

The Aerospace Update

Expedition 50 Says Good Bye to the ISS

April 11, 2017

Image Credit: Thomas PesquetVerified/ESA/NASA



Expedition 50 Makes Pinpoint Landing in Kazakhstan



Astronaut Shane Kimbrough and his two Russian crewmates — Soyuz MS-02 commander Sergey Ryzhikov and flight engineer Andrey Borisenko — undocked from the International Space Station and plunged back to Earth Monday, April 10th landing on the steppe of Kazakhstan to close out an extended 173-day mission. Russian recovery crews, flight surgeons and NASA support personnel stationed nearby reached the spacecraft within minutes to help the returning station fliers out of the cramped descent module as they begin re-adapting to the unfamiliar tug of Earth's gravity after more than five-and-a-half months in space. All three appeared in good spirits, smiling and chatting with support crews and enjoying comfortable, late afternoon weather on the steppe of Kazakhstan.

Video Credit: Roscosmos

Source: William Harwood @ CBS News

NASA'S Peggy Whitson Takes Command of Space Station



Peggy Whitson, soon to become the most experienced U.S. astronaut in terms of time spent in space, assumed command of the ISS on Sunday before two Russian crew members and one American returned to Earth. On April 24th, Whitson will have spent more time in space than any other American astronaut, surpassing the current U.S. record of 534 days held by NASA's Jeff Williams. She already held records for the most time spent in space by a woman and for the most time spent spacewalking by a woman. This is the second time she has commanded the ISS.

Source: IRENE KLOTZ @ www.aol.com


Image Credit: NASA

Whitson's Station Expedition Extended Three Months

A photograph of astronaut Peggy Whitson inside the International Space Station. She is wearing a blue long-sleeved shirt and khaki pants, smiling and looking towards the camera. Her right arm is raised, holding onto a blue handrail. The background is filled with various pieces of equipment, cables, and structural elements of the station. A sign with the text "To FGB" is visible on a panel in the lower center of the image.

NASA and Roscosmos, the Russian space agency, have agreed to extend astronaut Peggy Whitson's stay aboard the International Space Station by three months to enable uninterrupted research aboard the orbital laboratory during a period when Russia is temporarily reducing its crew complement. Originally scheduled to return to Earth June 2nd with Oleg Novitskiy and flight engineer Thomas Pesquet, Whitson will now return on on Spet 3rd with Fyodor Yurchikhin and NASA astronaut Jack Fischer, who are scheduled for launch from the Baikonur Cosmodrome on April 20nd.

NASA's MAVEN Reveals Mars Has Metal in its Atmosphere

The image shows the MAVEN spacecraft in orbit around Mars. The spacecraft is a complex of various instruments and solar panels, with a prominent white thermal shield. The background is the reddish-orange surface of Mars, with a thin layer of atmosphere visible at the top. The spacecraft is positioned in the center-left of the frame, with its solar panels extending outwards.

Mars has electrically charged metal atoms (ions) high in its atmosphere, according to new results from NASA's MAVEN spacecraft. The metal ions can reveal previously invisible activity in the mysterious electrically charged upper atmosphere (ionosphere) of Mars. The metal comes from a constant rain of tiny meteoroids onto the Red Planet. When a high-speed meteoroid hits the Martian atmosphere, it vaporizes. Metal atoms in the vapor trail get some of their electrons torn away by other charged atoms and molecules in the ionosphere, transforming the metal atoms into electrically charged ions. MAVEN has detected iron, magnesium, and sodium ions in the upper atmosphere of Mars over the last two years using its Neutral Gas and Ion Mass Spectrometer instrument, giving the team confidence that the metal ions are a permanent feature.

Source & Image Credits: NASA's Goddard Space Flight Center

Cassini Mission Prepares for 'Grand Finale' at Saturn



NASA's Cassini spacecraft, in orbit around Saturn since 2004, is about to begin the final chapter of its remarkable story. On Wednesday, April 26, the spacecraft will make the first in a series of 22 dives through the 1,500-mile-wide (2,400-kilometer) gap between Saturn and its rings as part of the mission's grand finale. In mid-September, following a distant encounter with Titan, the spacecraft's path will be bent so that it dives into the planet. When Cassini makes its final plunge into Saturn's atmosphere on Sept. 15, it will send data from several instruments - most notably, data on the atmosphere's composition—until its signal is lost.

