

Space News Update – February 2014

By Pat Williams

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PUBLIC GLOBAL SPENDING ON SPACE DECREASES FOR THE FIRST TIME IN 20 YEARS

Global budgets for space programs in 2013 dropped by \$1.8 billion from \$72.9 billion in 2012. This is as a direct result of the cyclical nature of countries investment in space-based infrastructure combined with the tough economic times. There are, however, many positive signs that the level of spending will recover.

In 2013, 58 countries invested \$10 million or more in space applications and technology, compared to 53 in 2011 and 37 in 2003. 22 more countries have been identified with plans for space investment.

Many countries have called for wider private sector involvement including in areas until now reserved for government initiatives.

<http://www.euroconsult-ec.com/news/press-release-33-1/87.html>

13 February 2014 – Source: Euroconsult

BILLIONAIRE “ASTROPRENEUR” INVESTORS LOOK BEYOND EARTH

“Investment in commercial space flight has become one of the big trends among the super-rich,” says Liam Bailey, head of global research at Knight Frank. The property agency has identified more than 70 ultra-high net worth individuals – people with at least \$30m in net assets investing in commercial space travel, 13 of whom are billionaires with a combined wealth of \$175bn.

There are about 10 private companies engaged in space transport at present, including [SpaceX](#), created by billionaire PayPal co-founder [Elon Musk](#), and Blue Origin, founded by Amazon's chief executive [Jeff Bezos](#). Space tourism, driven by companies such as [Sir Richard Branson's Virgin Galactic](#) and Jeff Greason's XCOR Aerospace, aims to give the super wealthy a taste of what it is like to be an astronaut by sending them into suborbital space. Aboard Virgin Galactic's [SpaceShipTwo](#), passengers will see the view that eluded mankind until 50 years ago, and one that only about 500 people have seen in reality: the curvature of the Earth set against the blackness of space. Closer to home suborbital travel could cut journey times around the world for example from London to Sydney to just a couple of hours.

<http://www.ft.com/cms/s/2/a441d9bc-9d65-11e3-a599-00144feab7de.html#axzz2vYP34i6q>

28 February 2014 – Source: The Financial Times.

RED STAR RISING: CHINA'S ASCENT TO SPACE SUPERPOWER



June 2013 Taikonauts Return to Earth after 15 Days in Space (Image: ChinaFotoPress)

Since its first manned mission in 2003, by June 2013 China had sent 10 taikonauts and six spacecraft into space. On 14 - Dec. 2013 the Chang'e-3 lunar probe soft-landed on the Moon. Yutu (Jade Rabbit) separated from the lander hours later. The success of the Chang'e-3 mission makes China the third country to soft-land a spacecraft on lunar soil after the United States and the former Soviet Union. Of 130 lunar probe activities around 51% have been successful. Despite concerns that Jade Rabbit would not awaken from enforced sleep when it was in darkness with no solar power it has each time come back to life, albeit with diminished capacity. China has great space ambitions. See links below:

<http://www.space.com/24832-china-moon-rover-lander-hibernation.html>

<http://strategicstudyindia.blogspot.co.uk/2014/02/red-star-rising-chinas-ascent-to-space.html>

http://news.xinhuanet.com/english/china/2014-01/25/c_133073239.htm

<http://news.sky.com/story/1210751/chinas-jade-rabbit-rover-comes-back-to-life>

27 February 2014 Sources: Space.com - Leonard Davies; Indian Strategic Studies – Phil McKenna (12 February); Xinhuanet (15 January) and Sky News (17 February)



New undated imagery taken by the mechanically challenged Yutu moon rover shows the large Chang'e 3 lander, purportedly taken during the robot's third lunar day. Credit: SASTIND

“GRAVITY” WINS 7 OSCARS. TIM PEAKE DESCRIBES HOW THE JETPACK IS AVAILABLE TO HELP AN ASTRONAUT RECOVER WHEN TUMBLING THROUGH SPACE



Unlike Sandra Bullock's predicament in 'Gravity', where she is left to fall at the mercy of the laws of physics until rescued by George Clooney, there are other options open to astronauts

02 March 2014 Source: The Telegraph

THE GLOBAL PRECIPITATION MEASUREMENT CORE OBSERVATORY SUCCESSFULLY LAUNCH



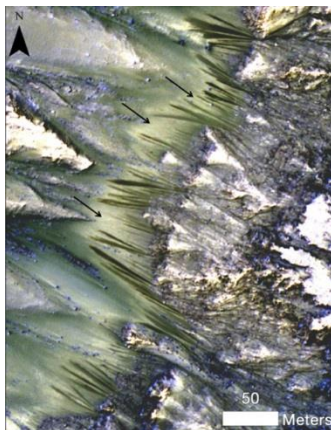
A Japanese H-IIA rocket with the NASA-Japan Aerospace Exploration Agency (JAXA) Global Precipitation Measurement (GPM) Core Observatory on-board is seen launching from the Tanegashima Space Center in Tanegashima, Japan. Image Credit: NASA/Bill Ingalls

