

# The Aerospace Update

A vertical rocket or missile is shown pointing upwards, centered in the frame. The background is a view of Earth from space, showing blue oceans and white clouds. The rocket is white with a teal-colored section near the base.

Paris Airshow

June 20, 2017

Video Credit: Boeing

# Paris Air Show Week



Boeing and Airbus are battling for aircraft orders at the International Paris Air Show, the biggest aviation gathering in the world this year. Low fuel prices, a lack of new planes and aggressive ordering in past years means deal flow could be light. Boeing has drawn in some buyers with new 737 Max 10, which is being positioned to rival the hot-selling Airbus A321neo. Meanwhile, there's also a range of far-out concepts on display like supersonic jets and flying cars. Over 350,000 visitors attended the biennial event in 2015, which this year is open to the public from June 23-25.

# Boeing Launches MAX 10 at Paris Air Show



Boeing officially launched the 737 MAX 10, its answer to the rival Airbus A321neo. Boeing said it has 240 orders and commitments for the new jet. The MAX 10 is a stretch of the MAX 9 that will seat up to 230 passengers. It's designed to stem the loss of sales to the rival Airbus A321neo, which has won more than 1,400 orders. The new airplane is set to enter service in 2020 and means the MAX family now comes in five different versions: the MAX 7, MAX 8, MAX 9, MAX 10 and also a high-density version of the 8 called the MAX 200.

# Airbus Launches A380-plus Development Study



Airbus is offering its customers an enhanced version of the A380 dubbed the A380-plus, seeking to regain market traction with its biggest aircraft. The new version will feature 13% lower costs per seat compared to the current A380, according to Airbus. The A380-plus, if firmly launched, will feature new winglets and some wing refinements that, the manufacturer expects, will lead to a fuel-burn reduction of up to 4%. Furthermore, Airbus is targeting a significant reduction of maintenance by stretching intervals and reducing down time for the six-year check. The A380plus also includes proposed changes to the interior that will allow for the addition of up to 80 seats in a four-class configuration. The A380-plus is Airbus's latest attempt to attract more customers to the program, which has been in crisis mode for some years. But the project falls way short of the A380neo, a study Airbus has looked at before and that would have involved a reengining of the aircraft.

# F-35 Paris Performance Will 'Crush Years Of Misinformation'



Not as agile as the Super Hornet nor as fast as the Typhoon? Don't you believe it, says Lockheed Martin test pilot Billie Flynn. He put the F-35A through its paces at Le Bourget this week, proving that the aircraft is more maneuverable than any he has flown, he says, including Boeing's F/A-18, the Eurofighter, and his own company's F-16 Viper. The F-35's maneuverability is all the more impressive because, unlike the F-16s that perform at air shows, the Joint Strike Fighter flying the demonstration this week is fully combat-ready. Flynn's F-35A will move easily through complex aerial maneuvers loaded with everything it needs to go to war.

*Source: Lara Seligman @ Aviation Week*

*Video Credit: Lockheed-Martin*

# Russia's Progress MS-06 supply ship blasts off from Baikonur



Russia's Progress MS-06 supply ship launched Wednesday, June 14<sup>th</sup> aboard a Soyuz rocket from the Baikonur Cosmodrome in Kazakhstan, on the way to deliver food, fuel, spare parts, oxygen and water to the International Space Station's crew. The Soyuz-2.1a booster lifted off at 0920:13 GMT (5:20:13 a.m. EDT), kicking off a nine-minute ascent before releasing the Progress cargo craft in orbit. Progress MS-06 docked with the ISS two days later on Friday, June 16<sup>th</sup>.

*Video Credit: ROSCOSMOS*

*Source: Stephen Clark @ SpaceFlightNow.com*

# China Launches its First X-ray Space Telescope

**June 15**

**Jiuquan Satellite Launch Center**

China successfully launched on Thursday its first X-ray space telescope to study black holes, pulsars and gamma-ray bursts, state media reported. A Long March-4B rocket carried the 2.5-tonne telescope into orbit from the Jiuquan Satellite Launch Center in northwest China's Gobi Desert at 11:00 am (3:00 GMT), according to the official Xinhua news agency. The Hard X-ray Modulation Telescope (HXMT), named Insight, will allow Chinese scientists to observe magnetic fields and the interiors of pulsars and better understand the evolution of black holes. It will also help scientists search for gamma-ray bursts corresponding to gravitational waves and study how to pulsars can be used for spacecraft navigation.

