

The Aerospace Update



Oct. 31, 2017

Trick or Treat

Image Credit: ESA/NASA

SpaceX Launches — and Lands — 3rd Rocket in 3 Weeks



SpaceX launched its third Falcon 9 rocket flight of the month Monday, Oct. 30th with a Korean-owned commercial communications satellite built to connect customers across a swath from the Middle East to East Asia. The successful release of Koreasat 5A concluded SpaceX's 44th Falcon 9 mission, and the 16th this year. Koreasat 5A carries 36 Ku-band transponders, providing Internet access, television broadcast and other multimedia services in Korea, Japan, the Philippines, Guam, Southeast Asia, and South Asia. Koreasat 5A will also offer coverage for maritime communications in the Middle East, the Indian Ocean, the South China Sea and the East China Sea.

Minotaur launches 10 satellites for Planet

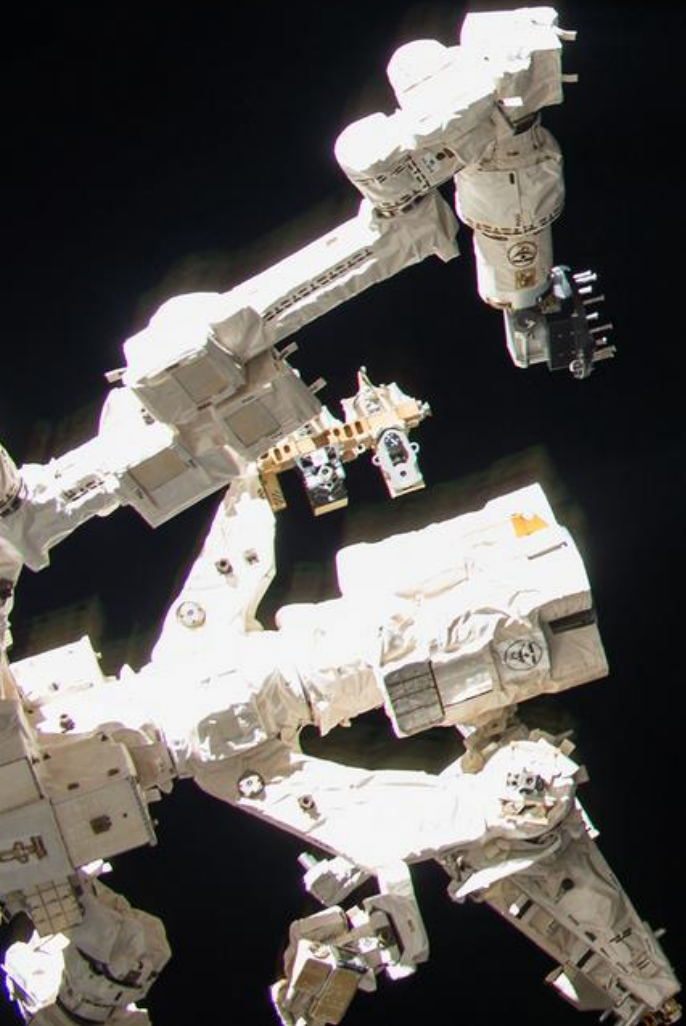
An Orbital ATK Minotaur-C rocket successfully launched two sets of satellites for Earth observation company Planet Oct. 31st in what was effectively the return to flight of a vehicle that failed in its two previous missions. The rocket deployed its payload of six SkySat spacecraft and four Dove cubesats between 13 and 19 minutes after liftoff, but a lack of real-time telemetry meant that confirmation of the successful launch did not come until more than two hours after liftoff, once Planet made contact with the satellites via its ground stations. The launch was the first for the version of the Minotaur called the Minotaur-C, which in fact is the company's earlier Taurus rocket with modest upgrades. The previous two Taurus launches, of NASA's Orbiting Carbon Observatory in 2009 and its Glory satellite in 2011, both ended in failure when the Taurus' payload fairing failed to separate.

