The Aerospace Update

Gazing at Earth's Light Show from Space

July 4, 2017

Video Credit: NASA

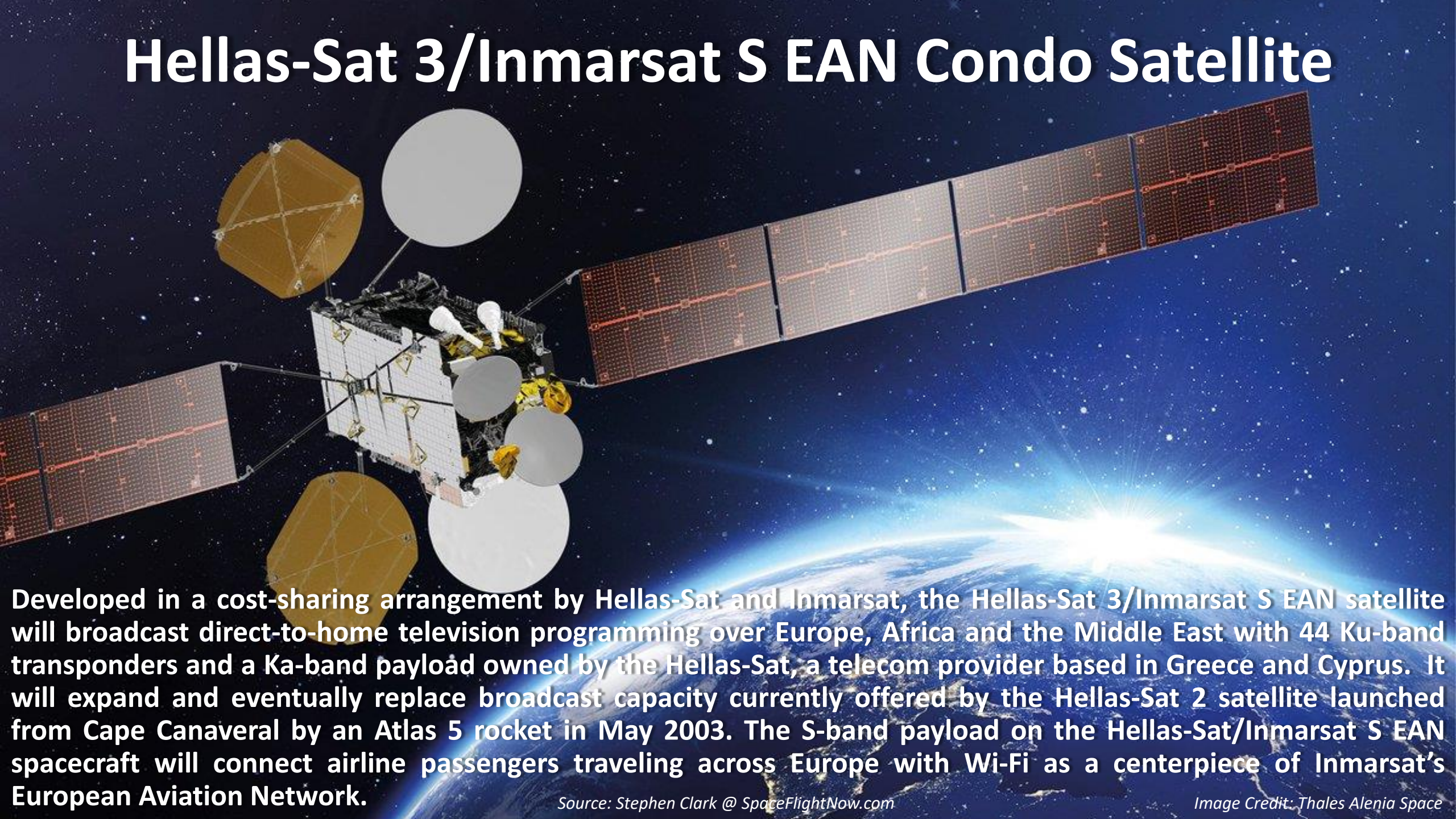
Ariane 5 Successfully lifts Telecommunications Satellites for Three Operators

Hauling two heavy satellites into orbit, Europe's Ariane 5 rocket checked off its fourth successful flight of the year on Wednesday June 28th, the 80th success in a row for the workhorse launcher in a streak that has been going since 2002. Hidden under the rocket's large fairing were the shared Inmarsat-S/HellasSat-3 satellite for TV distribution and aeronautical connectivity and India's GSAT-17 that will reinforce the country's communications infrastructure.

