

The Aerospace Update



Earth Day 2017

April 25, 2017

Video Credit: NASA Johnson Space Center

Record-Breaking NASA Astronaut Peggy Whitson Sets New Record for Time in Space

A photograph of NASA astronaut Peggy Whitson inside the International Space Station. She is wearing a dark blue polo shirt with a NASA logo and a patch that says '50'. She is looking towards the camera with a slight smile. The background is a view of Earth from space, showing a blue sky with white clouds. The station's interior is visible, including a large circular window and various equipment.

NASA astronaut Peggy Whitson flew through the standing record for cumulative time spent in space by a U.S. astronaut at 1:27 a.m. EDT on April 24, and with the recent extension of her stay at the International Space Station, she has five months to rack up a new one. This is Whitson's third long-duration stay onboard the space station, and in March her mission was extended into September, increasing the amount of valuable astronaut time available for experiments on board the station.

Source & Photo Credit: NASA

Soyuz MS-04 Sends Two-Man Crew on Fast-Track to ISS



Russia's Soyuz rocket successfully lifted a two-man crew from Russia and the U.S. into orbit and on the fast lane to the International Space Station on Thursday, blasting off from the world's oldest spaceport in Kazakhstan. The trusted Soyuz FG rocket lifted off from Site 1/5 at the Baikonur Cosmodrome at 7:13 UTC, carrying into orbit the Soyuz MS-04 spacecraft manned by fifth-time space flier and third-time Soyuz commander Fyodor Yurchikhin and NASA's Jack Fischer. Thursday's launch marks the first Soyuz mission with two instead of three crew members since Soyuz TMA-2 that lifted off from the same Baikonur launch pad in April 2003 with ISS Expedition 7 crew members Yuri Malenchenko and Ed Lu.

Video Credit: Credit: Roscosmos

Source: SpaceFlight101.com

Two Fresh Crew Members Join ISS Expedition



Veteran Russian cosmonaut Fyodor Yurchikhin and rookie American flight engineer Jack Fischer streaked into orbit aboard a Russian Soyuz ferry craft Thursday, chased down the International Space Station and glided to a smooth docking to complete a six-hour rendezvous. About two hours later, after confirming an airtight seal, hatches were opened and the crew was welcomed aboard by Expedition 51 commander Peggy Whitson, European Space Agency astronaut Thomas Pesquet and Soyuz MS-03 commander Oleg Novitskiy.

S.S. John Glenn OA-7 Cygnus berthed to ISS

After a four-day cruise to the International Space Station, Orbital ATK's OA-7 Cygnus spacecraft, named S.S. John Glenn, was captured and berthed to the outpost. Capture of the 21-foot (6.4-meter) long spacecraft by the station's robotic Canadarm2 came at 6:05 a.m. EDT (10:05 GMT) April 22, 2017. Expedition 51 Flight Engineer Thomas Pesquet of the European Space Agency as well as Commander Peggy Whitson of NASA were at the Robotics Work Station in the Cupola window controlling the arm. Cygnus is carrying some 7,500 pounds (3,400 kilograms) of cargo, crew supplies, and experiments.



China Launches First Cargo Spacecraft on Mission to Test Docking and Refueling



China launched its first cargo resupply spacecraft Thursday on a mission to test docking and refueling technologies. A Long March 7 rocket lifted off from the Wenchang Satellite Launch Center Thursday, April 20th placing the Tianzhou-1 spacecraft into orbit. The spacecraft, the first in a new line of spacecraft designed to eventually support a Chinese space station, will dock with the uncrewed Tiangong-2 laboratory module in orbit to test automated docking technologies and refueling of the lab module by the cargo spacecraft. Tianzhou-1 also carries experiments it will perform for three months after completing initial docking and refueling tests.

