

The Aerospace Update



Earth's Night Lights

April 18, 2017

Image Credit: NASA's Goddard Space Flight Center

Lights of Human Activity Shine in NASA's Image of Earth at Night



Atlas 5 Launches Cygnus Cargo Mission to ISS



An Atlas 5 successfully launched a Cygnus spacecraft April 18th carrying three and a half tons of cargo for the International Space Station. The Cygnus, flying on a mission designated OA-7, is carrying 3,459 kilograms of cargo for the ISS. That cargo includes a mix of crew supplies, vehicle hardware and science investigations. The Cygnus will arrive at the station and be berthed by the station's robotic arm early April 22.

Video Credit: NASA

Source: Jeff Foust @ SpaceNews.com

Cygnus Freighter to Make Science-Enabling Delivery to ISS



The Cygnus Freighter named S.S. John Glenn is bringing nearly 3,500 kg scientific supplies and additional hardware necessary to support ongoing research efforts conducted by the crew members aboard the ISS. Included are investigations into chemotherapy drugs with reduced side effects and radiation detectors for homeland security, a plant-growing chamber to promote future food harvesting in space and a technology demonstration for sample-return capsules. After departing from ISS, Cygnus will performance additional science objectives including third spacecraft fire safety experiment, called SAFFIRE, additional cubesat deployments and a re-entry data collection.

China's Highest-Capacity Communications Satellite Launched into Orbit

A Chinese Long March 3B rocket fired into space Wednesday with Shijian 13, also known as Chinasat 16, to deliver Internet connectivity to remote parts of China, airline travelers and high-speed trains. The Shijian 13 satellite also has an experimental mission to test laser communications technology and electric thrusters to maintain its position in geostationary orbit.

*Source: Stephen Clark @ SpaceFlightNow.com
Photo Credit: Xinhua*



SLS unlikely to launch in 2018

An aerial photograph of the Space Launch System (SLS) rocket on the launch pad. The rocket is oriented vertically, with its orange core stage and two white boosters clearly visible. The white nose cone is at the top, featuring the NASA logo and an American flag. The launch pad is situated in a green, hilly area with some infrastructure visible at the base.

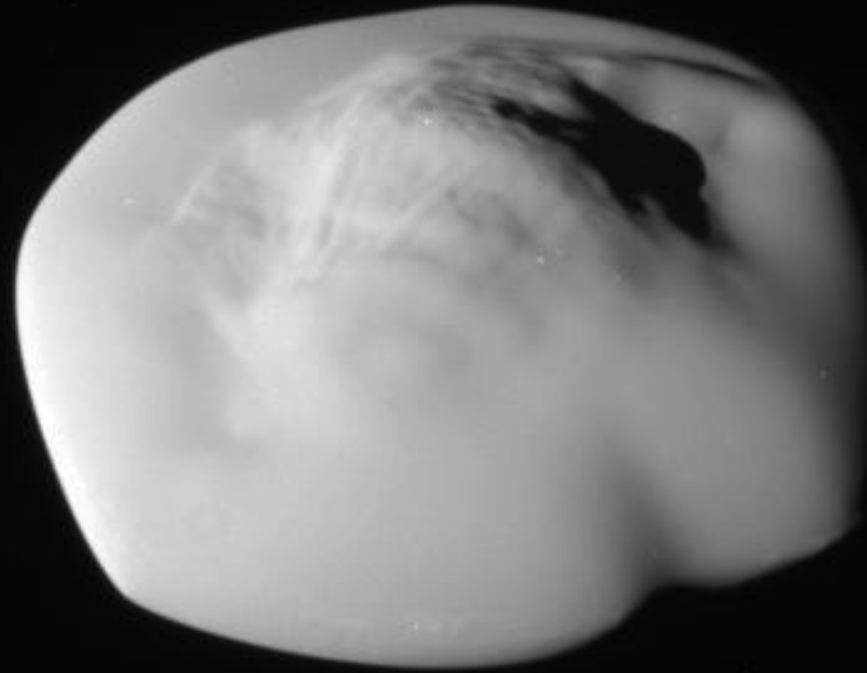
The NASA Office of Inspector General has issued an audit detailing that the space agency's Exploration Mission 1 (EM-1) will likely not take to the Florida skies in 2018. However, this might be a moot point as NASA is considering flying EM-1 with a crew, which would push the launch to 2019 at the earliest. These are just some of a myriad of issues facing the first flight of the agency's new super-heavy-lift launch system.