Source: Jeff Foust @ SpaceNews.com

Photo Credit: Orbital ATK Webcast



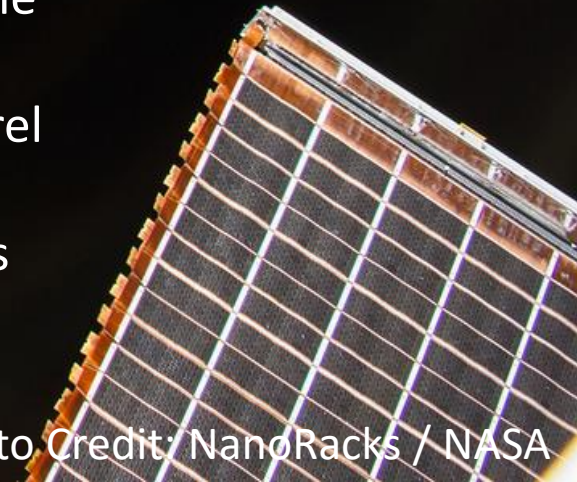
KESTREL EYE IIM MICROSATELLITE DEPLOYED FROM ISS




NanoRacks LLC successfully deployed the Kestrel Eye IIM microsatellite on Tuesday, Oct. 24, using its Kaber Microsatellite Deployer (Kaber). The 110-pound (50-kilogram) Earth-imaging spacecraft, which is operated by the U.S. Army, is so far the largest satellite deployed by NanoRacks from the International Space Station (ISS). Kestrel Eye IIM (also known as KE2M) is an electro-optical nanosatellite-class Earth-imaging spacecraft. The satellite is designed to deliver near-real-time imagery to support the tactical warfighter.

Source: TOMASZ NOWAKOWSKI @ SpaceFlightInsider.com

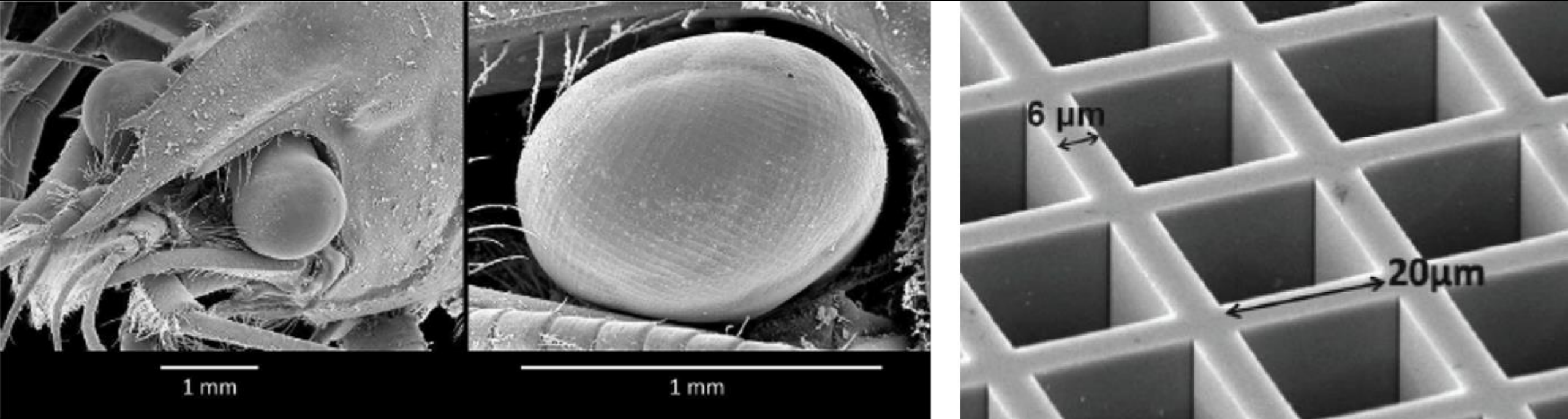
Photo Credit: NanoRacks / NASA





A Queen's University Belfast scientist is leading an international team in studying a new visitor to our solar system - the first known comet or asteroid to visit us from another star. The fast-moving object, now named A/2017 U1, was initially spotted on 18 October in Hawaii by the Pan-STARRS 1 telescope in Hawaii. The initial data implies it is a small rocky or icy object that may have been drifting through our galaxy for millions or even billions of years, before entering our solar system by chance. The object flew into the solar system from above, was close to the Sun last month, and is now already on its way back out to the stars.

