

Space News Update – March 2015

By Pat Williams

THIS EDITION AND ALL FUTURE EDITIONS WILL BE IN WORD FORMAT TO ENABLE READERS TO CUT AND PASTE ITEMS OF PERSONAL INTEREST.

IN THIS EDITION:

- Space station crew returns to Earth and year in space starts for two astronauts.
- A spin-off from space helps diagnose skin cancer.
- Rosetta makes first detection of molecular nitrogen at a comet 67P.
- DAWN becomes first spacecraft to orbit a dwarf planet.
- Why do solar flares explode? – Magnetospheric Multiscale Mission blasts off.
- Rapid return of payloads from space.
- Links to other space and astronomy news published in March 2015.

Disclaimer - I claim no authorship for the printed material; except where noted.

SPACE STATION CREW 41/42 RETURNS AND YEAR IN SPACE STARTS FOR 2/3 OF CREW 43



Return at Sunrise

Thursday 12th March, shortly after local sunrise over central Asia, this [Soyuz spacecraft](#) floated over a sea of golden clouds during its descent by parachute through planet Earth's dense atmosphere. [On board were](#) Expedition 42 commander Barry Wilmore of NASA and Alexander Samokutyaev and Elena Serova of the Russian Federal Space Agency (Roscosmos). [Touchdown](#) was at approximately 10:07 p.m. EDT (8:07 a.m. March 12, Kazakh time) southeast of Zhezkazgan, Kazakhstan. [The three were returning](#) from low Earth orbit, after almost six months on the International Space Station as members of the Expedition 41 and Expedition 42 crews. Credit; APOD

[Space station crew returns to Earth, lands safely in Kazakhstan](#) (11 March 2015) Three crew members returned to Earth Wednesday after a 167-day mission on the International Space Station (ISS) that included hundreds of scientific experiments and several spacewalks to prepare the orbiting laboratory for future arrivals by U.S. commercial crew spacecraft.

The International Space Station is a convergence of science, technology and human innovation that demonstrates new technologies and makes research breakthroughs that are not possible on Earth. The space station has been continuously occupied since November 2000. In this time, it has received more than 200 visitors and a variety of international and commercial spacecraft. The space station remains the springboard to NASA's next giant leap in exploration.



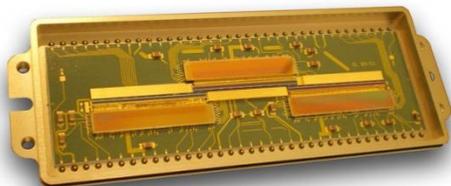
The Soyuz TMA-16M spacecraft is seen as it launches to the International Space Station with Expedition 43's NASA Astronaut Scott Kelly and Russian cosmonauts Mikhail Kornienko and Gennady Padalka of the Russian Federal Space Agency (Roscosmos) on-board Friday, March 27 (Saturday, March 28 Kazakh time) from the Baikonur Cosmodrome in Kazakhstan. Image Credit: NASA/Bill Ingalls

Expedition 43 will perform scientific research in several other fields, such as astrophysics and biotechnology. Among the planned experiments are a study of meteors entering Earth's atmosphere and testing of a new synthetic material that can expand and contract like human muscle tissue. The crew members also are scheduled to greet a host of cargo spacecraft during their mission, including the sixth SpaceX commercial resupply flight and a Russian Progress resupply mission. Each flight will carry several tons of food, fuel, supplies and research. No spacewalks are planned during Expedition 43. [One-year crew set for launch to Space Station](#) (18 March 2015)

[Year in space starts for one American and one Russian](#) (27 March 2015)

Three crew members representing the United States and Russia are on their way to the International Space Station after launching from the Baikonur Cosmodrome in Kazakhstan at 3:42 p.m. EDT Friday (1:42 a.m., March 28 in Baikonur).

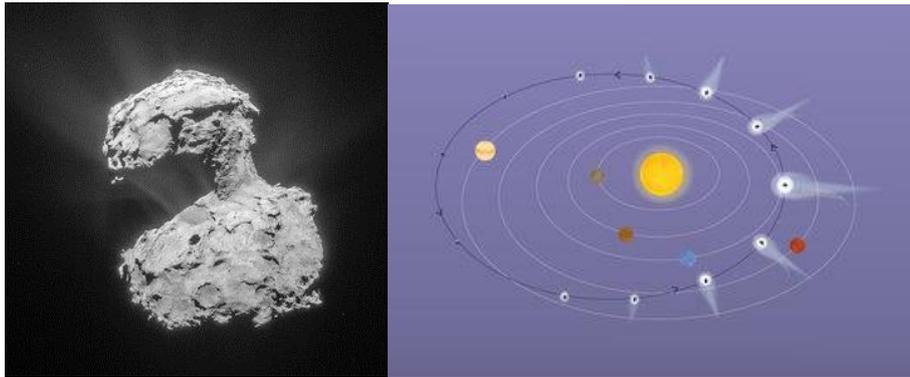
A SPIN-OFF FROM SPACE HELPS DIAGNOSE SKIN CANCER



Infrared sensor developed by Belgium Xenics for ESA's Proba V satellite which the company now has transferred to several terrestrial applications

