

Space News Update – October 2013

By Pat Williams

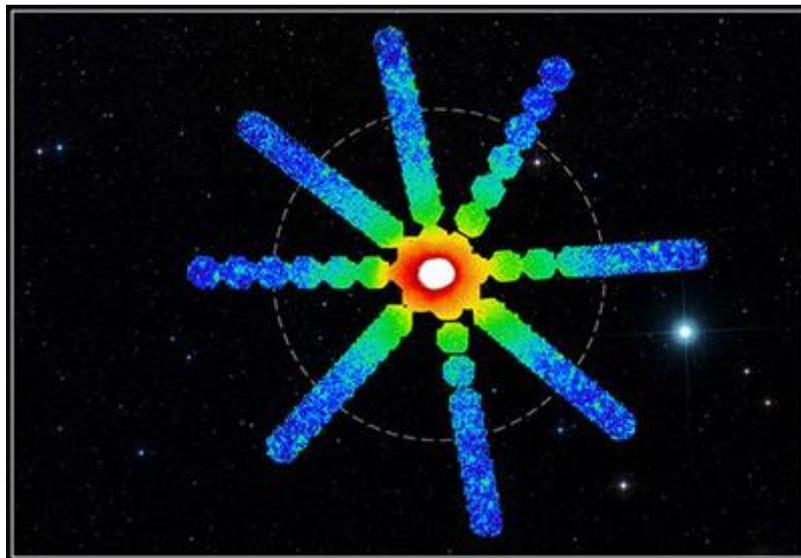
A Scottish space success story: congratulations to Craig Clark as his satellite UKube-1 is shipped to Moscow and thence to Baikonur for launch in February 2014. I first met Craig at the UK Space Conference in 2011 when he won the Arthur C Clarke Award for Space Commerce. He founded his firm Clyde Space in 2005 having re-mortgaged his house. His company is now the largest indigenous space company in Scotland.

<http://frontiersmagazine.org/scotlands-satellite-heading-for-lift-off/>

- The Turbulent Youth of the Universe.
- How Microgravity Affects the Human Body.
- Retrieving Rubbish from the ISS.
- Speedy Data.
- Dark Matter.
- Observations of a 960 Year Old Pulsar.
- Martian Meteorites Come From Mars.

EVIDENCE THAT THE BUILDING BLOCKS OF STARS, PLANETS AND LIFE RESULTED FROM THE TURBULENT AND VIOLENT YOUTH OF THE UNIVERSE.

Traces of iron spread evenly between the galaxies of the giant Perseus cluster supports the theory that the universe underwent a turbulent and violent youth more than 10 billion years ago. This evidence was found using observations of the nearby Perseus cluster of galaxies with the Suzaku satellite.



Suzaku observed the Perseus Cluster along 8 directions for two weeks. (courtesy: "NASA/ISAS/DSS/O.Urban al., MNRAS)

31st October 2013 - Source: JAXA.

http://www.jaxa.jp/press/2013/10/20131031_suzaku_e.html

HOW MICROGRAVITY AND RADIATION AFFECTS THE HUMAN BODY.

1. We age faster!

Experiments conducted aboard the International Space Station show that endothelial cells lining blood vessels are affected by microgravity causing inflammation leading to atherosclerosis (which causes heart attacks and strokes) and cell senescence (accelerating the ageing process). It is anticipated that these results will contribute to finding preventive measures to improve the quality of life here on Earth as well as for those journeying to Mars and beyond.

31st October 2013 - Source: Federation of American Societies for Experimental Biology.

http://www.eurekalert.org/pub_releases/2013-10/foas-hwh103113.php

2. Eye changes.

Just 13 days in space may be enough to cause profound changes in eye structure and eye genes. Scientists aboard the Space Shuttle Endeavour are reporting that mice showed evidence of ocular nerve damage and changes in eye gene expression. While the retinal and lens changes partially resolved on return to Earth the ocular nerve damage did not. Since 2001, studies have shown that astronauts are at increased risk of developing eye problems such as premature age-related macular degeneration. The cause may be low gravity, radiation or each of these combined. Further studies are needed.

24th October 2013 - Source: Houston Methodist.

<http://www.houstonmethodist.org/methodist.cfm?xyzpdqabc=0&id=495&action=detail&ref=1117>

HOW THE INTERNATIONAL SPACE STATION WILL RECEIVE SUPPLIES AND INCINERATE ITS RUBBISH.

After the successful demonstration mission when the unmanned Cygnus D1 spacecraft rendezvoused and berthed with the International Space Station for 30 days, the owner Orbital is contracted to deliver 20,000 kgs of cargo over 8 missions in 2016. The return flight on 22nd October 2013 saw the 785 kg. disposal cargo burn up in the atmosphere, below the ISS, on re-entry.



23rd October 2013 - Source: Orbital Sciences.

<http://www.orbital.com/antares-cygnus/>

A NEW RECORD SPEED FOR TRANSMITTING DATA OVER 23,900 MILES FROM MOON TO EARTH.

NASA's Lunar Laser Communication Demonstration (LLCD) has made history using a pulsed laser beam to transmit data at a record breaking download rate of 622 Mbps and an upload rate of 20Mbps. Previously NASA had used radio waves. When fully operational laser technology will allow for increased image resolution and 3-D video transmission from deep space.

22nd October 2013 - Source: NASA.

<http://www.engadget.com/2013/10/24/nasa-llcd-data-transmission-record/>

SEEKING DARK MATTER HERE ON EARTH.

A mile underground in the Black Hills of Dakota the Large Underground Xenon (LUX) experiment seeks WIMPs. After its first three month run none have yet been found but scientists are optimistic that LUX gives them the best chance of doing so. Dark matter, so far observed only by its gravitational effects on galaxies and clusters of galaxies, is the predominant form of matter in the universe. Weakly interacting massive particles or WIMPs, so-called because they rarely interact with ordinary matter except through gravity, are the leading theoretical candidates for dark matter. The mass of WIMPs is unknown.

30th October 2013 - Source: Sanford Underground Research Facility.

<http://sanfordlab.org/article/1612>

JODRELL BANK OBSERVES A 960 YEAR OLD PULSAR FOR 22 YEARS.

A massive cosmic explosion in AD1054 resulted in the neutron star known as the Crab Pulsar. 25 km across it has a mass of nearly one million Earths. It emits pairs of radio waves that flash each time it rotates. The observations show that the spacing of these pulses is increasing by 0.6 degrees per century. This is an unexpectedly large rate of evolution. The scientists have shown that this means that the magnetic pole is moving towards the equator.

31ST October 2013 - Source: University of Manchester.

<http://www.manchester.ac.uk/aboutus/news/display/?id=10990>

MARS CURIOSITY CONFIRMS THE ORIGINS OF MARTIAN METEORITES.

A new measurement of Mars's atmosphere provides a way to determine whether or not a meteorite is of Martian Origin. On Mars the ratio of Argon-36 and Argon-38 is skewed because much of the planet's lighter Argon was lost to space. Argon exists throughout the solar system.



Thank you to Caroline Smith who allowed HAS to view and photograph
the Natural History Museum Martian Meteorite.

16th October 2013 - Source: American Geophysical Union.

<http://news.agu.org/press-release/curiosity-confirms-origins-of-martian-meteorites/>