Proposed NASA Mission Employs “Lobster-Eye” Optics to Locate Source of Cosmic Ripples

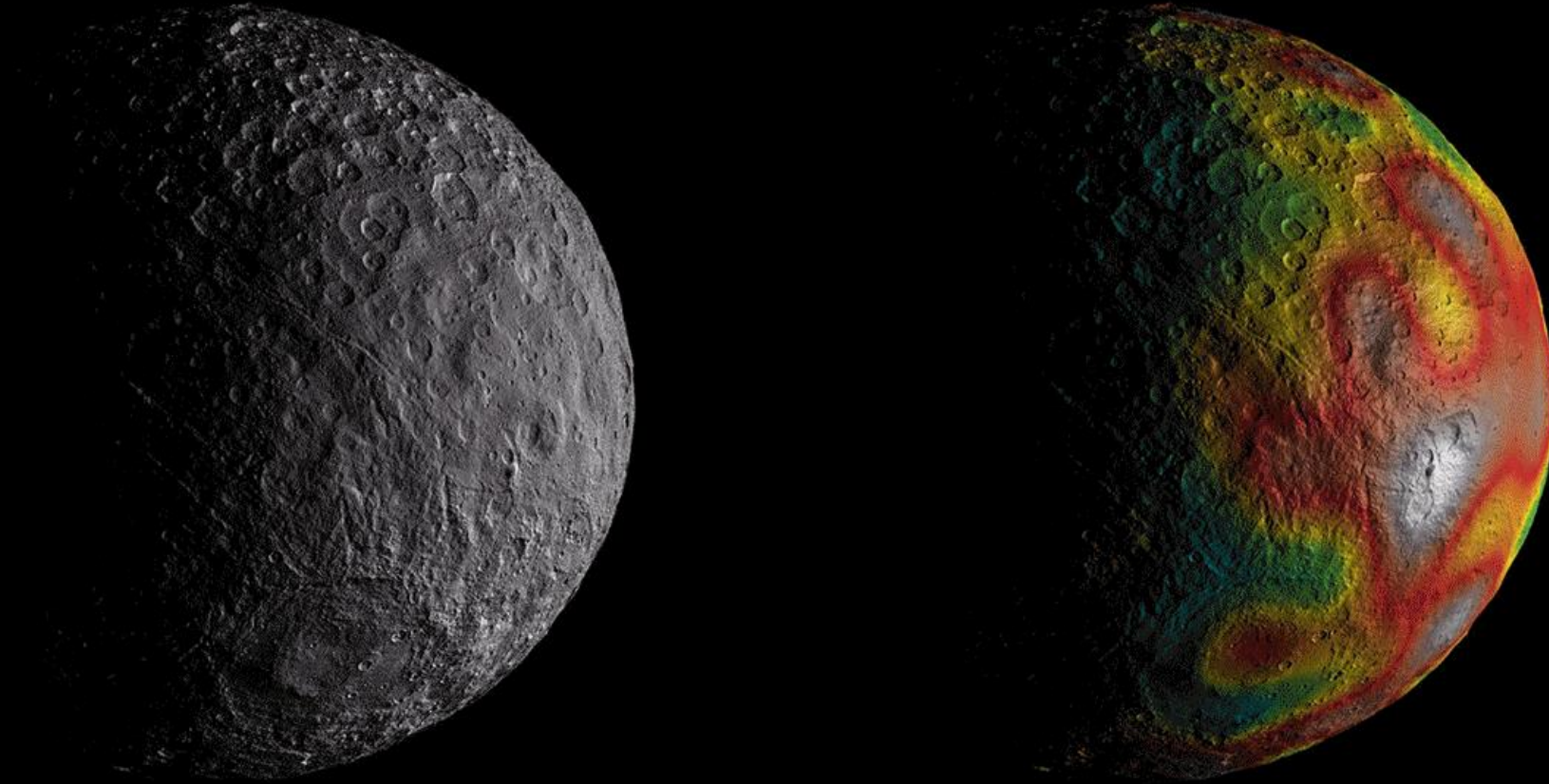


A novel optics system that mimics the structure of a lobster’s eyes would enable a conceptual Explorer-class mission to precisely locate, characterize, and alert other observatories to the source of gravitational waves, which are caused by some of the most powerful events in the universe. From its perch aboard the ISS the mission would monitor the sky in search of transient X-rays and gamma rays — those fleeting, hard-to-capture, high-energy photons unleashed during black-hole and neutron-star mergers and supernovae. These powerful upheavals generate gravitational waves. The Goddard-provided soft X-ray Wide-Field Imager proposed for a mission called ISS-TAO borrows heavily from nature. The images on the left and center show close-up views of a crustacean’s eyes; the image on the right shows a manmade microchannel plate. Both operate the same way. Both gather light from multiple angles, focusing it into a single image to provide a wide field of view.

