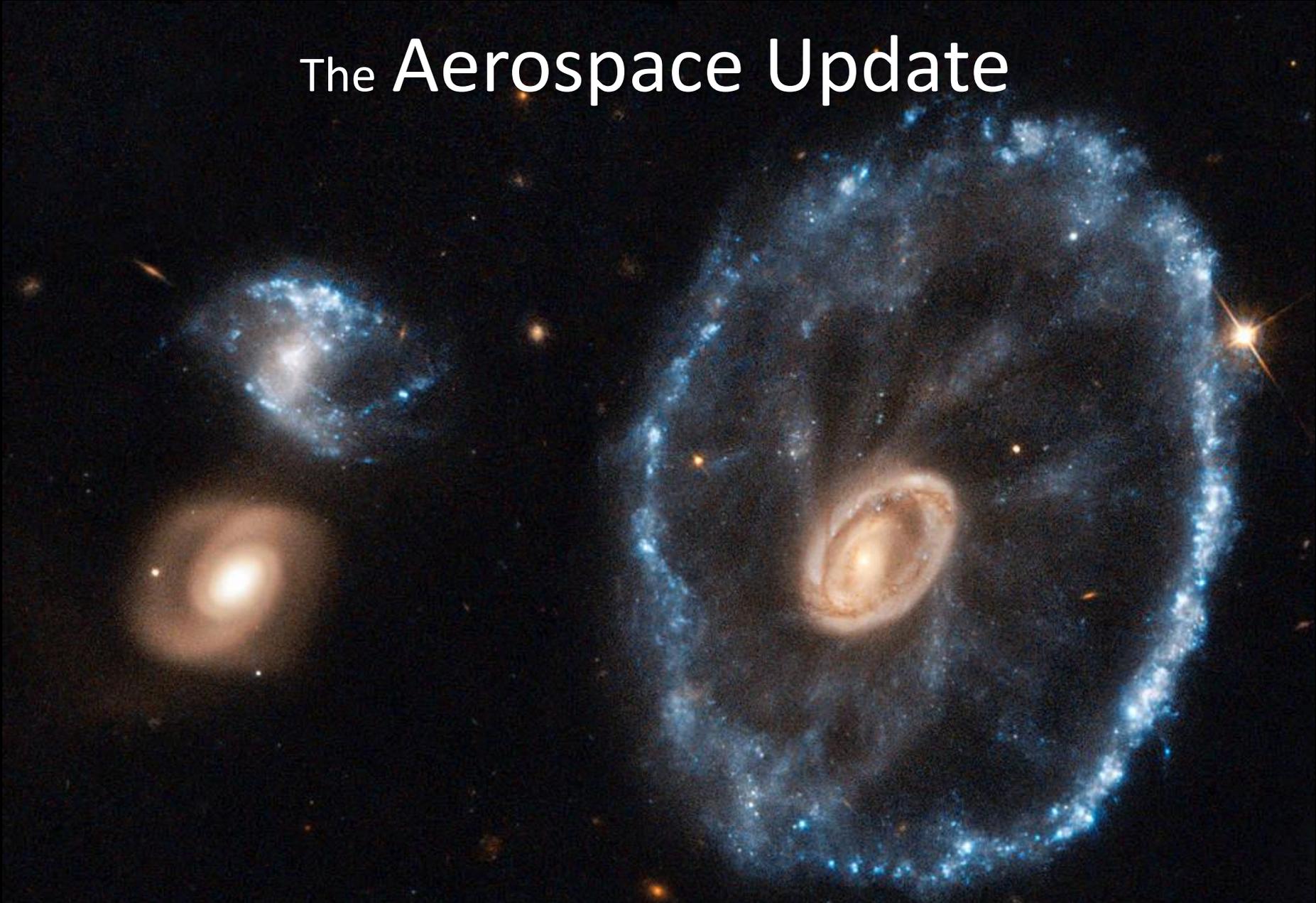


The Aerospace Update



Hubble's Cartwheel

U.S. Military Satellite Launched to Fortify Against Missile Attacks



A billion-dollar U.S. military satellite rode a United Launch Alliance Atlas 5 rocket into orbit Friday, Jan 19th night from Cape Canaveral, joining a network of space sentinels warning of threatening missile launches from North Korea, or any other place on the globe. Lockheed Martin, builder of the SBIRS GEO Flight 4 spacecraft, said ground controllers with the Air Force's 460th Space Wing established contact with the newly-launched satellite soon after its release from the Atlas 5's Centaur upper stage.