Solar Dynamics Observatory Images 3 Solar Flares in Early April

**On April 2 - 3, 2017,
the sun let off a trio of
mid-level solar flares.**

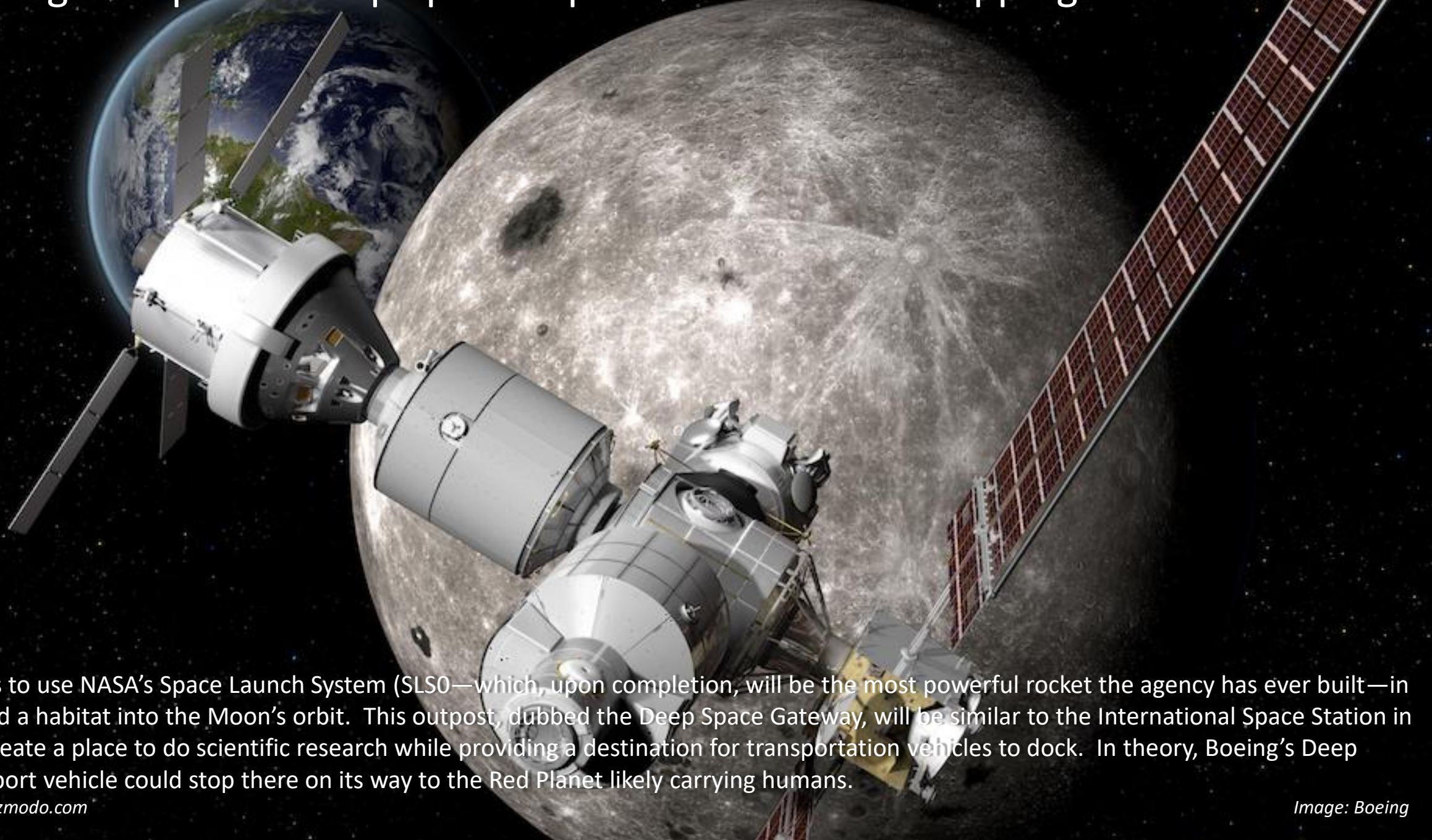


The sun emitted a trio of mid-level solar flares on April 2-3, 2017. NASA's Solar Dynamics Observatory, which watches the sun constantly, captured images of the three events.