Text Source: Lori Keesey @ NASA's Goddard Space Flight Center

Image Credit: J. Camp

Dawn Finds Possible Ancient Ocean Remnants at Ceres

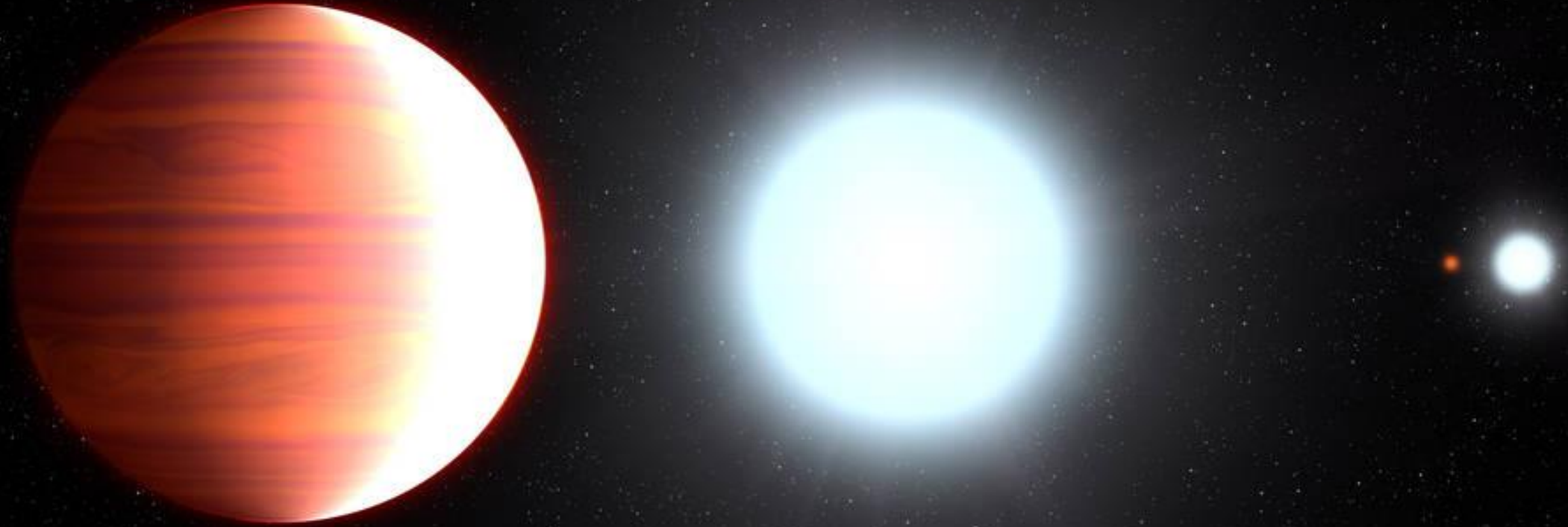


Minerals containing water are widespread on Ceres, suggesting the dwarf planet may have had a global ocean in the past. What became of that ocean? Could Ceres still have liquid today? Two new studies from NASA's Dawn mission shed light on these questions. The Dawn team found that Ceres' crust is a mixture of ice, salts and hydrated materials that were subjected to past and possibly recent geologic activity, and that this crust represents most of that ancient ocean. The second study builds off the first and suggests there is a softer, easily deformable layer beneath Ceres' rigid surface crust, which could be the signature of residual liquid left over from the ocean, too. This image shows dwarf planet Ceres as seen by NASA's Dawn. The map overlaid at right gives scientists hints about Ceres' internal structure from gravity measurements.

Text Source: Elizabeth Landau @ Jet Propulsion Laboratory

Image Credit: NASA/JPL-Caltech/UCLA/MPS/DLR/IDA

Hubble Observes Exoplanet that Snows Sunscreen



NASA's Hubble Space Telescope has found a blistering hot planet outside our solar system where it "snows" sunscreen. The problem is the sunscreen (titanium oxide) precipitation only happens on the planet's permanent nighttime side. Any possible visitors to the exoplanet, called Kepler-13Ab, would need to bottle up some of that sunscreen, because they won't find it on the sizzling hot, daytime side, which always faces its host star. This illustration shows the seething hot planet Kepler-13Ab that circles very close to its host star, Kepler-13A. On the nighttime side the planet's immense gravity pulls down titanium oxide, which precipitates as snow. Seen in the background is the star's binary companion, Kepler-13B, and the third member of the multiple-star system is the orange dwarf star, Kepler-13C.