“Bell Ringer to a Launch Anywhere on the Face of the Planet”



The \$1.2 billion SBIRS GEO Flight 4 satellite launched aboard the Atlas 5 rocket will finish the initial deployment of the Air Force’s new-generation missile-warning network. When complete, the constellation that will include a minimum of four SBIRS craft stationed in geosynchronous orbit and at least two infrared payloads in elliptical orbits aboard top secret National Reconnaissance Office spy satellites, providing polar coverage. The SBIRS fleet is the “bell ringer to a launch anywhere on the face of the planet,” said Col. Dennis Bythewood, director of the remote sensing systems directorate at the Air Force’s Space and Missile Systems Center.

Source: Stephen Clark @ SpaceFlightNow.com

Photo Credit: Lockheed Martin

Rocket Lab Electron Reaches Orbit on Second Launch



Rocket Lab's commercial Electron launcher named "Still Testing" soared into orbit from New Zealand on Saturday, Jan 20th U.S. time, a success that will hasten dedicated, frequent and affordable rides to space for small satellites. The achievement caps four years of development by Rocket Lab's U.S.-New Zealand team and affirms the company's place in the world's fast-growing commercial space sector. The rocket's on-target orbital delivery, on only its second flight, should allow a quick transition to operational, revenue-earning missions in the coming months. Rocket Lab's backlog includes several missions for commercial clients, along with one launch contract with NASA.

Video courtesy of Rocket Labs

Source: Stephen Clark @ SpaceFlightNow.com

Rocket Lab Reveals 'The Humanity Star,' a 'Disco Ball' Satellite Shining From Space



Rocket Lab on Wednesday (Jan. 24) revealed to the world that "The Humanity Star" is circling Earth and is expected to become the brightest object in the night sky. Covered in 65 highly-reflective panels, the satellite is rapidly spinning, reflecting the sun's light back onto the planet, much in the same way that a disco ball casts light onto a dance floor. From the ground, the geodesic sphere-shaped satellite will appear as a bright, glinting star quickly traversing the night sky. "The Humanity Star" was secretly launched on board "Still Testing," the second test flight of Rocket Lab's Electron carbon-composite booster.

Long March 11 Lifts Off From Jiuquan With Six Small Satellites



China's light-lift Long March 11 booster took to the skies on Friday, January 19th, tasked with the delivery of six small satellites into orbit. The rocket was launched Thursday, January 18th from Launch Area 4 at the Jiuquan Satellite Launch Center (JSLC) in northwestern China's Gansu province. The aim of Friday's flight was to deliver half a dozen small satellites designed for a variety of purposes into a Sun-synchronous orbit (SSO). The confirmed payload of the mission consists of two identical Jilin-1 satellites and four CubeSats, namely: Xiaoxiang 2, Huai'an, Quantutong 1 and Kepler 2.

Testbed for Canadian Data Relay Network Successfully Launched on Long March 11



A nanosatellite built in Scotland for Kepler Communications, a Toronto company planning a 140-satellite global data relay network, rode to orbit Friday with five Chinese satellites launched aboard a solid-fueled Long March 11 booster from the Gobi Desert. The Canadian-owned CubeSat, named KIPP after a robot in the film *Interstellar*, is no bigger than a shoebox, but its launch marks a major step in Kepler's ambition to deploy a commercial satellite fleet to transfer bulk data around the world, help companies track global shipments, and receive and forward data from remote scientific sensors.

Source: Stephen Clark @ SpaceFlightNow.com

Image Credit: Kepler Communications

SpaceX Conducts Falcon Heavy Static Fire Test



SpaceX carried out a static fire test of its first Falcon Heavy launch vehicle Jan. 24th, which the company's founder said clears the way for its upcoming launch. The rocket fired the engines in its three core boosters at 12:30 p.m. Eastern on the pad at Kennedy Space Center's Launch Complex 39A (LC-39A). Observers of the test reported it lasting about 10 seconds. The company didn't immediately release details about the test, including the precise length of the static fire and the performance of the 27 Merlin engines in the three boosters.