Source: SpaceFlight101.com

Video Credit: Arianespace

Hellas-Sat 3/Inmarsat S EAN Condo Satellite

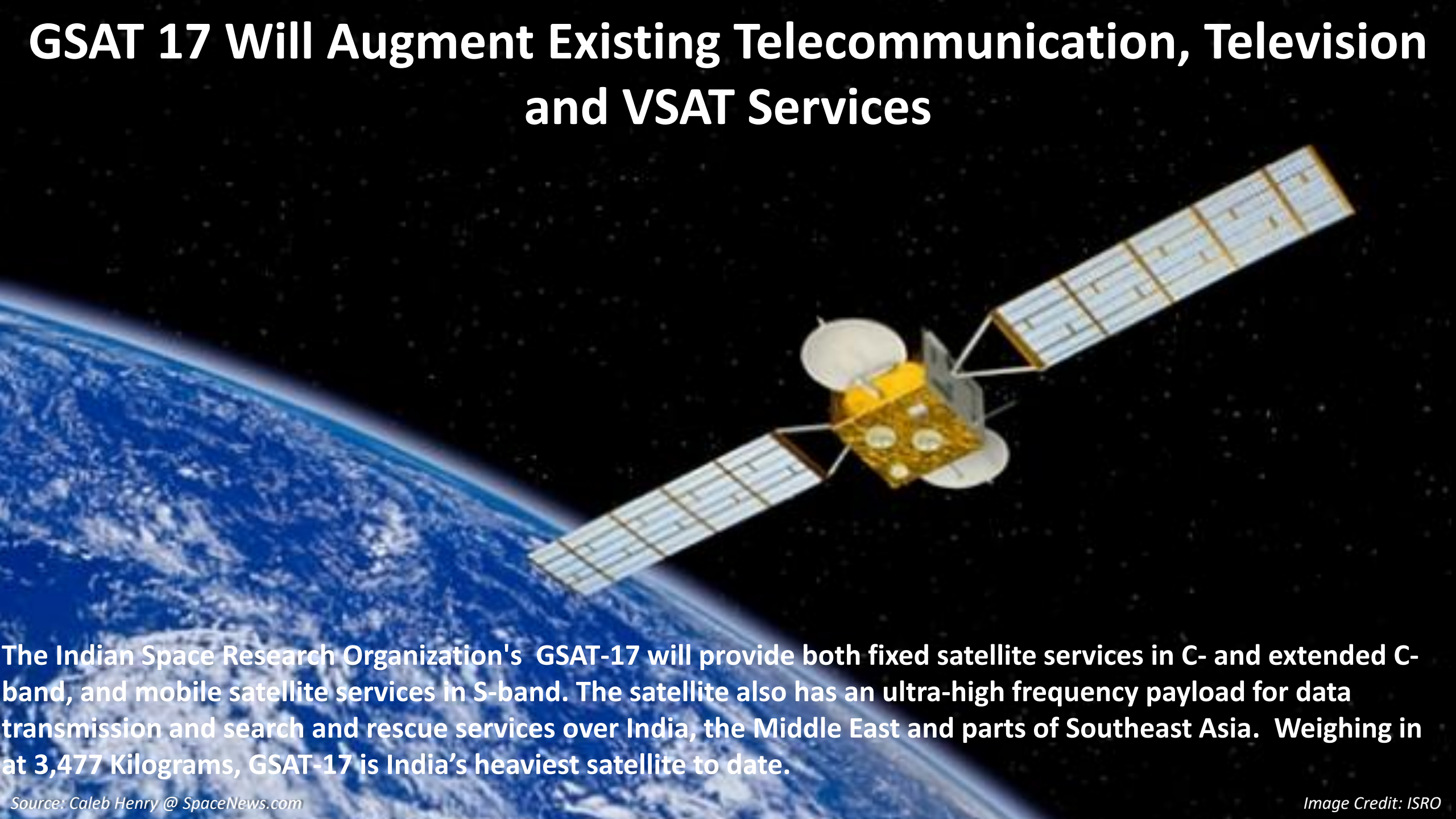


Developed in a cost-sharing arrangement by Hellas-Sat and Inmarsat, the Hellas-Sat 3/Inmarsat S EAN satellite will broadcast direct-to-home television programming over Europe, Africa and the Middle East with 44 Ku-band transponders and a Ka-band payload owned by the Hellas-Sat, a telecom provider based in Greece and Cyprus. It will expand and eventually replace broadcast capacity currently offered by the Hellas-Sat 2 satellite launched from Cape Canaveral by an Atlas 5 rocket in May 2003. The S-band payload on the Hellas-Sat/Inmarsat S EAN spacecraft will connect airline passengers traveling across Europe with Wi-Fi as a centerpiece of Inmarsat's European Aviation Network.

Source: Stephen Clark @ SpaceFlightNow.com

Image Credit: Thales Alenia Space

GSAT 17 Will Augment Existing Telecommunication, Television and VSAT Services



The Indian Space Research Organization's GSAT-17 will provide both fixed satellite services in C- and extended C-band, and mobile satellite services in S-band. The satellite also has an ultra-high frequency payload for data transmission and search and rescue services over India, the Middle East and parts of Southeast Asia. Weighing in at 3,477 Kilograms, GSAT-17 is India's heaviest satellite to date.