A high-speed camera for monitoring vegetation from space and combating famine in Africa is being adapted to spot changes in human skin cells, invisible to the naked eye, to help diagnose skin diseases like cancer. Mounted on a standard medical scanner, the space sensor can help doctors to look deeper into human tissues for detecting skin diseases earlier. Scanners have been giving detail-rich cross-section images of living tissue for some 20 years, but the space camera's sensitivity at certain wavelengths means it can see deeper to help diagnose skin diseases. "It may still be a few years away but once our sensors start helping doctors to diagnose skin diseases and catch them at earlier stages, then we can all feel doubly proud of this spin-off from space," reflects Koen. [Scanning Earth, saving lives](#) (6 March 2015)

ROSETTA DETECTS NITROGEN AT COMET 67P CHURYUMOV-GERASIMENKO



Comet on 14 March 2015 – NavCam

Comet's orbit

ESA's Rosetta spacecraft has made the first measurement of molecular nitrogen at a comet, providing clues about the temperature environment in which Comet 67P/Churyumov–Gerasimenko formed. The *in situ* detection of molecular nitrogen has long been sought at a comet. Nitrogen had only previously been detected bound up in other compounds, including hydrogen cyanide and ammonia, for example. Its detection is particularly important since molecular nitrogen is thought to have been the most common type of nitrogen available when the Solar System was forming. In the colder outer regions, it likely provided the main source of nitrogen that was incorporated into the gas planets. It also dominates the dense atmosphere of Saturn's moon, Titan, and is present in the atmospheres and surface ices on Pluto and Neptune's moon Triton. It is in these cold outer reaches of our Solar System in which the family of comets that includes Rosetta's comet is believed to have formed. [Rosetta makes first detection of molecular nitrogen at a comet](#) (19 March 2015)

DAWN becomes first spacecraft to orbit a dwarf planet



Ceres is seen from NASA's Dawn spacecraft on March 1, just a few days before the mission achieved orbit around the previously unexplored dwarf planet. The image was taken at a distance of about 30,000 miles (about 48,000 kilometers). Image Credit: NASA/JPL-Caltech/UCLA/MPS/DLR/IDA

NASA's Dawn spacecraft has become the first mission to achieve orbit around a dwarf planet. The spacecraft was approximately 38,000 miles (61,000 kilometers) from Ceres when it was captured by the dwarf planet's gravity at about 4:39 a.m. PST (7:39 a.m. EST) Friday. [NASA spacecraft becomes first to orbit a dwarf planet](#) (6 March 2015)

WHY DO SOLAR FLARES EXPLODE?

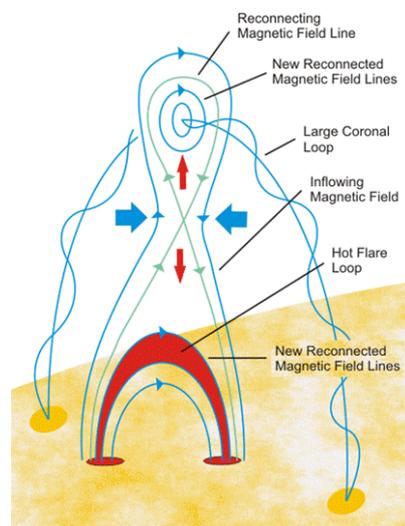


"The Atlas 5 rocket streaked into the sky with NASA's four Magnetospheric Multiscale probes," says Cooper. "It was a beautiful view 40.7 miles north of launch Complex 41." Credit: Ben Cooper

[NASA Goddard provides superfast sensors for new MMS mission](#) (11 March 2015)

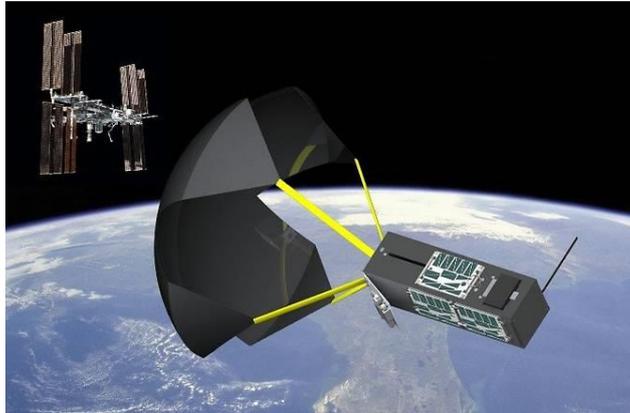
Scheduled to lift off on March 12, 2015, NASA's new Magnetospheric Multiscale, or MMS, mission consists of four identical spacecraft that each carry 25 sensors with unprecedented observational speeds.