Video Credit: SpaceX

Source: Jeff Foust @ SpaceNews.com

Spacewalkers Complete Repairs to Station Robotic Arm



Expedition 54 Flight Engineers Mark Vande Hei and Scott Tingle of NASA completed the first spacewalk this year Tuesday, Jan 23rd at 2:13 pm EST, lasting 7 hours, 24 minutes. The two astronauts replaced a Latching End Effector (LEE) on the station's robotic arm, Canadarm2. There are two redundant end effectors on each end of the arm used to grapple visiting vehicles and components during a variety of operational activities. The spacewalk was the 206th in support of space station assembly and maintenance, the third in Vande Hei's career and the first for Tingle. This photo is a "space-selfie" taken by Vande Hei.

Text & Photo Credits: NASA

NASA's Next Mars Lander Spreads its Solar Wings

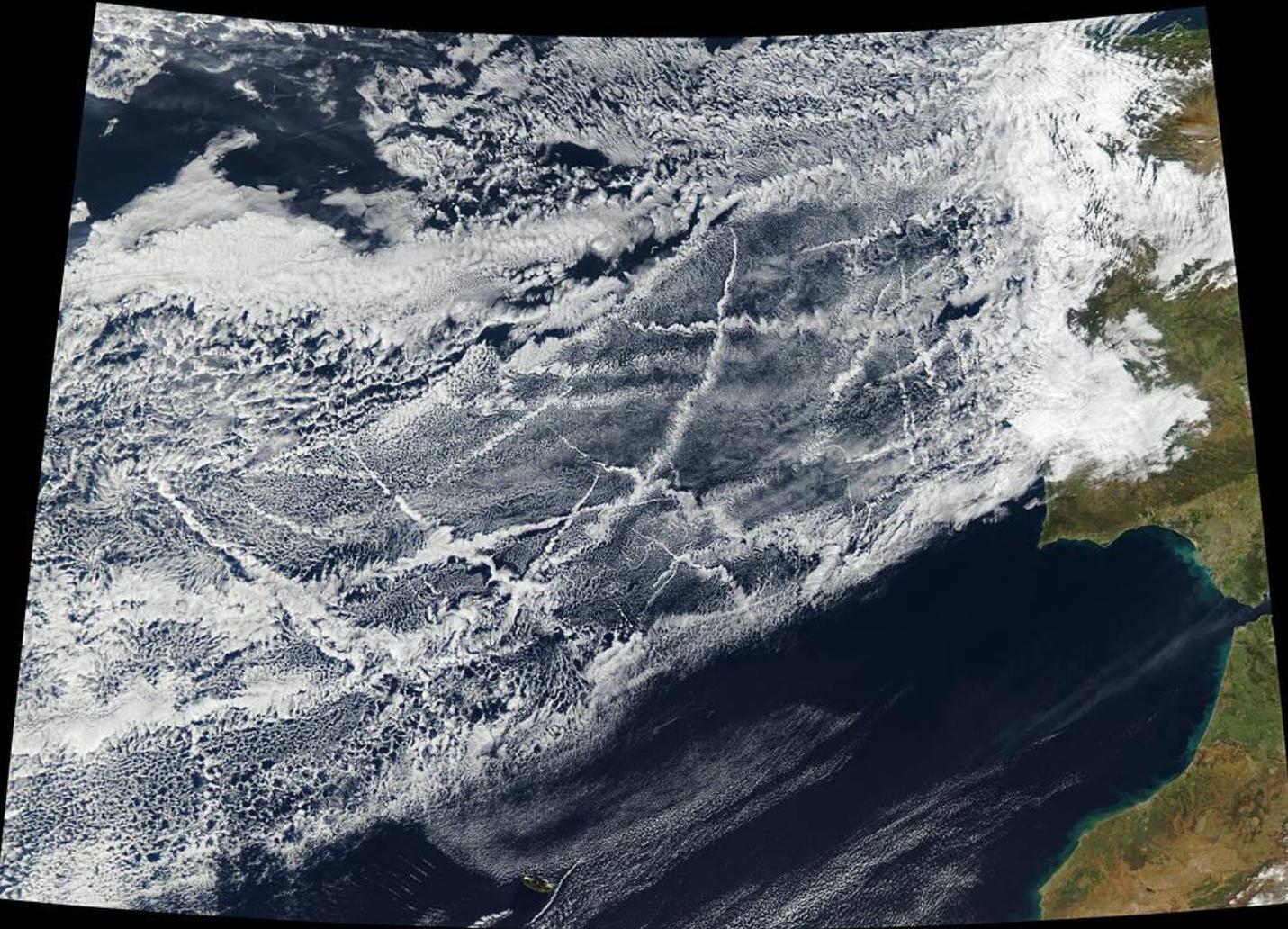


The solar arrays on NASA's InSight Mars lander were deployed as part of testing conducted Jan. 23rd, 2018, at Lockheed Martin Space in Littleton, Colorado. Engineers and technicians evaluated the solar arrays and performed an illumination test to confirm that the solar cells were collecting power. The launch window for InSight opens May 5, 2018.