Source: Caleb Henry @ SpaceNews.com

Image Credit: ISRO

Dragon Returns Space Station Science to Earth

SpaceX’s Dragon spaceship, carrying more than 4,100 pounds of cargo and research specimens, descended to a predawn splashdown Monday, July 3rd in the Pacific Ocean southwest of Los Angeles, completing the first re-flight of one of SpaceX’s unpiloted supply ships to the International Space Station.

NASA astronaut Jack Fischer photographed the SpaceX Dragon capsule as it reentered Earth's atmosphere before splashing down in the Pacific Ocean west of Baja California at 8:12 a.m. EDT, July 3, 2017.

Source: NASA

Photo Credit: Jack Fischer/NASA

Long March 5 launch fails

The second launch of China's most powerful rocket, the Long March 5, ended in failure July 2nd, the second incident involving a Chinese launch vehicle in as many weeks. Chinese broadcaster CGTN reported that the Long March 5 "started to malfunction shortly after take-off." Observers watching in-flight video of the launch noticed a plume of gas late in the first stage burn, suggesting a problem with one or both of the engines in the core stage. The failure was the second incident involving a Chinese launch in as many weeks. A Long March 3B rocket launched the Chinasat-9A satellite into geostationary transfer orbit June 19. However, a malfunction in the rocket's upper stage stranded the satellite into a much lower orbit than planned.