Source & Video Credits: NASA's Goddard Space Flight Center/Genna Duberstein

Music credit: A Waltz into Darkness by Joseph Bennie

Boeing's Proposed Deep Space Explorer Will Be Our Stepping Stone to Mars

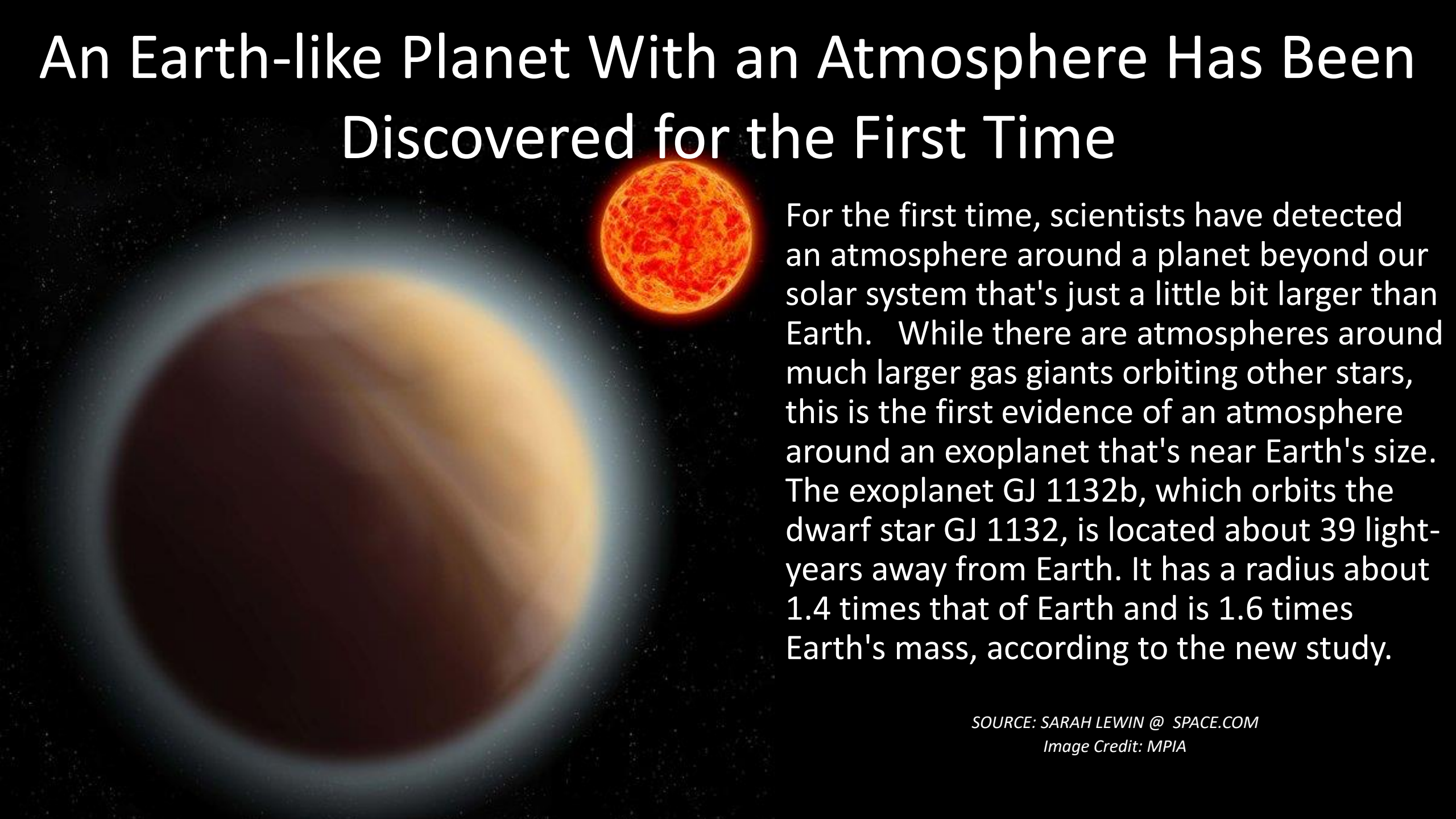


Boeing plans to use NASA's Space Launch System (SLS)—which, upon completion, will be the most powerful rocket the agency has ever built—in order to send a habitat into the Moon's orbit. This outpost, dubbed the Deep Space Gateway, will be similar to the International Space Station in that it will create a place to do scientific research while providing a destination for transportation vehicles to dock. In theory, Boeing's Deep Space Transport vehicle could stop there on its way to the Red Planet likely carrying humans.