*Source: Phys.org*

*Video courtesy of New China TV*



# Chinese Broadcasting Satellite Ends Up In Wrong Orbit After Rocket Failure

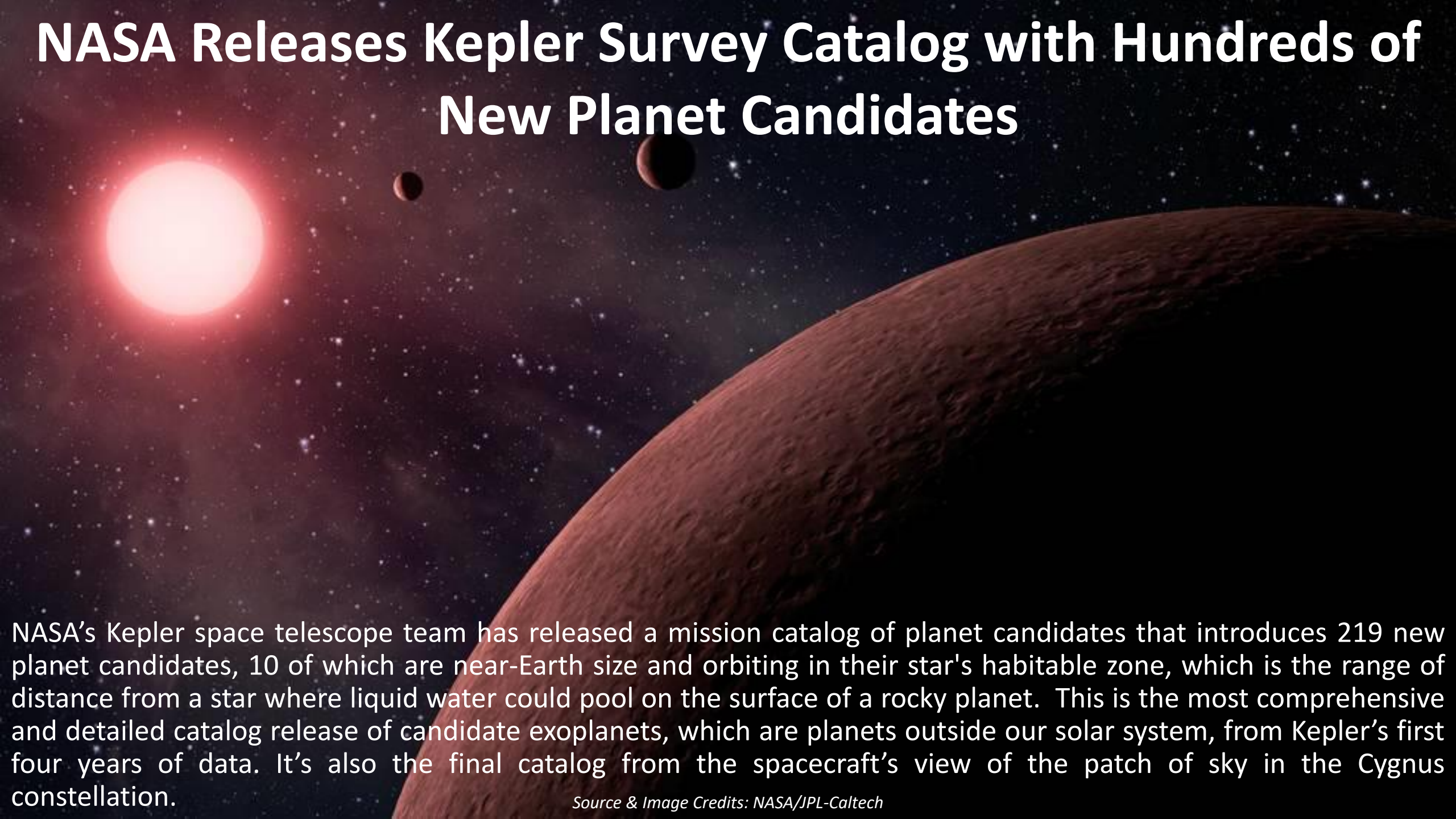
Ground controllers could try to salvage a Chinese television broadcasting satellite deployed in a lower-than-planned orbit Sunday by a Long March 3B rocket. A brief statement from the China Aerospace Science and Technology Corp., a state-run contractor for China's space program, confirmed an anomaly in the Long March 3B rocket's third stage left the Chinasat 9A communications satellite in the wrong orbit following a liftoff from the Xichang space center.