The first NASA Earth science mission of 2014 is the Global Precipitation Measurement (GPM) Core Observatory, a joint satellite project with the Japan Aerospace Exploration Agency (JAXA). The mission inaugurates an unprecedented international satellite constellation that will produce the first nearly global observations of rainfall and snowfall. This new information will help answer questions about our planet's life-sustaining water cycle, and improve water resource management and weather forecasting.

http://www.nasa.gov/press/2014/february/nasa-and-jaxa-launch-new-satellite-to-measure-global-rain-and-snow/#.Ux3Ejfl_uSp

27 February 2014 Source: NASA

MARS ORBITER SEES CLUES TO POSSIBLE WATER FLOWS



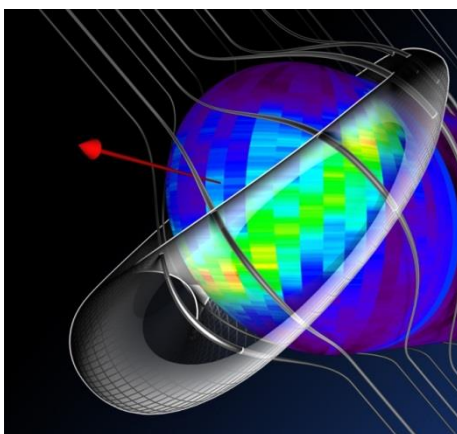
Dark, seasonal flows emanate from bedrock exposures at Palikir Crater on Mars in this image from the High Resolution Imaging Science Experiment (HiRISE) camera on NASA's Mars Reconnaissance Orbiter. Image credit: NASA/JPL-Caltech/Univ. of Arizona

NASA spacecraft orbiting Mars have returned clues for understanding seasonal features that are the strongest indication of possible liquid water that may exist today on the Red Planet. The features are dark, finger-like markings "recurring slope lineae" or RSL that advance down some Martian slopes when temperatures rise. These are the strongest indication of possible liquid water that may exist today on the Red Planet. The new clues include corresponding seasonal changes in iron minerals on the same slopes and a survey of ground temperatures and other traits at active sites. These support a suggestion that brines with an iron-mineral antifreeze, such as ferric sulphate, may flow seasonally, though there are still other possible explanations.

<http://www.jpl.nasa.gov/news/news.php?release=2014-042>

10 February 2014 Source: NASA

THE MAGNETIC SYSTEM BEYOND THE SOLAR WIND



A model of the interstellar magnetic fields – which would otherwise be straight - warping around the outside of our heliosphere, based on data from NASA's Interstellar Boundary Explorer. The red arrow shows the direction in which the solar system moves through the galaxy. Image Credit: NASA/IBEX/UNH

The heliosphere is formed as the constant stream of particles from the sun's solar wind flows outward in all directions until it slows down to balance the pressure from the interstellar wind. The only information gathered directly from the heart of this complex boundary region is from NASA's Voyager mission. Voyager 1 entered the boundary region in 2004, passing beyond the termination shock where the solar wind abruptly slows down. Voyager 1 crossed into interstellar space in 2012. IBEX, which orbits Earth, studies these regions from afar. The spacecraft detects energetic neutral atoms that form from interactions at the heliosphere's boundaries – an area that holds fascinating clues to what lies beyond. These interactions are dominated by electromagnetic forces. The IBEX Observations shows that the heliopause that separates solar and interstellar plasmas is very long, maybe 2 trillion miles in the downwind direction, and therefore may affect the transport of high-energy cosmic rays toward the solar system.

<http://www.nasa.gov/content/goddard/ibex-paints-picture-of-magnetic-system-beyond-solar-wind/>

13 February 2014 Source: NASA

MASSIVE NEUTRINOS

Recent Planck spacecraft observations of the Cosmic Microwave Background (CMB) – the fading glow of the Big Bang – allow scientists to accurately measure the amount of matter in the Universe. An inconsistency arises when large scale structures such as the distribution of the galaxies are observed. There are fewer galaxy clusters than we would expect and there is a weaker signal from gravitational lensing of galaxies than the CMB would suggest. A possible way of resolving this discrepancy is for neutrinos to have mass. The effect of these massive neutrinos would be to suppress the growth of dense structures that lead to the formation of galaxy clusters. This mass is thought to be less than a billionth of the mass of a proton.

<http://www.manchester.ac.uk/aboutus/news/display/?id=11555>

10 February 2014 Source: Manchester University

IS THE STERILE NEUTRINO RESPONSIBLE FOR DARK MATTER?

The Sterile Neutrino is so named because it has no interaction with other known neutrinos. It does have mass, and so could be responsible for the missing dark matter. Papers published separately from Leiden and Harvard show a tiny spike in the X-ray spectra of galaxies and galaxies clusters at a frequency which cannot be explained by any known atomic transmission. The existence of dark matter was first postulated 80 years ago. Are sterile neutrinos the dark matter particle?