NASA Missions Provide New Insights into 'Ocean Worlds' in Our Solar System



Two veteran NASA missions are providing new details about icy, ocean-bearing moons of Jupiter and Saturn, further heightening the scientific interest of these and other "ocean worlds" in our solar system and beyond. Cassini scientists announce that a form of chemical energy that life can feed on appears to exist on Saturn's moon Enceladus while Hubble researchers report additional evidence of plumes erupting from Jupiter's moon Europa. This artist's rendering shows Cassini diving through the Enceladus plume in 2015.

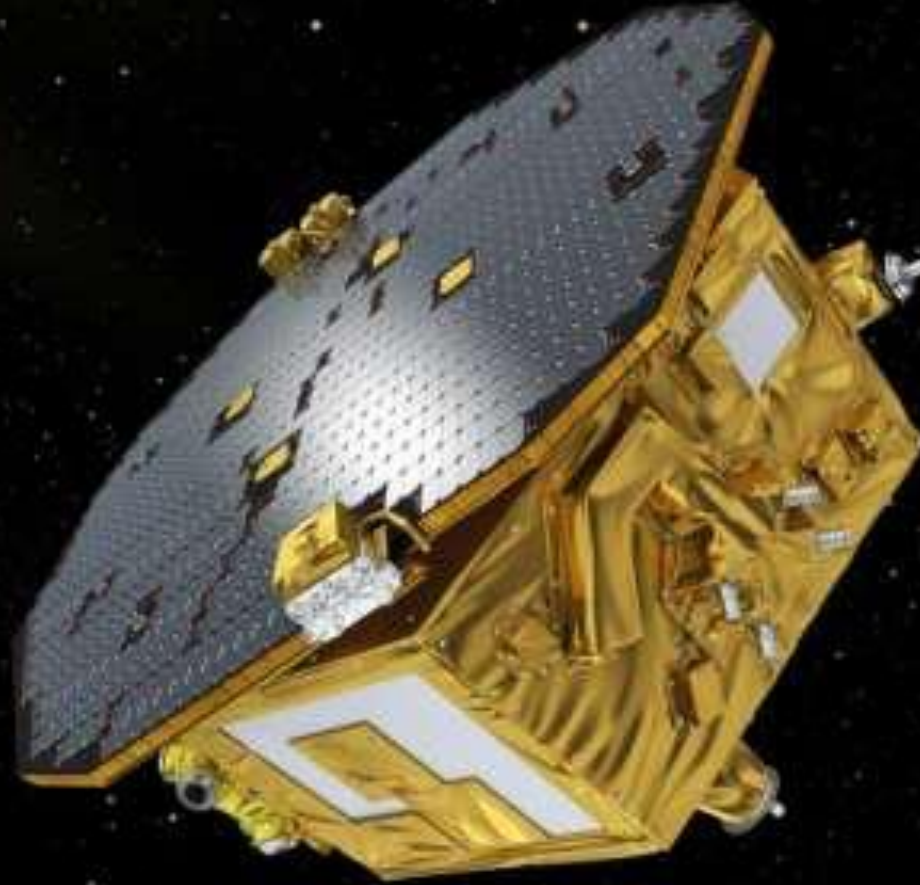
Cassini Sees 'Flying-Saucer' Moon Atlas Up Close



A series of raw, unprocessed images of Saturn's moon Atlas, including this image, were taken on April 12, 2017, by NASA's Cassini spacecraft. The flyby had a close-approach distance of about 7,000 miles (11,000 kilometers). These images are the closest ever taken of Atlas and will help to characterize its shape and geology. Atlas (19 miles, or 30 kilometers across) orbits Saturn just outside the A ring—the outermost of the planet's bright, main rings.

Source & Image Credits; Credit: NASA/JPL-Caltech/Space Science Institute

NASA Team Explores Using LISA Pathfinder as 'Comet Crumb' Detector



LISA Pathfinder, a mission led by ESA (the European Space Agency) with contributions from NASA, has successfully demonstrated critical technologies needed to build a space-based observatory for detecting ripples in space-time called gravitational waves. Now a team of NASA scientists hopes to take advantage of the spacecraft's record-breaking sensitivity to map out the distribution of tiny dust particles shed by asteroids and comets far from Earth. Most of these particles have masses measured in micrograms, similar to a small grain of sand. But with speeds greater than 22,000 mph (36,000 kph), even micrometeoroids pack a punch. The new measurements could help refine dust models used by researchers in a variety of studies, from understanding the physics of planet formation to estimating impact risks for current and future spacecraft.

Source: Francis Reddy @ Phys.org

Image Credit: Credit: ESA/C

Refit Bomber Aircraft Will Help Scientists Study the Total Solar Eclipse



Two NASA WB-57s will take to the skies to study the Aug. 21, 2017 total solar eclipse. Rising above the turbulent atmosphere, the planes will carry high-definition cameras that will observe the structure of the sun's outer layers in remarkable detail. The scientists will also use this unique opportunity to make some less obvious measurements: They'll measure the temperature of the planet Mercury and, if they're lucky, they may even spy remnants of the early solar system.