Source: Jeff Foust @ SpaceNews.com

Video Credit: Xinhua

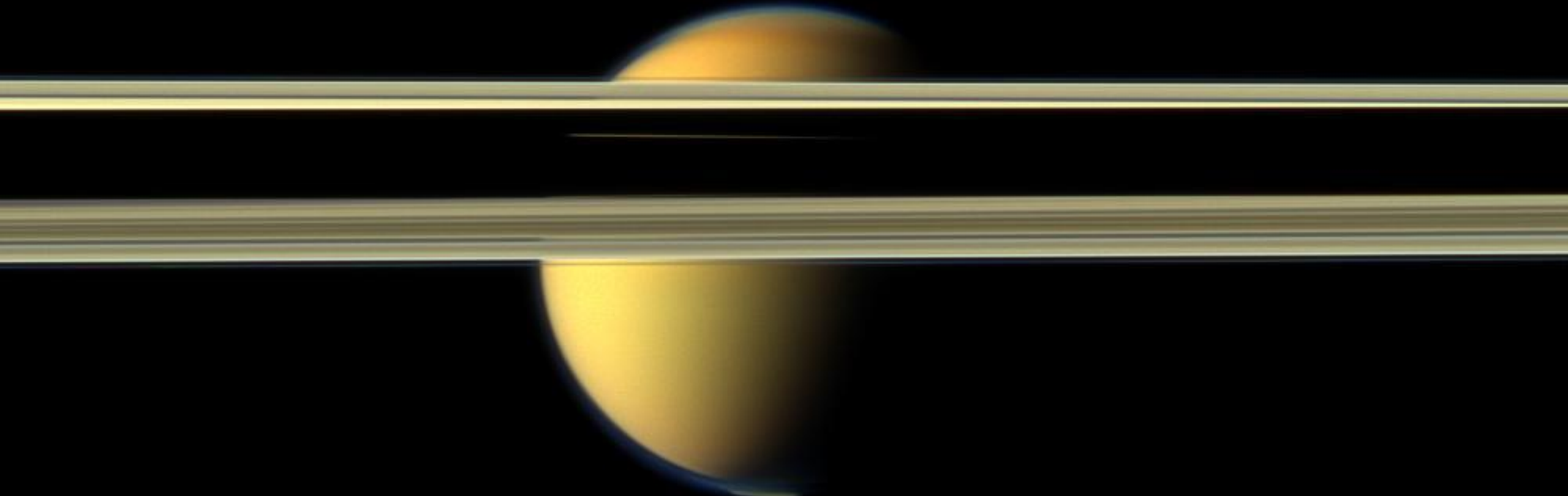
Earth Between the Rings of Saturn



NASA's Cassini spacecraft captured this view of planet Earth as a point of light between the icy rings of Saturn on April 12, 2017

Credits: NASA/JPL-Caltech/Space Science Institute

Cassini Sails by Saturn's Moon Titan for Last Time



NASA's Cassini spacecraft has had its last close brush with Saturn's hazy moon Titan and is now beginning its final set of 22 orbits around the ringed planet. The spacecraft made its 127th and final close approach to Titan on April 21 at 11:08 p.m. PDT (2:08 a.m. EDT on April 22), passing at an altitude of about 608 miles (979 kilometers) above the moon's surface. Saturn's rings obscure part of Titan's colorful visage in this image from NASA's Cassini spacecraft from 2012.

Credits: NASA/JPL-Caltech/Space Science Institute

New Look at 2004's Martian Hole-in-One Site

Eagle Crater with Lander ►

A new observation from NASA's Mars Reconnaissance Orbiter (MRO) captures the landing platform that the rover Opportunity left behind in Eagle Crater more than 13 years and 27 miles (or 44 kilometers) ago. A series of bounces and tumbles after initial touchdown plunked the airbag-cushioned lander into the crater, a mere 72 feet (22 meters) across, on Jan. 25, 2004, Universal Time (Jan. 24, PST).

◀ **Backshell and Parachute**

Credits: NASA/JPL-Caltech/Univ. of Arizona

NASA's Mars Rover Opportunity Leaves 'Tribulation'



Image Credit: Jet Propulsion Laboratory

NASA's senior Mars rover, Opportunity, is departing "Cape Tribulation," a crater-rim segment it has explored since late 2014, southbound for its next destination, "Perseverance Valley." The rover team plans observations in the valley to determine what type of fluid activity carved it billions of years ago: water, wind, or flowing debris lubricated by water. A color panorama of a ridge called "Rocheport" provides both a parting souvenir of Cape Tribulation and also possible help for understanding the valley ahead. The view was assembled from multiple images taken by Opportunity's panoramic camera.

Source: Guy Webster @ Phys.org

NASA's Fermi Catches Gamma-ray Flashes from Tropical Storms

A satellite image of a tropical storm, likely a hurricane, showing a well-defined eye and spiral cloud bands over a dark ocean. The storm is viewed from a high angle, showing its circular structure and the surrounding cloud cover.

About a thousand times a day, thunderstorms fire off fleeting bursts of some of the highest-energy light naturally found on Earth. These events, called terrestrial gamma-ray flashes (TGFs), last less than a millisecond and produce gamma rays with tens of millions of times the energy of visible light. Since its launch in 2008, NASA's Fermi Gamma-ray Space Telescope has recorded more than 4,000 TGFs, which scientists are studying to better understand how the phenomenon relates to lightning activity, storm strength and the life cycle of storms.

