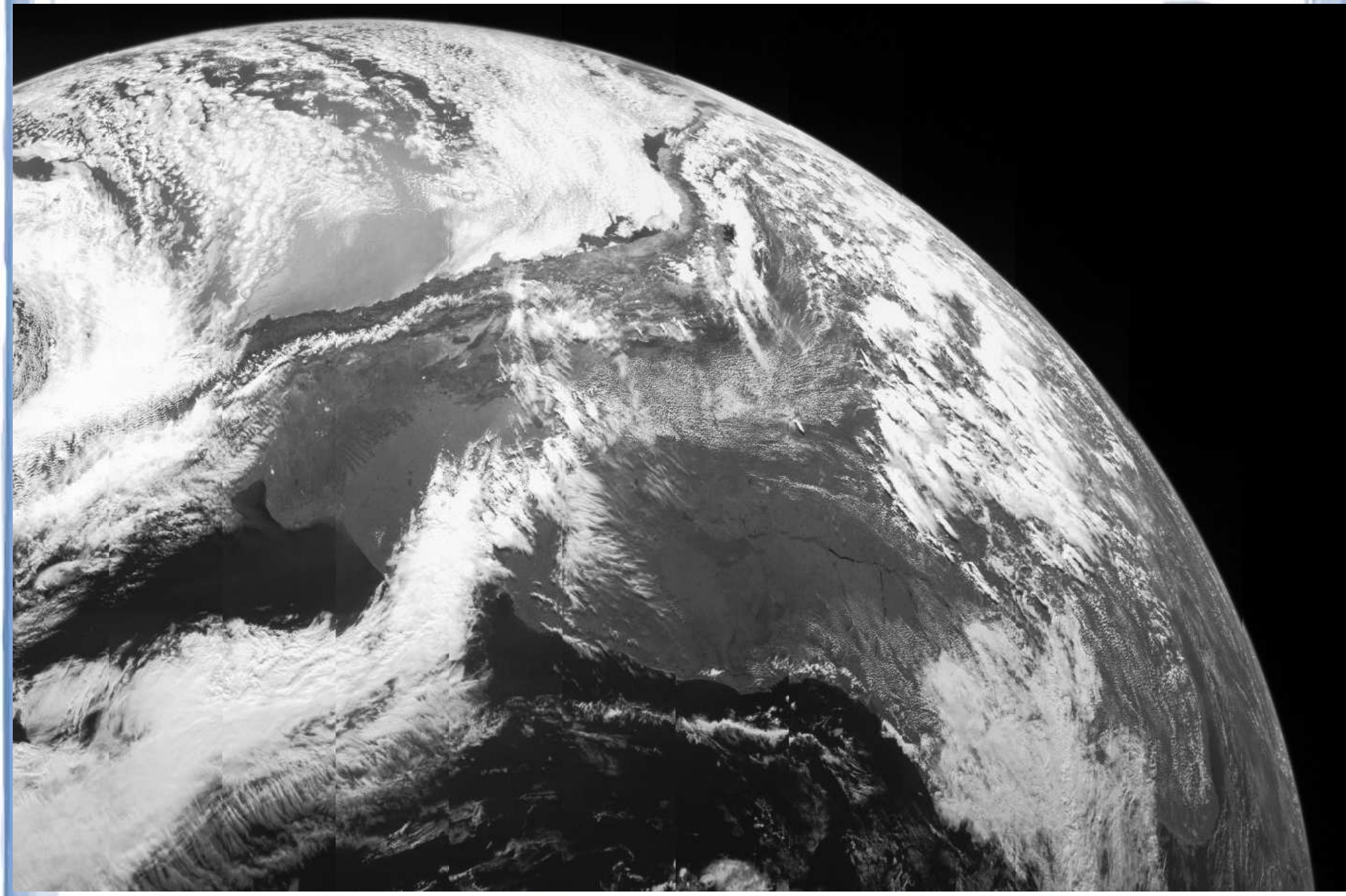
Galaxy Found in Hubble Survey Has Farthest Confirmed Distance

- hubblesite.org
- October 23, 2013: A team of astronomers has discovered a galaxy that sets the current distance record for galaxies whose distance has been definitively measured by spectroscopic redshift. The galaxy is seen as it was at a time just 700 million years after the Big Bang, when the universe was only about 5 percent of its current age of 13.8 billion years. This galaxy and dozens of others were selected for follow-up observations from the approximately 100,000 galaxies discovered in the Hubble Space Telescope CANDELS survey (Cosmic Assembly Near-infrared Deep Extragalactic Legacy Survey). The team used the Keck I Telescope in Hawaii to measure the redshift of the CANDELS galaxy, designated z8_GND_5296, at 7.51. This is the highest galaxy redshift ever confirmed. The spectral redshift of galaxies is caused by the expansion of space from the Big Bang.