Why do solar flares explode? Last night 12th March, NASA launched a fleet of spacecraft to answer that question. Blasting off from Cape Canaveral, the four probes of the Magnetospheric Multiscale (MMS) mission will spend the next 2 years flying in formation around Earth. Their mission: to study magnetic reconnection, the [mysterious process](#) that powers solar flares and geomagnetic storms. The basics are clear enough. Magnetic lines of force cross, cancel, reconnect and—Bang! Magnetic energy is unleashed, with charged-particles flying off near the speed of light. But how? How does the simple act of crisscrossing magnetic field lines trigger such a ferocious explosion?



In the simplest picture, oppositely directed [magnetic field lines](#) that are roughly vertical relative to the solar surface pinch together, where they reconnect and form new field lines that snap both upward and downward, away from the reconnection region (see illustration below). The new, upward-moving field lines form a large coronal loop that may become a [coronal mass ejection \(CME\)](#). The new downward-moving field lines form a relatively compact coronal loop or arcade of loops. This compact loop continues to build up, somewhat like adding more and more layers to an onion, as long as the magnetic reconnection continues above it.

RAPID RETURN OF PAYLOADS FROM SPACE



Graphic rendering of TechEdSat-4 with exo-brake deployed. Exo-brake is an aerodynamic specially-designed parachute-like device that causes the satellite to de-orbit and re-enter Earth's atmosphere.

Image Credit: NASA Ames



The TechEdSat series, a technology education collaboration with San Jose State University and the University of Idaho, uses the standard CubeSat structure, which measures one unit (1U) as approximately four inches cubed (10 centimetres cubed). TechEdSat-4 is a 3U satellite. Image Credit: NASA Ames

[NASA deploys satellite designed to re-enter atmosphere using revamped drag device](#)

(4 March 2015)

NASA mission controllers confirmed that a small satellite launched from the International Space Station at 5:30 p.m. PST on Tuesday, March 3, has successfully entered its orbit, setting the stage to test technology that could enable rapid return of payloads from space.

LINKS TO OTHER SPACE AND ASTRONOMY NEWS PUBLISHED IN MARCH 2015

ASTEROIDS

[Unusual asteroid suspected of spinning to explosion](#) (19 March 2015)

A team led by astronomers from the Jagiellonian University in Krakow, Poland, recently used the W. M. Keck Observatory in Hawaii to observe and measure a rare class of “active asteroids” that spontaneously emit dust and have been confounding scientists for years.

[NASA announces next steps on journey to Mars: progress on asteroid initiative](#)

(25 March 2015)

NASA Wednesday announced more details in its plan for its Asteroid Redirect Mission (ARM), which in the mid-2020s will test a number of new capabilities needed for future human expeditions to deep space, including to Mars.

[Asteroid hunter spacecraft data available to public](#) (26 March 2015)

Millions of images of celestial objects, including asteroids, observed by NASA's Near-Earth Object Wide-field Infrared Survey Explorer (NEOWISE) spacecraft now are available online to the public.

[OSIRIS-REx mission passes critical milestone](#) (31 March 2015)

NASA's ground-breaking science mission to retrieve a sample from an ancient space rock has moved closer to fruition.

[ESA's planetary defence test set for 2020](#) (31 March 2015)

If an asteroid were spotted headed towards Earth, what could humanity do about it?

ASTROPHYSICS

[South Pole Telescope expands cosmic search](#) (23 March 2015)

Down at the South Pole, where temperatures drop below negative 100 degrees Fahrenheit and darkness blankets the land for six months at a time, the South Pole Telescope (SPT) searches the skies for answers to the mysteries of our universe.

BLACK HOLES

[Chandra observatory finds cosmic showers halt galaxy growth](#) (4 March 2015)

Using NASA's Chandra X-ray Observatory, astronomers have found that the growth of galaxies containing supermassive black holes can be slowed down by a phenomenon referred to as cosmic precipitation.

[Black hole winds pull the plug on star formation](#) (25 March 2015)

Astronomers using ESA's Herschel space observatory have found that the winds blowing from a huge black hole are sweeping away its host galaxy's reservoir of raw star-building material.