<http://arxiv.org/abs/1402.4119>

17 February 2014 Source: Cornell University

LINKS TO OTHER SPACE NEWS PUBLISHED IN FEBRUARY 2014

05 February 2014 ESO's New Technology Telescope (NTT) Shows the Anatomy of an Asteroid

<http://www.eso.org/public/unitedkingdom/news/eso1405/>

27 February 2014 Distant Asteroid Revealed to be a Complex Mini Geological World

<http://www.seti.org/seti-institute/press-release/distant-asteroid-revealed-be-complex-mini-geological-world>

31st January 2014 Getting Ready for Asteroids

http://www.esa.int/Our_Activities/Operations/Space_Situational_Awareness/Getting_ready_for_asteroids

27 February 2014 Astronauts Space Suits

http://www.newscientist.com/article/dn25133-spacesuit-future-looks-sleek-speedy-and-commercial.html#.Ux3z5fl_uSq

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28 February 2014 New Fast and Furious Black Hole

[New fast and furious black hole found](#)

28 February 2014 NEOWISE Spies its First Comet

<http://www.jpl.nasa.gov/news/news.php?release=2014-067>

19 February 2014 Rare Form of Nitrogen in Comet ISON

<http://www.naoj.org/Pressrelease/2014/02/19/>

06 February 2014 Heavy Metal in the Early Cosmos

<https://www.tacc.utexas.edu/news/feature-stories/2014/heavy-metal-in-the-early-cosmos>

11 February 2014 Earth-imaging Satellites Launch from the International Space Station

http://www.nasa.gov/mission_pages/station/research/news/flock_1/

26 February 2014 Kepler Discovers 715 New Exoplanets

http://science.nasa.gov/science-news/science-at-nasa/2014/26feb_multiplication/

06 February 2014 Gaia Comes Into Focus

http://www.esa.int/Our_Activities/Space_Science/Gaia/Gaia_comes_into_focus

12 February 2014 Four New Galaxy Clusters Take Researchers Further Back in Time

http://www3.imperial.ac.uk/newsandeventspggrp/imperialcollege/newssummary/news_12-2-2014-9-55-3

28 February 2014 Fat or Flat – Getting Galaxies in to Shape

<http://www.icrar.org/home/fat-or-flat-getting-galaxies-into-shape>

25 February 2014 Bullying Black Holes Force Galaxies to Stay Red and Dead

<http://sci.esa.int/herschel/53732-bullying-black-holes-force-galaxies-to-stay-red-and-dead/>

26 February 2014. Cancer Targeted Treatments from the International Space Station Discoveries.

http://www.nasa.gov/mission_pages/station/research/news/microencapsulation/#.Ux3rFfl_uSo

04 February 2014 Testing the Cloud-Aerosol Transport System (CATS) in Space: Laser Technology to Debut on the International Space Station

http://www.nasa.gov/mission_pages/station/research/news/cats_in_space/

05 February 2014 Mars Orbiter Examines Dramatic New Crater

<http://www.jpl.nasa.gov/news/news.php?release=2014-037>

12 February 2014 NASA's Mars Odyssey to Observe the Atmosphere in Different Seasons

<http://www.jpl.nasa.gov/news/news.php?release=2014-047>

06 February 2014 MESSENGER Surpasses 200,000 Orbital Images of Mercury

<http://phys.org/news/2014-02-messenger-surpasses-orbital-images-mercury.html>

20 February 2014 Europe's Planet Hunting Mission Gets the Green Light

<http://www.bis.gov.uk/ukspaceagency/news-and-events/2014/Feb/plato-green-light>

12 February 2014. A Drastic Chemical Change in the Birth of a Planetary System – ALMA

<http://www.almaobservatory.org/en/press-room/press-releases/670-astronomers-discovered-a-drastic-chemical-change-in-the-birth-of-a-planetary-system>

27 February 2014 Radiation and Gravity – A Double Whammy

http://www.nasa.gov/mission_pages/station/research/news/micro7/

05 February 2014 Remarkable Recurrent Nova in M31

<http://www.ljmu.ac.uk/NewsUpdate/viewarticle/1281/>

10 February 2014 Astronomers Discover the Oldest Star

<http://www.theguardian.com/science/2014/feb/10/australian-astronomers-discover-oldest-known-star-in-universe>

12 February 2014 How Stellar Death Can Lead to Twin Celestial Jets

<http://www.rochester.edu/news/show.php?id=8322>

11 February 2014 360 Degree View of Saturn's Auroras

<http://www.jpl.nasa.gov/news/news.php?release=2014-044>

12 February 2014 Prehistoric Cave Pigment to Shield ESA's Solar Probe

http://www.esa.int/Our_Activities/Space_Engineering/Prehistoric_cave_pigment_to_shield_ESA_s_Solar_Orbiter

05 February 2014 Study Finds that the Early Universe Warmed Up Later than Previously Believed

<http://www.aftau.org/site/News2?page=NewsArticle&id=19685>