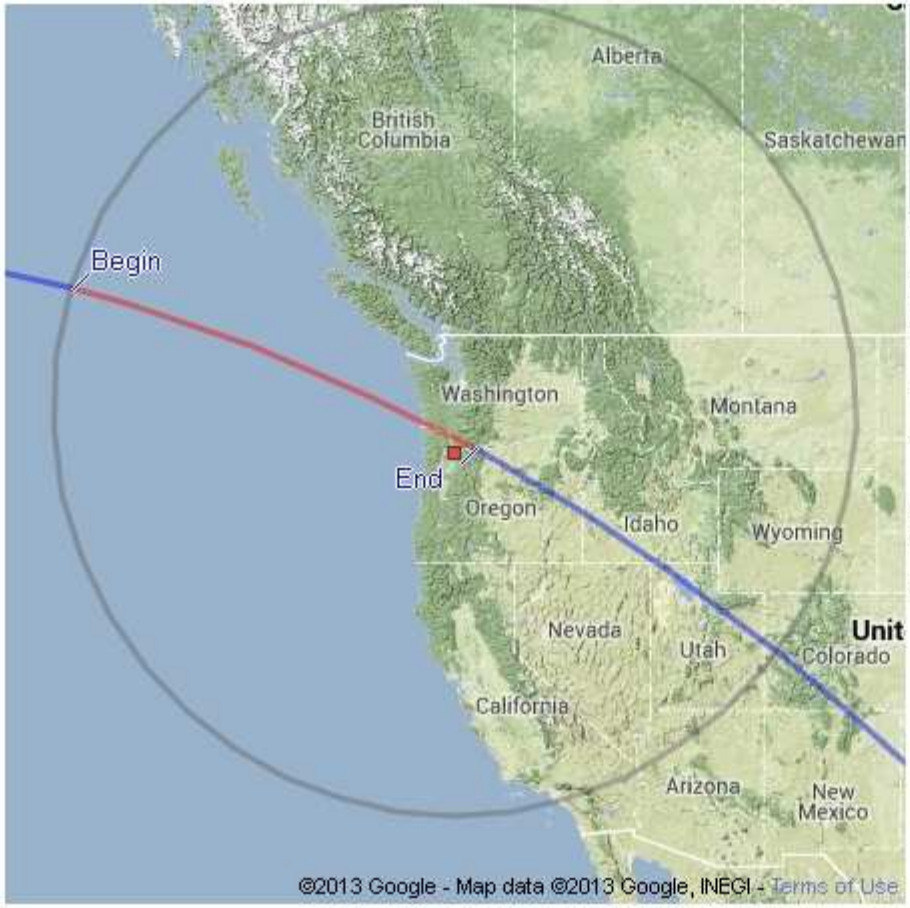


Juno fly-by takes picture of Earth

- nasa.gov/news
- On Oct. 9, Juno flew by Earth using the home planet's gravity to get a boost needed to reach Jupiter. The JunoCam caught this image of Earth, and other instruments were tested to ensure they work as designed during a close planetary encounter. The Juno spacecraft was launched from NASA's Kennedy Space Center in Florida on Aug. 5, 2011. Juno’s rocket, the Atlas 551, was only capable of giving Juno enough energy or speed to reach the asteroid belt, at which point the Sun’s gravity pulled Juno back toward the inner solar system. The Earth flyby gravity assist increases the spacecraft’s speed to put it on course for arrival at Jupiter on July 4, 2016.



Date	Begin	End	Duration	Loc.time	Brightness
23.10.2013	19:54:32	19:57:56	3:24	UTC-7	-3.2 mag



	Begin	Maxim.	End
Loc.time:	19:54:32	19:57:50	19:57:56
Direction:	WNW	NNE	ENE
Altitude:	10°	83°	80°

The grey circle indicates the area where the Space Station is at least 10° above the horizon.

The red line shows where the ISS is sunlit and visible.

On the blue line the ISS is in the Earth's shadow and invisible or it is less than 10° above the horizon.