Source: Nola Taylor Redd @ Space.com

Photo Credit: NASA

Lockheed's Skunk Works Demos Autonomy For Unmanned Loyal Wingman



Lockheed Martin issued a press release on April 10th, 2017 announcing a successful demonstration of a technique for using fighter jets called manned/unmanned teaming. The two-week demonstration at the Test Pilot school at Edwards Airforce Base in California showed an experimental F-16 aircraft was able to act as an unmanned wingman in a strike package.

Boeing 737 MAX 9 Completes First Flight



Boeing has begun roughly eight months of flight testing on the 737 Max 9 to focus on validating the aerodynamic and environmental system changes compared to the smaller variant. The 2h42min first flight completed on 13 April took off with a tail wind from Renton Municipal Airport and landed at nearby Boeing Field into a 20kt crosswind. The crosswind landing on first flight approximated flight test conditions usually experienced weeks or months later in the program, says Boeing Capt Christine Walsh, who became the first woman to pilot a new Boeing commercial passenger aircraft on first flight.

Source: Stephen Trimble @ FlightGlobal.com

Video Credit: Boeing

April 18, 1942 – The Doolittle Raid



This April 18th marks the 75th anniversary of the Doolittle Raid. Task Force 16, under the command of Vice Admiral William F. Halsey, Jr., U.S. Navy, approached the Japanese islands on a daring top secret joint Army-Navy attack. Two aircraft carriers, *USS Enterprise* (CV-6) and *USS Hornet* (CV-8), together with four cruisers, eight destroyers and two fleet oilers, carried sixteen U.S. Army Air Force B-25 Mitchell medium bombers within striking distance of Tokyo in the first offensive action against Japan by the United States. Each B-25 carried only four 500 lbs. bombs. The raid caused negligible material damage to Japan, but it achieved its goal of raising American morale and casting doubt in Japan on the ability of its military leaders to defend their home islands. It also contributed to Admiral Isoroku Yamamoto's decision to attack Midway Island in the Central Pacific—an attack that turned into a decisive strategic defeat of the Imperial Japanese Navy (IJN) by the U.S. Navy in the Battle of Midway.

Sources: ThisDayinAviation.com & Wikipedia.com

In The News



Amid Russia Tensions, F-35 Arrives In UK. U.S. Air Force F-35s have arrived in the UK for their first overseas deployment, a clear signal of U.S. military might on Russian President Vladimir Putin's doorstep. The F-35s will conduct training with other Europe-based U.S. and NATO aircraft for the next few weeks as part of the European Reassurance Initiative (ERI). *(Lara Seligman @Aerospace Daily & Defense Report)*



Bell To Test 407-Class FC-X Anti-torque System. Bell Helicopter is preparing to demonstrate a full-scale Bell 407/429-class cross-flow fan anti-torque system this summer. A thrust-vectoring electric-driven fan embedded in the tail boom could someday replace traditional tail rotors on certain commercial and military helicopters, providing greater lateral and pitch control as well as improved safety and lower noise emissions. *(James Drew @Aerospace Daily & Defense Report)*



Crew replace pane on ISS Cupola window. ISS crew members successfully replaced the scratch pane on a Cupola window that had sustained damage from MicroMeteoroid and Orbital Debris (MMOD) strikes. The crew had requested replacements due to the damage obscuring the window's view. *(Chris Bergin @NASASpaceFlight.com)*



Orbital ATK awaits NASA decision on future use of Atlas for Cygnus missions. Orbital ATK expects to hear soon from NASA about potentially using that rocket again on future cargo missions. Orbital's original plans called for launching all of its Cygnus spacecraft using the company's own Antares launch vehicle. However, after an October 2014 launch failure involving a Cygnus, the company purchased two Atlas 5 launches from United Launch Alliance to continue delivering supplies while it redesigned the Antares. The re-engined Antares returned to flight in October, delivering a Cygnus to the ISS, but in November Orbital ATK announced that it would launch the next Cygnus on an Atlas 5 because of the additional payload performance that vehicle offers, meeting NASA's desire to deliver more cargo to the station. *(Jeff Foust @SpaceNews.com)*



Large asteroid to hurtle past Earth on April 19th. An asteroid as big as the Rock of Gibraltar will streak past Earth on April 19 at a safe but uncomfortably close distance, according to astronomers. "Although there is no possibility for the asteroid to collide with our planet, this will be a very close approach for an asteroid this size," NASA said in a statement. *(Phys.org)*