[Best view yet of dusty cloud passing galactic centre black hole](#) (26 March 2015)

The best observations so far of the dusty gas cloud G2 confirm that it made its closest approach to the supermassive black hole at the centre of the Milky Way in May 2014 and has survived the experience.

CENTAURS

[A second minor planet may possess Saturn-like rings](#) (17 March 2015)

There are only five bodies in our solar system that are known to bear rings. The most obvious is the planet Saturn; to a lesser extent, rings of gas and dust also encircle Jupiter, Uranus, and Neptune.

COMET

[Lots of light and little shadow on 67P Churyumov-Gerasimenko](#) (3 March 2015)

On 14 February 2015, the Optical, Spectroscopic and Infrared Remote Imaging System (OSIRIS) on the Rosetta spacecraft observed the surface of comet 67P Churyumov-Gerasimenko with the Sun directly behind it, so the only shadow seen in the image is that of the photographer, the orbiter itself.

[Rapid changes in a comet's plasma tail](#) (4 March 2015)

Images from a December 2013 observation of the comet C/2013 R1 (Lovejoy) reveal clear details about rapidly changing activity in that comet's plasma tail.

[Waiting for a signal from Philae](#) (10 March 2015)

It would be very lucky if a signal were to be received from Rosetta's Philae lander at 05:00 CET on 12 March 2015.

[Rosetta: OSIRIS detects hints of ice in the comet's neck](#) (13 March 2015)

When seen with the human eye, comet 67P/Churyumov-Gerasimenko is grey – all over.

[Waiting for a signal from Philae](#) (16 March 2015)

With Philae now receiving twice as much solar energy as it did last November when it finally came to rest in a shaded spot on Comet 67P, the communication unit on the Rosetta orbiter has now been switched on to call the lander.

DARK MATTER

[Unexpected gamma-ray emission from dwarf galaxy may point to new understanding of dark matter](#) (10 March 2015)

A newly discovered dwarf galaxy orbiting our own Milky Way has offered up a surprise — it appears to be radiating gamma rays, according to an analysis by physicists at Carnegie Mellon, Brown and Cambridge universities.

[Laser Gold goes to the Moon helping understand dark matter](#) (18 March 2015)

Dark Matter is a mystery; so named since it is known only by its effect by bending light rays from distant galaxies.

[Dark matter is not as sticky as once thought](#) (26 March 2015)

Astronomers using observations from NASA's Hubble Space Telescope and Chandra X-ray Observatory have found that dark matter does not slow down when colliding with each other.

DWARF PLANETS

[Dawn spacecraft nears arrival at dwarf planet Ceres](#) (2 March 2015)

Dawn will be the first mission to successfully visit a dwarf planet when it enters orbit around Ceres on Friday, March 6. ([Other dwarf planets – Pluto and Eris](#))

EARTH

[Galileo satellites ready for fuelling as launcher takes shape](#) (9 March 2015)

All the elements for this month's Galileo launch are coming together at Europe's Spaceport in French Guiana.

[MMS: studying magnetic reconnection near Earth](#) (10 March 2015)

The Magnetospheric Multiscale, or MMS, mission is scheduled to launch into space on March 12, 2015.

[MMS in Earth orbit, preparing to study magnetic reconnection](#) (13 March 2015)

Following a successful launch at 10:44 p.m. EDT Thursday, NASA's four Magnetospheric Multiscale (MMS) spacecraft are positioned in Earth's orbit to begin the first space mission dedicated to the study of a phenomenon called magnetic reconnection.

[United Launch Alliance successfully launches solar probes to study space weather for NASA](#) (13 March 2015)

A United Launch Alliance (ULA) Atlas V rocket carrying the Magnetospheric Multiscale (MMS) payload for NASA lifted off from Space Launch Complex-41 at 10:44 p.m. EDT on March 12.

[Sixth Galileo satellite reaches correct orbit](#) (13 March 2015)

The sixth Galileo satellite of Europe's navigation system has now entered its corrected target orbit, which will allow detailed testing to assess the performance of its navigation payload.

[Mapping sea surface from the space station](#) (16 March 2015)

A new concept that involves mounting an instrument on the International Space Station and taking advantage of signals from navigation satellites could provide measurements of sea-surface height and information about features related to ocean currents, benefiting science and ocean forecasting.

[Ice venturers yield results for CryoSat](#) (18 March 2015)

Trekking to the far reaches of the Arctic for the sole purpose of collecting snow and ice measurements may seem extreme, but it is thanks to these efforts that scientists will soon have even better satellite information at their fingertips to assess changes in polar ice.

[Final payload integration begins for this double Galileo launch](#) (23 March 2015)

The payload build-up has been completed in French Guiana for Arianespace's medium-lift Soyuz mission on March 27, which is to orbit the third and fourth Full Operational Capability (FOC) satellites for Europe's Galileo navigation system.