Source: Jeff Foust @ SpaceNews.com

Photo Credit: Xinhua

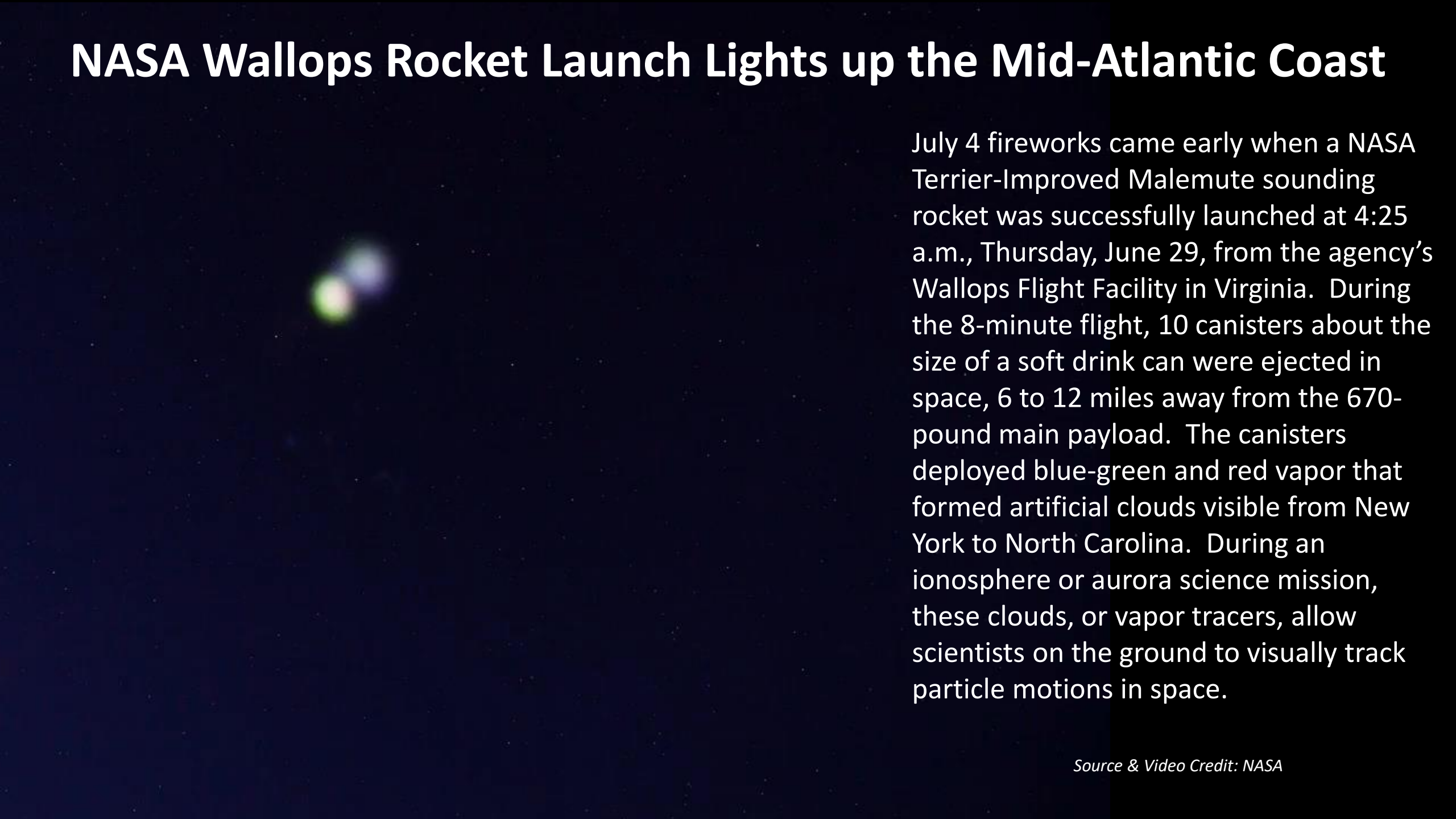
An Algorithm Helps Protect Mars Curiosity's Wheels

There are no mechanics on Mars, so the next best thing for NASA's Curiosity rover is careful driving. A new algorithm is helping the rover do just that. The software, referred to as traction control, adjusts the speed of Curiosity's wheels depending on the rocks it's climbing. The traction control algorithm uses real-time data to adjust each wheel's speed, reducing pressure from the rocks. The software measures changes to the suspension system to figure out the contact points of each wheel. Then, it calculates the correct speed to avoid slippage, improving the rover's traction.

Source: Andrew Good @ Jet Propulsion Laboratory

Photo Credit: NASA/JPL-Caltech

NASA Wallops Rocket Launch Lights up the Mid-Atlantic Coast



July 4 fireworks came early when a NASA Terrier-Improved Malemute sounding rocket was successfully launched at 4:25 a.m., Thursday, June 29, from the agency's Wallops Flight Facility in Virginia. During the 8-minute flight, 10 canisters about the size of a soft drink can were ejected in space, 6 to 12 miles away from the 670-pound main payload. The canisters deployed blue-green and red vapor that formed artificial clouds visible from New York to North Carolina. During an ionosphere or aurora science mission, these clouds, or vapor tracers, allow scientists on the ground to visually track particle motions in space.

Source & Video Credit: NASA

NASA's Juno Spacecraft to Fly Over Jupiter's Great Red Spot July 10

Just days after celebrating its first anniversary in Jupiter orbit, NASA's Juno spacecraft will fly directly over Jupiter's Great Red Spot, the gas giant's iconic, 10,000-mile-wide (16,000-kilometer-wide) storm. This will be humanity's first up-close and personal view of the gigantic feature -- a storm monitored since 1830 and possibly existing for more than 350 years. Jupiter's mysterious Great Red Spot is probably the best-known feature of Jupiter," said Scott Bolton, principal investigator of Juno from the Southwest Research Institute in San Antonio. "This monumental storm has raged on the solar system's biggest planet for centuries. Now, Juno and her cloud-penetrating science instruments will dive in to see how deep the roots of this storm go, and help us understand how this giant storm works and what makes it so special."