*Source: Stephen Clark @ SpaceFlightNow.com*





# NASA Releases Kepler Survey Catalog with Hundreds of New Planet Candidates



NASA's Kepler space telescope team has released a mission catalog of planet candidates that introduces 219 new planet candidates, 10 of which are near-Earth size and orbiting in their star's habitable zone, which is the range of distance from a star where liquid water could pool on the surface of a rocky planet. This is the most comprehensive and detailed catalog release of candidate exoplanets, which are planets outside our solar system, from Kepler's first four years of data. It's also the final catalog from the spacecraft's view of the patch of sky in the Cygnus constellation.

*Source & Image Credits: NASA/JPL-Caltech*

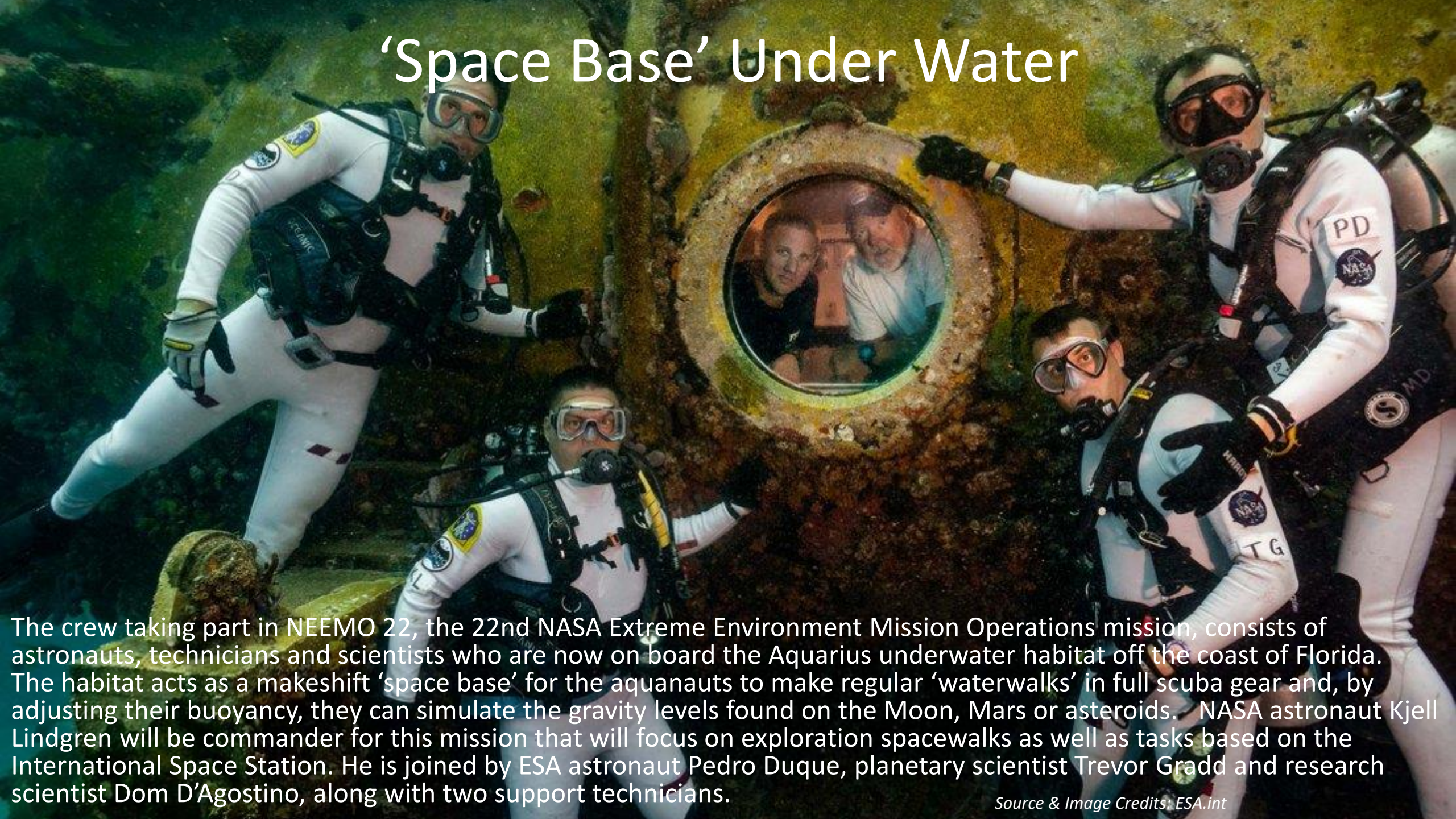


# Grooves and Kinks in the Rings

Many of the features seen in Saturn's rings are shaped by the planet's moons. This view from NASA's Cassini spacecraft shows two different effects of moons that cause waves in the A ring and kinks in the F ring. The A ring, which takes up most of the image on the left side, displays waves caused by orbital resonances with moons that orbit beyond the rings. Kinks, clumps and other structures in the F ring (the small, narrow ring at right) can be caused by interactions between the ring particles and the moon Prometheus, which orbits just interior to the ring, as well as collisions between small objects within the ring itself. This view looks toward the sunlit side of the rings from about 22 degrees above the ring plane. The image was taken in visible light with the Cassini spacecraft narrow-angle camera on March 22, 2017.

*Source & Image Credits: Credit: NASA/JPL-Caltech/Space Science Institute*

# 'Space Base' Under Water



The crew taking part in NEEMO 22, the 22nd NASA Extreme Environment Mission Operations mission, consists of astronauts, technicians and scientists who are now on board the Aquarius underwater habitat off the coast of Florida. The habitat acts as a makeshift 'space base' for the aquanauts to make regular 'waterwalks' in full scuba gear and, by adjusting their buoyancy, they can simulate the gravity levels found on the Moon, Mars or asteroids. NASA astronaut Kjell Lindgren will be commander for this mission that will focus on exploration spacewalks as well as tasks based on the International Space Station. He is joined by ESA astronaut Pedro Duque, planetary scientist Trevor Gradd and research scientist Dom D'Agostino, along with two support technicians.