[Europe's Earth observation programme maximised by UK data hub](#) (24 March 2015)

The UK is to host a world-class data facility, giving scientists full access to Earth observation data from Europe's Copernicus programme.

[Cluster satellite catches up](#) (25 March 2015)

One of the four Cluster satellites has shifted its orbit to ensure a safe re-entry when the time comes, as well as providing a rare opportunity to study how a satellite's exhaust plume interacts with the solar wind.

EXOPLANETS

[New technique allows analysis of clouds around exoplanets](#) (3 March 2015)

In a paper to be published in the *Astrophysical Journal*, researchers in the Department of Earth, Atmospheric, and Planetary Sciences (EAPS) at MIT describe a technique that analyses data from NASA's Kepler space observatory to determine the types of clouds on planets that orbit other stars, known as exoplanets.

[Planet 'reared' by four parent stars](#) (4 March 2015)

Researchers wanting to know more about the complex influences of multiple stars on planets have come up with two new case studies: a planet found to have three parents, and another with four.

['Habitable' planet GJ 581d previously dismissed as noise probably does exist](#) (6 March 2015)

Researchers are confident the planet named GJ 581d, identified in 2009 orbiting the star Gliese 581, does exist, and that last year's claim was triggered by inadequate analyses of the data.

[Some habitable exoplanets could experience wildly unpredictable climates](#) (11 March 2015)

As telescopes of ever-greater power scan the cosmos looking for life, knowing where to look — and where not to waste time looking — will be of great value.

[Planets in the habitable zone around most stars, calculate researchers](#) (18 March 2015)

Using NASA's Kepler satellite, astronomers have found about 1,000 planets around stars in the Milky Way and they have also found about 3,000 other potential planets.

[Best look yet at 'warm dense matter' at cores of giant planets](#) (23 March 2015)

In an experiment at the Department of Energy's SLAC National Accelerator Laboratory, scientists precisely measured the temperature and structure of aluminium as it transitions into a superhot, highly compressed concoction known as "warm dense matter."

[Earthlike 'Star Wars' Tatooines may be common](#) (29 March 2015)

Luke Skywalker's home in "Star Wars" is the desert planet Tatooine, with twin sunsets because it orbits two stars.

FUTURE LAUNCHES and MISSIONS

[UK Space Agency's second CubeSat mission is taking shape](#) (5 March 2015)

The UK Space Agency's next CubeSat mission, AISat Nano, is starting to take shape, following the selection of the mission's payloads.

[New NASA mission to study ocean colour, airborne particles and clouds](#) (13 March 2015)

NASA is beginning work on a new satellite mission that will extend critical climate measurements of Earth's oceans and atmosphere and advance studies of the impact of environmental changes on ocean health, fisheries and the carbon cycle.

GALAXIES AND DWARF GALAXIES

[An old-looking galaxy in a young universe](#) (2 March 2015)

One of the most distant galaxies ever observed has provided astronomers with the first detection of dust in such a remote star-forming system and tantalising evidence for the rapid evolution of galaxies after the Big Bang

[Why galaxies don't create as many stars as they should](#) (4 March 2015)

A handful of new stars are born each year in the Milky Way, while many more blink on across the universe.

[Mysterious phenomena in a gigantic galaxy-cluster collision](#) (10 March 2015)

Researchers using the Karl G. Jansky Very Large Array (VLA) have produced the most detailed image yet of a fascinating region where clusters of hundreds of galaxies are colliding, creating a rich variety of mysterious phenomena visible only to radio telescopes.

[Cosmic dust discs withstand hellfire](#) (10 March 2015)

A team of scientists led by astronomers at the University of Bonn discovered an unusual phenomenon in the centre of the Milky Way: They detected about 20 rotating dust and gas discs in each cluster hosting exceptionally large and hot stars.

[New dwarf galaxies discovered in orbit around the Milky Way](#) (10 March 2015)

Astronomers have discovered a 'treasure trove' of rare dwarf satellite galaxies orbiting our own Milky Way.

[The corrugated galaxy](#) (11 March 2015)

The Milky Way galaxy is at least 50 percent larger than is commonly estimated, according to new findings that reveal that the galactic disk is contoured into several concentric ripples.

[More than a million stars are forming in a mysterious dusty gas cloud in a nearby galaxy](#)

(18 March 2015)

More than a million young stars are forming in a hot, dusty cloud of molecular gases in a tiny galaxy near our own, an international team of astronomers has discovered.

[Herschel and Planck find missing clue to galaxy cluster formation](#) (31 March 2015)

By combining observations of the distant Universe made with ESA's Herschel and Planck space observatories, cosmologists have discovered what could be the precursors of the vast clusters of galaxies that we see today.