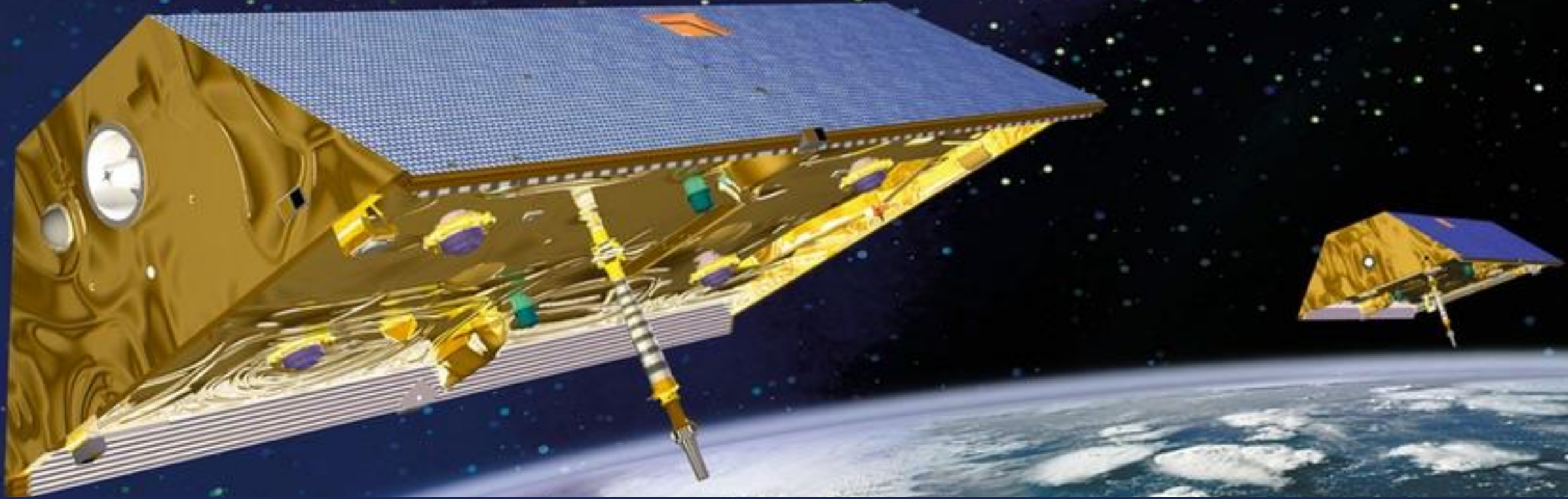
Engineers Hopeful Mars Rover's Drill Can Return to Service

Engineers have started testing a new way to use the Curiosity rover's drill to bore into Martian rocks after a motor in the device stalled late last year, but ground teams are still months away from the first chance to resume drilling operations. The rover has not used its drill since Dec. 1, 2016, when engineers noticed a problem with the drill feed mechanism, a motor which is supposed to extend the drill bit to touch the surface of Martian rocks.

Photo Credit: NASA/JPL-Caltech

*Source: Stephen Clark @
SpaceFlightNow.com*

GRACE Mission Comes to an End



An Earth science mission launched more than 15 years ago has finally come to an end, slightly earlier than previously expected, NASA announced Oct. 27. The GRACE Earth science mission used two spacecraft flying in formation to measure changes in the local gravitational field linked to weather and climate. In a statement, NASA said the Gravity Recovery and Climate Experiment (GRACE) mission, carried out in cooperation with the German space agency DLR, had ended science operations after the retirement of one of its twin spacecraft.