Source: NASA/JPL-CalTech

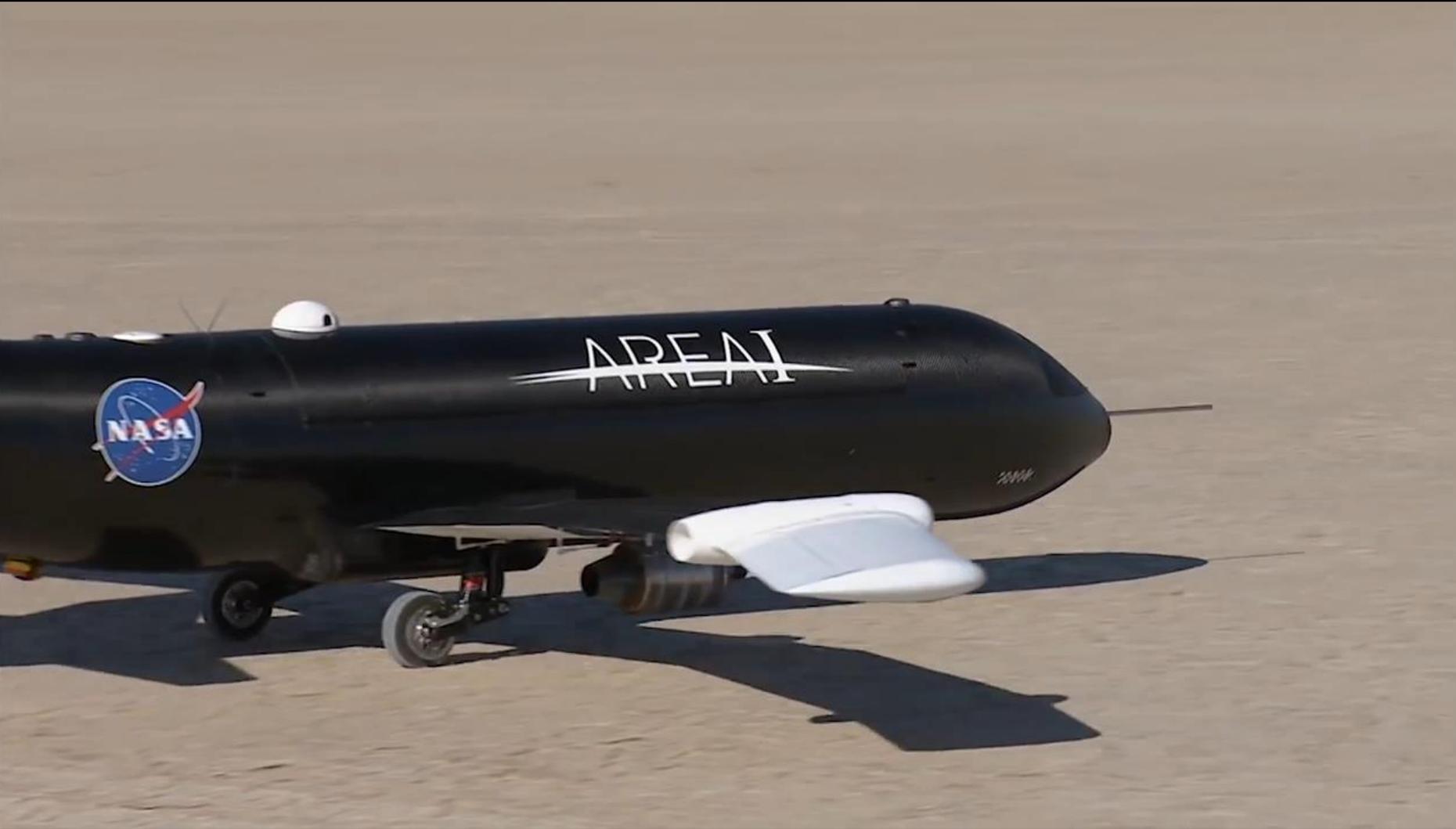
Image Credit: Lockheed Martin Space

Signs of Ships in the Clouds



Ships churning through the Atlantic Ocean produced this patchwork of bright, criss-crossing cloud trails off the coast of Portugal and Spain. The narrow clouds, known as ship tracks, form when water vapor condenses around tiny particles of pollution that ships emit as exhaust or that form from gases in the exhaust. Ship tracks typically form in areas where low-lying stratus and cumulus clouds are present. Some of the pollution particles generated by ships (especially sulfates) are soluble in water and serve as the seeds around which cloud droplets form. Clouds infused with ship exhaust have more and smaller droplets than unpolluted clouds. As a result, the light hitting the polluted clouds scatters in many directions, making them appear brighter and thicker than unpolluted marine clouds, which are typically