GAMMA-RAY BURST

[U.S. and Mexico to inaugurate facility to detect gamma rays, probe universe's most energetic phenomena](#) (16 March 2015)

The universe's most energetic phenomena, such as black holes and supernovae, produce gamma rays that can be observed and studied to learn more about the universe.

[Here comes HAWC: New observatory to seek out gamma rays](#) (20 March 2015)

High on a sleeping Mexican volcano, a new particle astrophysics observatory is about to blink to life, commencing an all-sky search for very high-energy gamma rays — a search that could greatly expand the catalogue of known gamma ray sources and chip away at the mystery of the cosmic rays that constantly bombard our planet.

GRAVITATIONAL WAVES

[Race to detect gravitational waves advances with new NANOGrav Physics Frontiers Center](#)

(30 March 2015)

The National Science Foundation (NSF) has awarded the North American Nanohertz Observatory for Gravitational Waves (NANOGrav) \$14.5 million over 5 years to create and operate a Physics Frontiers Center (PFC).

INTERNATIONAL SPACE STATION

[Testing astronauts' lungs in space station airlock](#) (9 March 2015)

The International Space Station's air lock was pumped free of air for the first time in the name of science last week.

JUPITER AND MOONS

[Hubble observations suggest underground ocean on Jupiter's largest moon](#) (12 March 2015)

NASA's Hubble Space Telescope has the best evidence yet for an underground saltwater ocean on Ganymede, Jupiter's largest moon.

[Explosions of Jupiter's aurora linked to extraordinary planet-moon interaction](#) (25 March 2015)

On Earth, bursts of particles spewed by the Sun spark shimmering auroras, like the Northern Lights, that briefly dance at our planet's poles.

MARS

[Single site on Mars advanced for 2016 NASA lander](#) (4 March 2015)

NASA's next mission to Mars, scheduled to launch one year from today to examine the Red Planet's deep interior and investigate how rocky planets like Earth evolved, now has one specific site under evaluation as the best place to land and deploy its science instruments.

[Testing to diagnose power event in Mars rover](#) (3 March 2015)

NASA's Curiosity Mars rover is expected to remain stationary for several days of engineering analysis following an on-board fault-protection action on Feb. 27 that halted a process of transferring sample material between devices on the rover's robotic arm.

[Mars: the planet that lost an ocean's worth of water](#) (5 March 2015)

A primitive ocean on Mars held more water than Earth's Arctic Ocean, and covered a greater portion of the planet's surface than the Atlantic Ocean does on Earth, according to new results published today.

[MAVEN spacecraft detects aurora and mysterious dust cloud around Mars](#) (18 March 2015)

NASA's Mars Atmosphere and Volatile Evolution (MAVEN) spacecraft has observed two unexpected phenomena in the Martian atmosphere: an unexplained high-altitude dust cloud and aurora that reaches deep into the Martian atmosphere.

[NASA reformats memory of longest-running Mars rover](#) (23 March 2015)

After avoiding use of the rover's flash memory for three months, the team operating NASA's 11-year-old Mars Exploration Rover Opportunity has reformatted the vehicle's flash memory banks and resumed storing some data overnight for transmitting later.

[Curiosity rover finds biologically useful nitrogen on Mars](#) (24 March 2015)

A team using the Sample Analysis at Mars (SAM) instrument suite aboard NASA's Curiosity rover has made the first detection of nitrogen on the surface of Mars from release during heating of Martian sediments.

[**Ancient Martian lake system records two water-related events**](#) (25 March 2015)

Researchers from Brown University have completed a new analysis of an ancient Martian lake system in Jezero Crater, near the planet's equator.

[**Scars on Mars from 2012 rover landing fade - usually**](#) (27 March 2015)

A series of observations from Mars orbit show how dark blast zones that were created during the August 2012 landing of NASA's Curiosity rover have faded inconsistently.

[**Curiosity sniffs out history of Martian atmosphere**](#) (31 March 2015)

NASA's Curiosity rover is using a new experiment to better understand the history of the Martian atmosphere by analysing xenon.

MERCURY

[**New Mercury surface composition maps illuminate the planet's history**](#) (13 March 2015)

Two new papers from members of the MESSENGER Science Team provide global-scale maps of Mercury's surface chemistry that reveal previously unrecognized geochemical terranes — large regions that have compositions distinct from their surroundings.

[**With the end in sight, MESSENGER marks four years at Mercury**](#) (18 March 2015)

On the evening of March 17, 2011 (EDT), the MESSENGER spacecraft — built and operated by the Johns Hopkins University Applied Physics Laboratory (APL) in Laurel, Maryland — made history when it became the first to orbit the innermost planet.