Source: www.gizmodo.com

Image: Boeing

An Earth-like Planet With an Atmosphere Has Been Discovered for the First Time



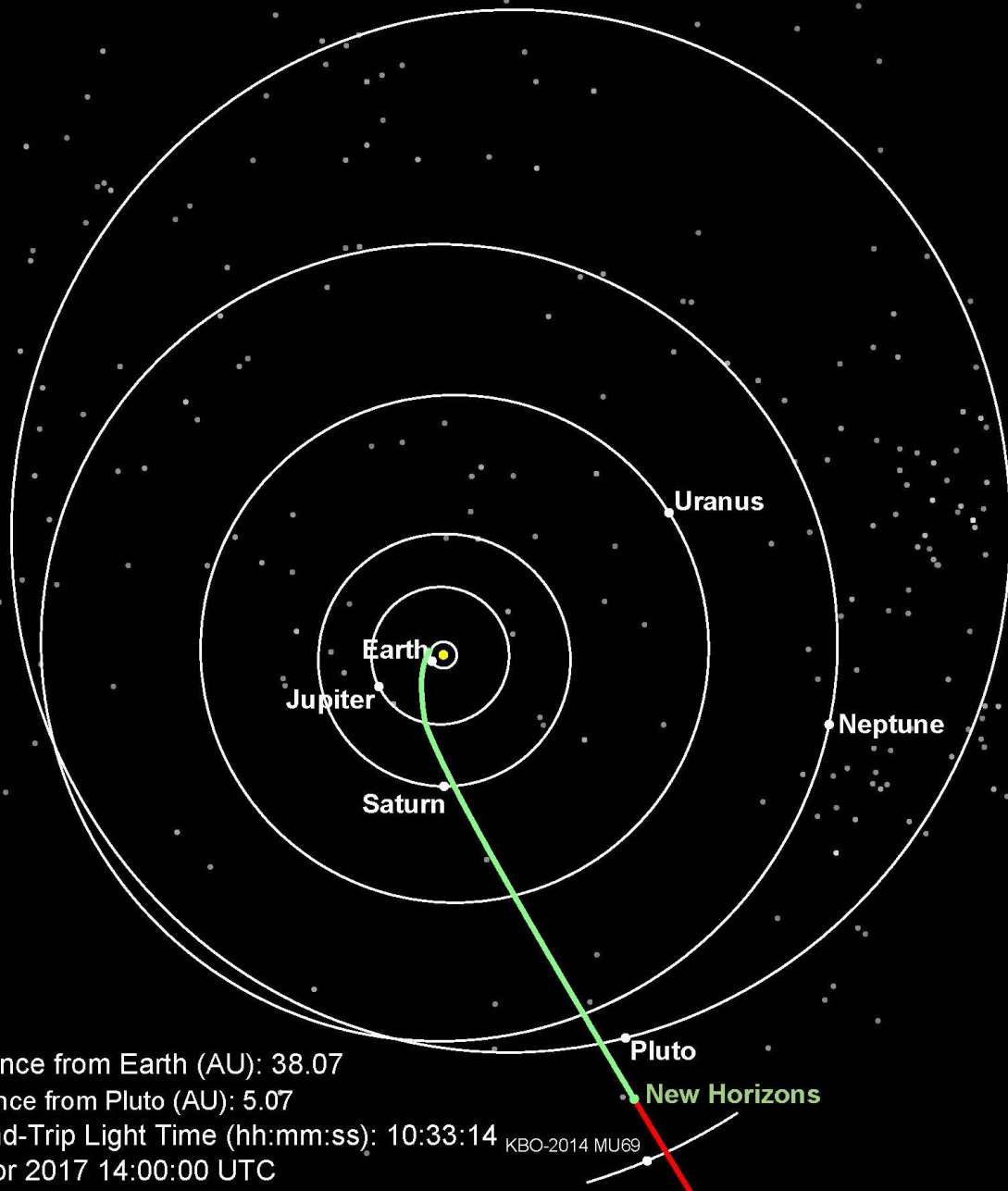
For the first time, scientists have detected an atmosphere around a planet beyond our solar system that's just a little bit larger than Earth. While there are atmospheres around much larger gas giants orbiting other stars, this is the first evidence of an atmosphere around an exoplanet that's near Earth's size. The exoplanet GJ 1132b, which orbits the dwarf star GJ 1132, is located about 39 light-years away from Earth. It has a radius about 1.4 times that of Earth and is 1.6 times Earth's mass, according to the new study.

SOURCE: SARAH LEWIN @ SPACE.COM

Image Credit: MPIA

New Horizons Full Trajectory – Overhead View

Distance from Sun*(AU): 38.15 Heliocentric Velocity (km/s): 14.29



New Horizons Enters Hibernation

NASA's New Horizons spacecraft has eased into a long summer's nap, entering a hibernation phase on April 7 that will last until early September. New Horizons had been "awake" for almost two and a half years, since Dec. 6, 2014, because it was in the throes of its prime mission: conducting a six-month flyby of the Pluto system that culminated with close approach on July 14, 2015; that was followed by 16 months transmitting the data from that flight back to Earth. The spacecraft then began an extended mission in the Kuiper Belt, making distant observations of several Kuiper Belt objects – setting up for a close flyby on Jan. 1, 2019, of one particular object known as 2014 MU69 – and sampling the space environment in the outer reaches of the solar system. This hibernation period will last 157 days – ending on Sept. 11 – but mission activity won't necessarily stop. The science and mission operations teams will be developing detailed command loads for the MU69 encounter, shaping the science observations for much of nine-day flyby.