Source: NASA.gov

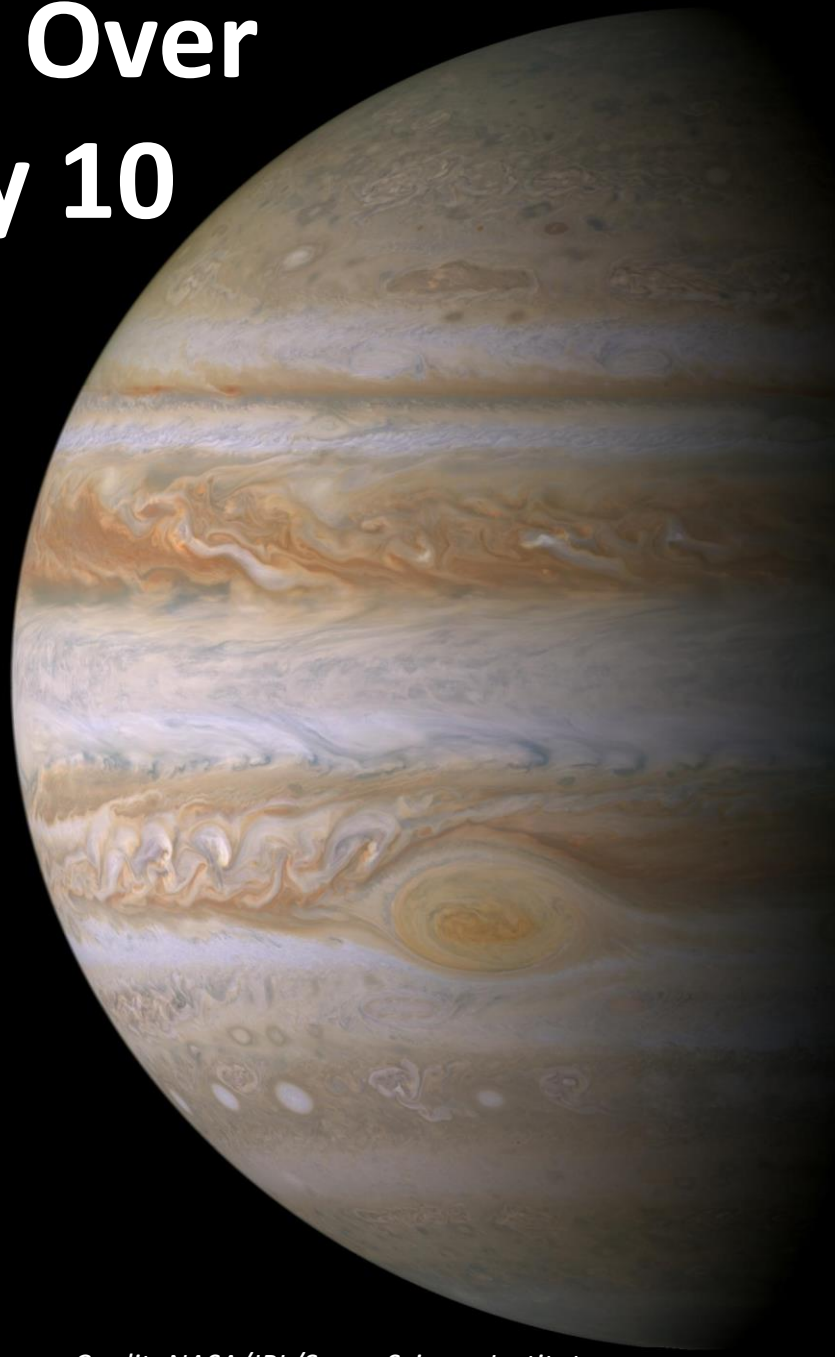


Image Credit: NASA/JPL/Space Science Institute

From Predator To Stingray, General Atomics Leads UAV Boom

Its Predator revolutionized air warfare. Now General Atomics is taking aim at the next generation of unmanned aircraft systems (UAS), from a ground-up redesign of its workhorse MQ-9/Predator B and a bid to transform carrier-based aviation to high-energy lasers and air-launched swarming drones. Its privately developed Predator C Avenger jet-powered UAS has been flying since 2009. A development of the Avenger will compete against rival designs from Boeing, Lockheed Martin and Northrop Grumman for the U.S. Navy's MQ-25 Stingray program—an aerial refueling and surveillance unmanned aircraft that will relieve overworked Boeing F/A-18E/F fighters of tanking duties.