seeded by larger, naturally occurring particles such as sea salt. The Moderate Resolution Imaging Spectroradiometer (MODIS) aboard the Aqua satellite captured this natural-color image on January 16, 2018. Some of the criss-crossing clouds stretch hundreds of kilometers from end to end. The narrow ends of the clouds are youngest, while the broader, wavier ends are older.

NASA Tests New Alloy to Fold Wings in Flight

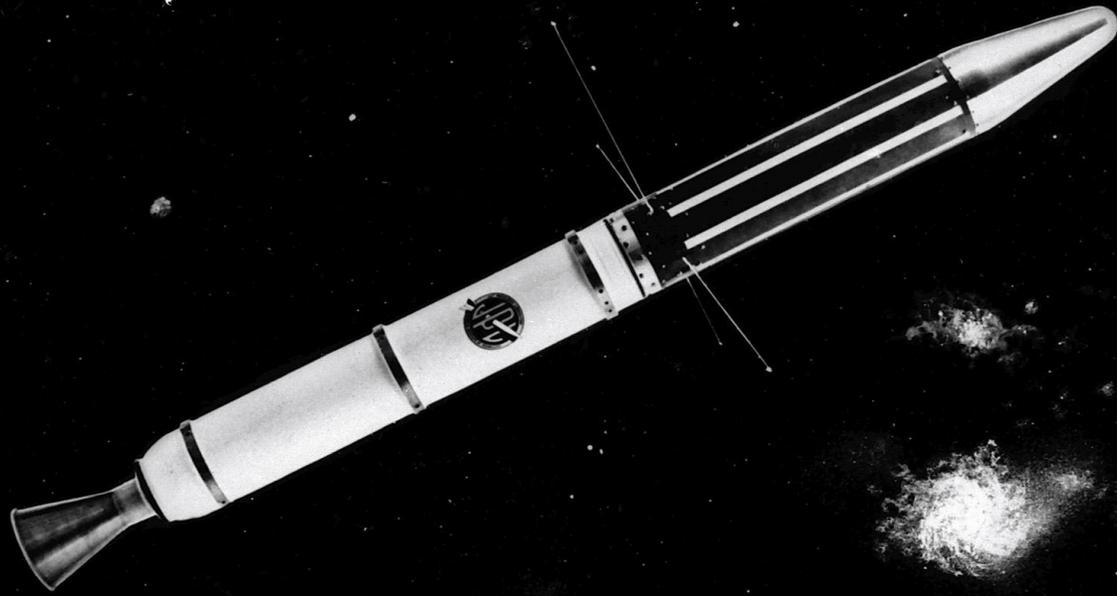


NASA has successfully applied a new technology in flight that allows aircraft to fold their wings to different angles while in the air. The recent flight series, which took place at NASA's Armstrong Flight Research Center in California, was part of the Spanwise Adaptive Wing project, or SAW. This project aims to validate the use of a cutting-edge, lightweight material to be able to fold the outer portions of aircraft wings and their control surfaces to optimal angles in flight.