Source & Image Credits: <http://pluto.jhuapl.edu>

Distance from Earth (AU): 38.07

Distance from Pluto (AU): 5.07

Round-Trip Light Time (hh:mm:ss): 10:33:14

10 Apr 2017 14:00:00 UTC

KBO-2014 MU69

New Horizons

NASA's High-Altitude Plane Takes to the Sky for GOES-16 Field Campaign



This video shows the view from from the NASA ER-2 high-altitude aircraft cockpit before a flight over the Sonoran Desert coastline during the Advanced Baseline Imager (ABI validation flight on March 23. These flights are conducted in order to validate and calibrate NOAA's GOES-16 satellite. The plane will make similar flights over the eastern United States and adjacent oceans to check the data collected by GOES-16's Geostationary Lightning Mapper instrument. The plane is scheduled to fly in lightning-producing storms over both land and ocean while the satellite monitors them from space.

Source: NASA/NOAA

Video Credit: NASA

Tiny Electric Planes and \$25 Tickets Could be the Future of Regional Air Travel



Zunum Aero, a Washington State startup, funded by heavyweight investor partners, including Boeing HorizonX and JetBlue Technology Ventures, subsidiaries of their respective companies, hopes to make regional air travel of a couple hundred miles at \$25 a ticket feasible using hybrid-electric planes that it has been developing since 2013. The start-up has laid out an array of promises: Door-to-door travel times cut in half. Lower operating costs. Airfares that would be 40 to 80 percent lower. All on quiet hybrid aircraft that would produce 80 percent less emissions. Indeed, part of the company name was inspired by “tzunuum,” the Mayan word for the hummingbird, for the bird’s speed and efficiency.

Source: Amy B Wang @ WashingtonPost.com

Image Credit: Zunum Aero

9 April 1967: First Flight of the Boeing 737



The prototype Boeing 737-130 (internal number PA-099), took off from Boeing Field with test pilots Brian Wygle and Lew Wallick, Jr., in the cockpit. In production since 1968, the Boeing 737 is the most popular airliner made and is still in production. As of December 2016, the total number of 737s delivered was 9,335. Boeing has received orders for 3,606 of the new 737 MAX variants. Today, PA-009 is on display at the Museum of Flight.

In The News



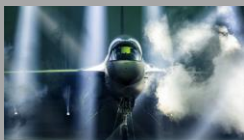
SpaceX Could Reuse 100% of Major Rocket Components by Next Year. Following his company's first successful re-use of the first stage of a Falcon 9 rocket, and its first-ever recovery of a protective nose cone, SpaceX CEO Elon Musk revealed on Friday that he was aiming to be able to reuse every part of the rocket by late 2018. If and when it proves possible, reuse of all of the major components of a rocket would have a profound effect on SpaceX's bottom line, and on the economics of space more broadly. If achievable, it would leave fuel—at \$200,000-\$300,000 per mission—as the primary material cost for launches. *(David Z. Morris @ Fortune.com)*



NASA, Roscosmos Open to Extending ISS Operations to 2028. Top officials from NASA and Roscosmos, the Russian space agency, could decide soon to commit to keeping the International Space Station staffed and flying through at least 2028, four years after the research lab's current retirement date. *(Stephen Clark @ SpaceFlightNow.com)*



Vulcan engine downselect is Blue Origin's to lose. United Launch Alliance is prepared to select Blue Origin's BE-4 engine for its Vulcan launch vehicle this year if the engine passes an upcoming series of tests, the company's chief executive said April 5. In an interview during the 33rd Space Symposium here, Tory Bruno said that tests of the BE-4 engine, scheduled to begin "very soon" at Blue Origin's test site in West Texas, are the last major hurdle the engine must clear before ULA decides to use it on Vulcan. *(Jeff Foust @ SpacNews.com)*



Lockheed Passes On USAF's Light Attack Demo. Lockheed joins Boeing in passing on the OA-X demonstration this summer at Holloman AFB, New Mexico, company spokesman John Losinger confirmed to Aviation Week. Proposals for the experiment – which could lead to a buy of 300 off-the-shelf, light-attack aircraft for counterterrorism missions – were due to the Air Force April 7. Of the big three U.S. aerospace giants, this leaves just Northrop Grumman a possible contender. A spokesman declined to comment on whether the company would participate. *(Lara Seligman @ Aerospace Daily & Defense Report)*