Source: James Drew @ Aviation Week & Space Technology

Image Credit: GA/ASI

Facebook Drone in Successful Test Flight

The drone - dubbed Aquila - flew for one hour and 46 minutes in Arizona. On Aquila's maiden voyage last summer, the autopilot system was confused by heavy wind and crash-landed. This time, the drone flew at an altitude of 3,000ft, a long way from Facebook's intended 60,000ft goal. This time, the engineering team added "spoilers" to the wings to increase drag and reduce lift during landing. They also modified the autopilot software and applied a smoother finish to the craft. Aquila - which has a wingspan of a Boeing 737 - is part of Facebook's ambitious plans to connect the world to the internet.

Source: BBC.com

Photo Credit: Facebook

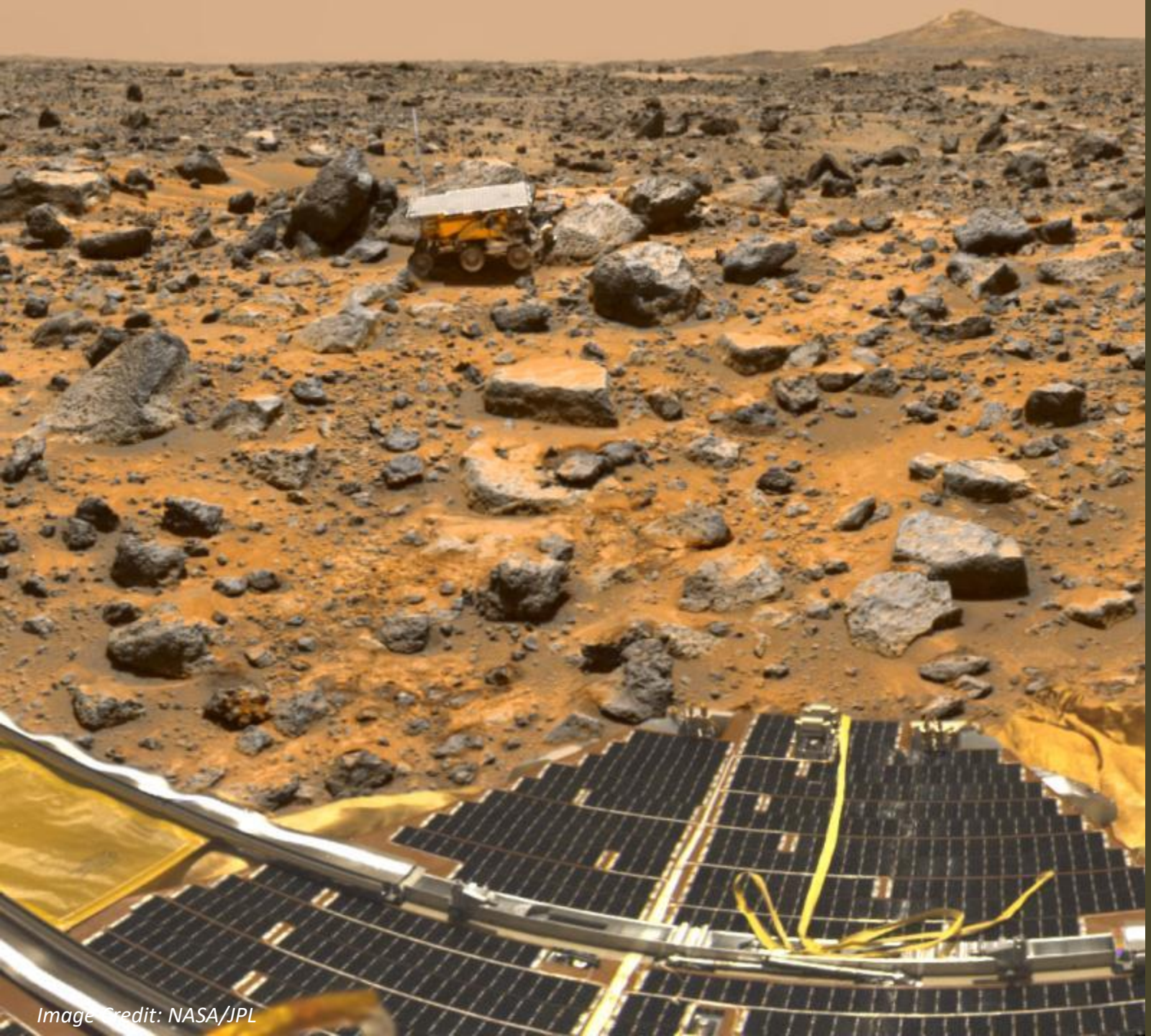


Image Credit: NASA/JPL

Pathfinder Landed on Mars on July 4, 1997, Carrying Sojourner

Mars Pathfinder was launched on Dec. 4, 1996 at 1:58:07 am EST on a Delta II rocket. After an uneventful journey, the spacecraft safely landed on the surface of Mars on July 4, 1997. The first set of data was received shortly after 5:00 p.m. followed by the release of images at 9:30 p.m. The Sojourner rover then began its Martian trek and returned images and other data over the course of three months. After operating on the surface of Mars three times longer than expected and returning a tremendous amount of new information about the red planet, NASA's Mars Pathfinder mission completed the last successful data transmission cycle from Pathfinder at 6:23 a.m. EDT on Sept. 27, 1997.

Source: NASA.gov

2 July 1937: Amelia Earhart's Final Flight

At approximately 10:00 a.m., local time, Amelia Earhart and Fred Noonan departed Lae, Territory of New Guinea, aboard their Lockheed Electra 10E, NR16020, enroute to Howland Island, 2,566 miles (4,113.5 kilometers) east-northeast across the South Pacific Ocean. The airplane was loaded with 1,100 gallons (4,164 liters) of gasoline, sufficient for 24 to 27 hours of flight.

They were never seen again.

Source: www.thisdayinaviation.com

Photo Credit: Public Domain

In The News