Explorer 1: The Beginning of American Space Science

Explorer 1 was the first satellite launched by the United States when it was sent into space on January 31, 1958. Following the launch of the Soviet Union's Sputnik 1 on October 4, 1957, the U.S. Army Ballistic Missile Agency was directed to launch a satellite using its Jupiter C rocket developed under the direction of Dr. Wernher von Braun. The Jet Propulsion Laboratory received the assignment to design, build and operate the artificial satellite that would serve as the rocket's payload. JPL completed this job in less than three months.

The primary science instrument on Explorer 1 was a cosmic ray detector designed to measure the radiation environment in Earth orbit. Once in space this experiment, provided by Dr. James Van Allen of the University of Iowa, revealed a much lower cosmic ray count than expected. Van Allen theorized that the instrument may have been saturated by very strong radiation from a belt of charged particles trapped in space by Earth's magnetic field. The existence of these radiation belts was confirmed by another U.S. satellite launched two months later, and they became known as the Van Allen Belts in honor of their discoverer.



In The News



Google Lunar X Prize to End without Winner. The foundation running the Google Lunar X Prize announced Jan. 23 that the \$20 million grand prize for a commercial lunar lander will expire at the end of March without a winner. The X Prize Foundation said none of its five finalist teams would be able to launch a mission before the current deadline of March 31. That deadline has been extended several times in the past, but foundation officials previously said there would be no further extensions of the competition. *(Jeff Foust @ SpaceNews.com)*



787-10 Dreamliner Earns FAA Certification. Boeing Co.'s 787-10 — the twin-aisle commercial plane built exclusively in North Charleston — has received certification from the Federal Aviation Administration, clearing the plane to carry passengers on commercial flights. Singapore Airlines, which has ordered 49 of the jets, will get the first 787-10 for commercial flights during the first half of this year. *(David Wren @ PostandCourier.com)*



GE Engine Venture May Oust Rolls Royce From Emirates A380 Contract. General Electric Co.'s A380 engine venture with Pratt & Whitney may be poised to muscle back in on the double-decker jet following Airbus SE's deal to sell 36 superjumbos to Gulf carrier Emirates. Citing sources familiar with the matter, Bloomberg reports that although Rolls Royce Holdings is providing Trent 900 turbines for the last 50 A380s that Emirates ordered, the carrier "is leaning toward a rival power plant offered by the so-called Engine Alliance of GE and Pratt for the new bunch." *(Benjamin Katz & Rick Clough @ Bloomberg.com)*



First A320 in Alaska Airlines Livery Revealed. Airbus and Alaska Airlines have released pictures of the first Airbus A320-family aircraft painted in the color scheme of Alaska Airlines. The aircraft, an A320 with registration N625VA, had previously worn the livery of Virgin America, now a subsidiary of Seattle-based Alaska Air Group. Virgin operates a mix of 67 A319s, A320s and A321neos, and has orders for 36 more Airbus narrow bodies, according to Flight Fleets Analyzer. Alaska has said it expects to do away with the Virgin brand completely by the end of 2019. *(Jon Hemmerdinger @ FlightGlobal.com)*

Astronaut Remembrance



STS-107 Crew (l-r): Mission Specialist 1 David M. Brown, Commander Rick D. Husband, Mission Specialist 4 Laurel Blair Salton Clark, Mission Specialist 2 Kalpana Chawla, Payload Commander Michael P. Anderson, Pilot William C. McCool, Payload Specialist 1 Ilan Ramon

STS-51L Crew (l-r): Mission Specialist Ellison S. Onizuka, Pilot Michael J. Smith, Payload Specialist Christa McAuliffe, Commander Francis R. Scobee, Payload Specialist Gregory B. Jarvis, Mission Specialist Judith A. Resnik, Mission Specialist Ronald E. McNair

Apollo 1 Crew (l-r): Virgil I. Grissom, Edward H. White, Roger B. Chaffee

The Museum honors the astronauts lost during Apollo 1 (Jan. 27, 1967) and the space shuttles *Challenger* (January 28, 1986) and *Columbia* (Feb. 1, 2003) with a program, Saturday Jan. 27th at 2:00 pm in the Charles Simonyi Space Gallery, recalling those tragedies while exploring the risks and successes of all space travel. The program will be presented by NASA JPL Solar System Ambassador Ron Hobbs.