A New Angle on Two Spiral Galaxies for Hubble's 27th Birthday



In celebration of the 27th anniversary of the launch of NASA's Hubble Space Telescope on April 24, 1990, astronomers used the legendary telescope to take a portrait of a stunning pair of spiral galaxies. This starry pair offers a glimpse of what our Milky Way galaxy would look like to an outside observer. The edge-on galaxy is called NGC 4302, and the tilted galaxy is NGC 4298. These galaxies look quite different because we see them angled at different positions on the sky. They are actually very similar in terms of their structure and contents.

NASA's Super Pressure Balloon Takes Flight From New Zealand



NASA successfully launched its football-stadium-sized, heavy-lift super pressure balloon (SPB) from Wanaka, New Zealand, at 10:50 a.m. Tuesday, April 25 (6:50 p.m. April 24 in U.S. Eastern Time), on a mission designed to run 100 or more days floating at 110,000 feet (33.5 km) about the globe in the southern hemisphere's mid-latitude band. While validating the super pressure balloon technology is the main flight objective, the International Extreme Universe Space Observatory on a Super Pressure Balloon (EUSO-SPB) payload is flying as a mission of opportunity. EUSO-SPB's objective is to detect ultra-high energy cosmic rays from beyond our galaxy as they penetrate the Earth's atmosphere. As these high-energy particles enter the atmosphere, they interact with nitrogen molecules in the air and create a UV fluorescence light. From its high-altitude vantage point, EUSO-SPB will look downward observing a broad swathe of the Earth's atmosphere to detect the UV fluorescence from these deep space cosmic rays coming in from above.

All-Electric 'Flying Car' Take its First Test Flight in Germany



Munich-based Lilium, backed by investors who include Skype co-founder Niklas Zennström, said the planned five-seater jet, which will be capable of vertical take-off and landing, could be used for urban air-taxi and ride-sharing services. In flight tests, a two-seat prototype executed maneuvers that included a mid-air transition from hover mode – like a drone – to wing-borne flight – like a conventional aircraft, Lilium said.

Source: TheGuardian.com

Video Credit: Lilium & The Guardian

Pressurized Perlan Glider Reaches New High Altitude on Journey to Edge of Space



Airbus Perlan Mission II, an initiative to fly a glider without an engine to the edge of space to collect ground-breaking insights on high-altitude flight, weather, and climate change, returned to flight this week at its U.S. headquarters at the Minden-Tahoe Airport. Perlan Project Pilots Jim Payne and Miguel Iturmendi soared the pressurized glider to its highest altitude to date, reaching 30,615 feet. The Perlan 2 will spend spring soaring in the rising wind currents - called mountain waves - in the skies above the Sierra Nevada, before deploying in May to Argentina for its second year of flight operations in Patagonia.

In The News



U.S. Navy Further Limits T-45 Flying To 5,000 ft. The U.S. Navy has further restricted flying in the Boeing T-45C Goshawk to 5,000 ft. maximum altitude and 2-g maneuvers after one instructor pilot reported headaches after performing dynamic flying in the troubled tandem-seat trainer. The new flight restrictions come less than a week after the T-45C resumed flying, following a 12-day “operational pause” implemented by Navy leadership after a spike in hypoxia-like physiological episodes reported by pilots.

(James Drew, Lara Seligman and Jen DiMascio | Aerospace Daily & Defense Report)



Israel Welcomes Latest Trio of F-35s. Three additional Lockheed Martin F-35s landed at Nevatim air base in Israel on 23 April, taking the number of fifth-generation fighters to arrive in the nation to five. The Israeli air force's “Golden Eagle” squadron will use the new arrivals to intensify training operations, while the jets will also receive modifications unique to the service. *(Arie Egozi @ FlightGlobal.com)*



French Guiana Accord Sets Stage for Arianespace to Resume Launches. Thanks to the “Accord de Guyane” agreement signed April 21 by French and French Guianese officials, launch service provider Arianespace says it will be able to soon resume launch activity and can make up for delays by using previously scheduled downtime over the next two months. *(Caleb Henry @ SpaceNews.com)*



Apple Hires Two Former Google Executives Involved with Satellite. Apple has hired two former Google executives involved with that company’s satellite projects. Joining Apple are John Fenwick, who led Google’s spacecraft operations, and Michael Trela, head of satellite engineering. Some analysts speculate that Apple is pursuing a broadband satellite constellation by backing proposals for such systems made by Boeing, although neither company has confirmed any partnership. *(Jeff Foust @ SpaceNews.com)*



Airbus delivers the first A321neo to Virgin America. Airbus has delivered the first-ever A321neo to Virgin America now owned by the Alaska Airlines Group. The pictured A321-253N N921VA (msn 7589) was delivered in full Virgin America colors. The latest generation aircraft powered by CFM International’s LEAP-1A engines was handed over to the all-Airbus operator, at a ceremony in Hamburg, Germany. *(WorldAirlineNews.com)*