Space for Humanity Seeks 10,000 Citizen Astronauts. To date, only 536 people have traveled to space and the vast majority have been men from a handful of nations. Dylan Taylor, a space industry angel investor and SpaceNews columnist, is eager to share the experience with 10,000 people through a nonprofit organization, Space for Humanity, that will pay for the trips. Space for Humanity has not yet decided how it will fly the new astronauts. “We are vehicle agnostic as long as it’s safe, reliable and somewhat economical,” Taylor said.
(Debra Werner @ SpaceNews.com)

Japan has plans to land astronauts on the moon by 2030 — with a little help from the U.S. The Japanese space agency JAXA said it envisions human missions to the moon, potentially to study and make use of water ice deposits at the lunar poles. The JAXA plan, though, would involve making use of NASA’s proposed Deep Space Gateway in cislunar space, which would serve as the jumping-off point for expeditions to the lunar surface. *(Jeff Foust @ SpaceNews.com)*

Perlan II **Making High-Altitude Record Bid**. The Perlan 2 stratospheric glider has arrived in Argentina as the Airbus Perlan Mission II team bids to set a new altitude record for sailplanes. The pressurized Perlan 2 is designed to reach 90,000 ft., but chief pilot Jim Payne is hoping to reach 60,000-65,000 ft. this year, enough to beat the record of 50,727 ft. set by Perlan 1 in 2006. (*Graham Warwick @ Aviation Daily)*

The Air Force Thinks It Can Fly the F-22 Raptor Until 2060. The F-22A Raptor will fly until 2060, more than 60 years after the first aircraft took flight. That's the word from the U.S. Air Force, which estimates that the fifth-generation fighter jets could fly for another 43 years with proper upgrades. Whether the Raptor will still be relevant 43 years from now is another question entirely. *(popularmechanics.com)*

Trump signs order reviving long-dormant National Space Council. Emphasizing commercial, technological and national security opportunities in space, President Donald Trump signed an executive order Friday re-establishing the National Space Council, a space policy advisory and steering group that was last active nearly 25 years ago. *(Stephen Clark @ SpaceFlightNow.com)*