Source: Jeff Foust @ SpaceNews.com

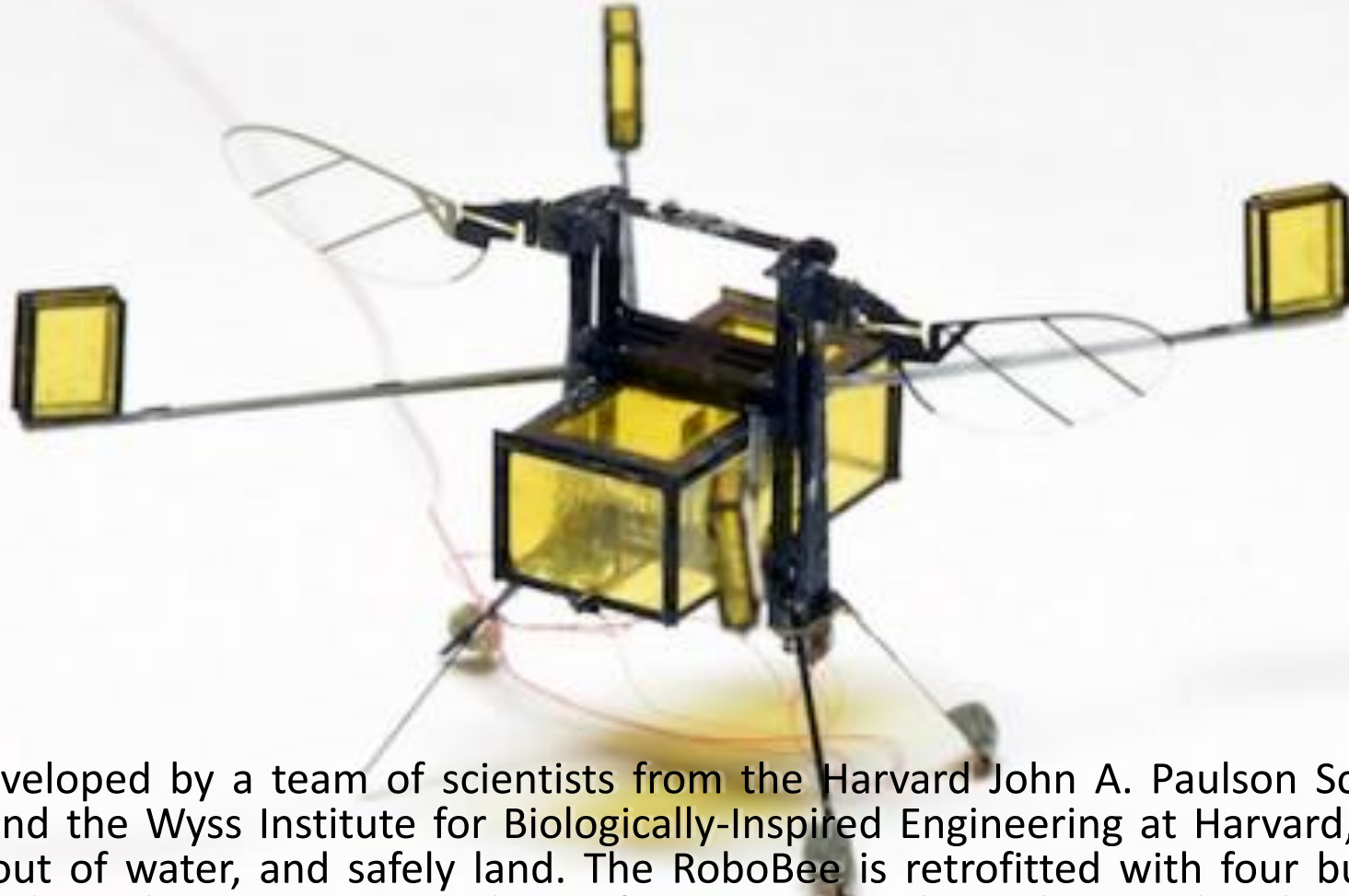
Image Credit: NASA

Small Unmanned Aircraft Sets 56-Hour Flight Record



The U.S. Defense Advanced Research Projects Agency (Darpa) and its developer reported this month that a small unmanned aircraft powered by a heavy-fuel engine flew for 56 hours without refueling, setting an apparent flight record for its subclass. Towed by a truck on takeoff and powered by a four-cycle engine and pusher propeller, the airplane flew at an altitude of between 6,500 feet and 7,500 feet msl, at an average speed of 57 knots. Plans called for a 120-hour mission, but the flight “was ended early due to forecasted severe icing and range restrictions,” Vanilla Aircraft said. “The airplane landed with enough JP-8 fuel on board for an additional 90 hours of flying.”