[**BepiColombo launch moved to 2017**](#) (30 March 2015)

The launch of BepiColombo, an ESA mission to explore the planet Mercury in collaboration with the Japanese space agency, JAXA, is now planned to take place during a one month long window starting on 27 January 2017.

[**New explanation for Mercury's dark surface**](#) (27 March 2015)

Peering into space, the surface of Mercury appears dark and unreflective, an observation that has long puzzled planetary scientists due to the planet's very low surface abundance of iron (less than 2 percent).

METEORITES

[**World's largest asteroid impacts found in central Australia**](#) (23 March 2015)

A 400 kilometre-wide impact zone from a huge meteorite that broke in two moments before it slammed into the Earth has been found in Central Australia.

MISCELLANEOUS

[**NASA's super pressure balloon is hoping to break records**](#) (2 March 2015)

Residents in the Southern Hemisphere's mid-latitudes, such as Argentina and South Africa, may catch a glimpse of a large NASA heavy-lift scientific balloon as it travels around the globe on a potentially record-breaking flight.

[**ESA experts assess risk from exploded satellite**](#) (4 March 2015)

After studying the recent explosive break-up of a US satellite, ESA space debris experts have concluded this event does not increase the collision risk to nearby ESA missions in any meaningful way.

Luminous Red Nova or Red Transient

[**Colliding stars explain enigmatic seventeenth century explosion**](#) (23 March 2015)

New observations made with APEX and other telescopes reveal that the star that European astronomers saw appear in the sky in 1670 was not a nova, but a much rarer, violent breed of stellar collision.

MOON

[LRO spacecraft finds March 17, 2013 impact crater and more](#) (17 March 2015)

NASA's Lunar Reconnaissance Orbiter (LRO) acquired images of the lunar surface before and after the largest recorded explosion occurred on the surface.

[Extent of Moon's giant volcanic eruption is revealed](#) (18 March 2015)

Scientists have produced a new map of the Moon's most unusual volcano showing that its explosive eruption spread debris over an area much greater than previously thought.

PROTOPLANETARY DISK

[New clues from the dawn of the solar system](#) (14 March 2015)

A research group in the UA Lunar and Planetary Laboratory has found evidence in meteorites that hint at the discovery of a previously unknown region within the swirling disk of dust and gas known as the protoplanetary disk – which gave rise to the planets in our solar system.

SATURN AND MOONS (Enceladus)

[Hot water activity on icy moon's seafloor](#) (11 March 2015)

Tiny grains of rock detected by the international Cassini spacecraft orbiting Saturn point to hydrothermal activity on the seafloor of its icy moon Enceladus.

[A new spin on Saturn's peculiar rotation](#) (25 March 2015)

Tracking the rotation speed of solid planets, like the Earth and Mars, is a relatively simple task: Just measure the time it takes for a surface feature to roll into view again.

[Saturn spacecraft returns to the realm of icy moons](#) (30 March 2015)

NASA's Cassini spacecraft has returned to the realm of the planet's icy satellites.

SOLAR SYSTEM

[Wandering Jupiter accounts for our unusual solar system](#) (23 March 2015)

Jupiter may have swept through the early solar system like a wrecking ball, destroying a first generation of inner planets before retreating into its current orbit, according to a new study published March 23 in Proceedings of the National Academy of Sciences.

[Solar system may have once harboured super-Earths](#) (23 March 2015)

Long before Mercury, Venus, Earth, and Mars formed, it seems that the inner solar system may have harboured a number of super-Earths—planets larger than Earth but smaller than Neptune.

STARS AND STAR CLUSTERS

[Wayward star cluster Kim 2 located far from home in the Galactic suburbs](#) (3 March 2015)

Like the lost little puppy that wanders too far from home, astronomers have found an unusually small and distant group of stars that seems oddly out of place. <http://arxiv.org/abs/1502.03952>

[Carina Nebula survey reveals details of star formation](#) (9 March 2015)

A new Rice University-led survey of one of the most active star-forming regions in the galactic neighbourhood is helping astronomers better understand the processes that may have contributed to the formation of the sun 4.5 billion years ago. <http://iopscience.iop.org/1538-3881/149/3/101>

[Astronomers discover fastest ever unbound star in our galaxy](#) (10 March 2015)

A fast-moving unbound star discovered by astronomers at Queen's University Belfast has broken the galactic speed record.

[Solving the riddle of neutron stars](#) (10 March 2015)

It has not yet been possible to measure the gravitational waves predicted by Einstein's theory of general relativity.

['Growth spurt' from newborn protostar](#) (23 March 2015)

Using data from orbiting observatories, including NASA's Spitzer Space Telescope, and ground-based facilities, an international team of astronomers has discovered an outburst from a star thought to be in the earliest phase of its development.

[As stars form, magnetic fields influence regions big and small](#) (30 March 2015)

Stars form when gravity pulls together material within giant clouds of gas and dust.

[ALMA disentangles complex birth of giant stars](#) (31 March 2015)

A research group led by Aya Higuchi, a researcher at Ibaraki University, conducted observations of the massive-star forming region IRAS 16547-4247 with the Atacama Large Millimeter/submillimeter Array (ALMA).

SUN

[Two solar wind jets in the heliosphere](#) (3 March 2015)

As the sun skims through the galaxy, it emits charged particles in a stream of plasma called the solar wind.

[NASA-funded mission studies the Sun in soft X-rays](#) (24 March 2015)

At any given moment, our sun emits a range of light waves far more expansive than what our eyes alone can see: from visible light to extreme ultraviolet to soft and hard X-rays.

SUPERNOVA

[Brighter than 100 billion stars](#) (2 March 2015)

Supernova scientist Friedrich Röpke is the leader of the new research group "Physics of Stellar Objects" at HITS and professor at Heidelberg University. He examines the high-energy processes in the death of stars using computer simulations.

[SOFIA finds missing link between supernovae and planet formation](#) (19 March 2015)

Using NASA's Stratospheric Observatory for Infrared Astronomy (SOFIA), an international scientific team discovered that supernovae are capable of producing a substantial amount of the material from which planets like Earth can form.

[Chemical fingerprints of ancient supernovae found](#) (23 March 2015)

A Carnegie-based search of nearby galaxies for their oldest stars has uncovered two stars in the Sculptor dwarf galaxy that were born shortly after the galaxy formed, approximately 13 billion years ago.

[Astronomers upgrade their cosmic light bulbs](#) (26 March 2015)

The brilliant explosions of dead stars have been used for years to illuminate the far-flung reaches of our cosmos.

TECHNOLOGY

[Scientists gather at SLAC to prepare for Large Synoptic Survey Telescope](#) (9 March 2015)

When the Large Synoptic Survey Telescope begins in 2022 to image the entire southern sky from a mountaintop in Chile, it will produce the widest, deepest and fastest views of the night sky ever observed – and a flood of 6 million gigabytes of data per year that are expected to provide new insights into dark matter, dark energy and other cosmic mysteries.

[Space Launch System booster passes major ground test](#) (11 March 2015)

The largest, most powerful rocket booster ever built successfully fired up Wednesday for a major-milestone ground test in preparation for future missions to help propel NASA's Space Launch System (SLS) rocket and Orion spacecraft to deep space destinations, including an asteroid and Mars.

[Successful test flights for Mars landing technology](#) (18 March 2015)

It's tricky to get a spacecraft to land exactly where you want. That's why the area where the Mars rover Curiosity team had targeted to land was an ellipse that may seem large, measuring 12 miles by 4 miles (20 by 7 kilometers).

[Space Fence ground breaking ceremony held](#) (17 March 2015)

Officials from the U.S. Air Force Space and Missile Systems Center and Lockheed Martin's Mission Systems and Training recently participated in a formal ground breaking ceremony on Kwajalein Atoll to kick off a 36-month long construction effort to build the Space Fence radar system.

[Want to snag a satellite? Try a net](#) (23 March 2015)

One of humanity's oldest technologies, the humble fishing net, may yet find a new role in space: bringing down dead satellites.

[NASA announces new partnerships with U.S. industry for key deep-space capabilities](#)

(30 March 2015)

Building on the success of NASA's partnerships with commercial industry to date, NASA has selected 12 Next Space Technologies for Exploration Partnerships (NextSTEP) to advance concept studies and technology development projects in the areas of advanced propulsion, habitation and small satellites.

TECHNOLOGY TRANSFER

[Rocket motor test moves NASA's Space Launch System closer to deep space](#) (11 March 2015)

NASA and Orbital ATK today conducted the first qualification ground test of the five-segment rocket motor that will be used for NASA's heavy-lift Space Launch System (SLS), which is being designed to enable exciting new exploration missions throughout the solar system.

VENUS

[Venus as seen in radar with the GBT](#) (9 March 2015)

Recently, by combining the highly sensitive receiving capabilities of the National Science Foundation's (NSF) Green Bank Telescope (GBT) and the powerful radar transmitter at the NSF's Arecibo Observatory, astronomers were able to make remarkably detailed images of the surface of this planet without ever leaving Earth.

[Unexplained warm layer discovered in Venus' atmosphere](#) (25 March 2015)

A group of Russian, European and American scientists have found a warm layer in Venus' atmosphere, the nature of which is still unknown.

Pat Williams. March 2015