New RoboBee Flies, Dives, Swims and Explodes Out the of Water



New, hybrid RoboBee, developed by a team of scientists from the Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS) and the Wyss Institute for Biologically-Inspired Engineering at Harvard, can fly, dive into water, swim, propel itself back out of water, and safely land. The RoboBee is retrofitted with four buoyant and a central gas collection chamber. Once the RoboBee swims to the surface, an electrolytic plate in the chamber converts water into oxyhydrogen, a combustible gas fuel. This latest-generation RoboBee, which is 1,000 times lighter than any previous aerial-to-aquatic robot, could be used for numerous applications, from search-and-rescue operations to environmental monitoring and biological studies.

Text Source: Leah Burrows @ www.seas.harvard.edu

Image Credit: Yufeng Chen/Harvard SEAS

Nov 3, 1957 – Laika Launched on Sputnik 2

Laika, the first living creature to orbit the Earth, was launched on a one-way trip on board Sputnik 2 on November 3, 1957. Despite surviving for just a few hours, Laika's place in space history is assured and the information she provided proved that a living organism could tolerate a long time in weightlessness and paved the way for humans in space. Laika's "coffin" circled the Earth 2,570 times and burned up in the Earth's atmosphere on 4 April 1958.

Source: Dr David Whitehouse @ BBC News

24 October 2003: Last British Airways Concorde Flight

The final commercial flight of the British Airways Concorde came to an end with the landing of G-BOAG at London Heathrow Airport. It landed third in sequence with G-BOAE and G-BOAF after all three made a low pass over London.

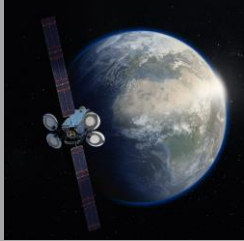
After a series of farewell flights, G-BOAG was retired to The Museum of Flight, Seattle, Washington. It had flown 16,239 hours, made 5,066 takeoffs and landings and had gone supersonic 5,633 times.

Bryan R. Swopes@thisdayinaviation.com

Photo Credit: British Airways



In The News



Israel's Spacecom Books Launch with SpaceX Using Pre-Paid Amos 6 Credits. The Israeli satellite operator Spacecom has tapped a Falcon 9 rocket to deliver its next geostationary communications satellite to orbit in 2019 using approximately \$50 million in credits the company paid SpaceX for a mission last year that ended in an explosion on the launch pad. Spacecom said money paid to SpaceX before last year's scheduled launch of the Amos 6 satellite will go toward the Amos 17 launch, without the need for any additional payments.

(Stephen Clark @ SpaceFlightNow.com)



Hydrazine Ban Could Cost Europe's Space Industry Billions. The European Union might ban the use of the toxic satellite propellant hydrazine as early as 2021, which would present a major setback for the block's space industry. The European Union might ban the use of the toxic satellite propellant hydrazine as early as 2021, which would present a major setback for the block's space industry.

(Tereza Pultarova @ SpaceNews.com)



Boeing Stages Launch of 777X Production. A blue-and-orange robot kicked off production of Boeing's 777X at the company's Everett, Washington plant on Monday. The laser-guided machine, made by supplier M-Torres, drilled a hole in a carbon-fiber wing spar, then drove in a fastener. Schedules call for the start of final assembly next year, followed by flight tests in 2019 and delivery in 2020.

(Dan Catchpole @ AINonline.com)



Virgin Signs Agreement with Saudi Arabia for Billion-Dollar Investment. The Virgin Group announced Oct. 26 an agreement with Saudi Arabia's sovereign wealth fund for an investment of \$1 billion into Virgin's suborbital and orbital space ventures. The funding from Saudi Arabia will support Virgin efforts like SpaceShipTwo, a suborbital vehicle that will begin a series of powered test flights in the near future.

(Jeff Foust @ SpaceNews.com)



Air Force to Deploy F-35A Aircraft to Japan in Support for Regional Security. The U.S. Air Force plans to deploy 300 airman and 12 F-35A Lightning II aircraft from Hill Air Force Base in Utah to Kadena Air Base in Japan, making the U.S. Pacific Command's first operation tasked to the F-35A fleet. *(Nichols Martin @ executivegov.com)*