# Changing How Solar Power Rolls



The Roll-Out Solar Array (ROSA) was deployed from the end of the Canadarm2 robotic arm Sunday, June 18 outside the International Space Station. ROSA is an experiment to test a new type of solar array that rolls open in space like a party favor and is more compact than current rigid panel designs. The ROSA investigation tests deployment and retraction, characterizes changes when the Earth blocks the sun, vibration and other physical challenges to determine the array's strength and durability. ROSA has the potential to replace solar arrays on future satellites, making them more compact and lighter weight.

*Source: NASA.gov*

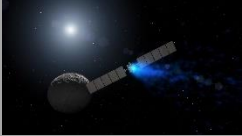
*Video Credit: NASA*

# Experiment Devoted to Neutron Star Research Installed on ISS




**A NASA instrument built to help astronomers learn about the structure and behavior of neutron stars, super-dense stellar skeletons left behind by massive explosions, has been mounted to an observation post outside the International Space Station after delivery aboard a SpaceX supply ship earlier this month. Since its arrival inside the trunk of SpaceX's Dragon cargo capsule, the X-ray astronomy experiment has been transferred from the spacecraft's unpressurized carrier to a platform on the space-facing side of the space station's starboard truss backbone, powered up and checked to ensure it can point at stellar targets as the research outpost orbits around Earth.**


# In The News




**Dawn Mission Managers Await NASA Decision on Spacecraft's Future.** The future of NASA's Dawn spacecraft, running low on hydrazine fuel and now flying around the dwarf planet Ceres without the help of internal pointing wheels, will be decided in the coming weeks by top space agency managers. Scientists have not ruled out sending Dawn on a journey across the solar system to another destination, a voyage that counterintuitively might burn less of the craft's remaining hydrazine propellant than if Dawn stayed in orbit around Ceres, where it has resided since March 2015. *(Stephen Clark @ SpaceFlightNow.com)*



**NASA Closing Out Asteroid Redirect Mission.** With administration plans to cancel it announced earlier this year, and a lack of congressional support, NASA is in an "orderly closeout" phase of its Asteroid Redirect Mission (ARM) while keeping alive some of its key technologies for other applications. *(Jeff Foust @ SpaceNews.com)*



**Orbital ATK Successfully Tested a Motor Used for Orion Spacecraft's Abort.** Orbital ATK successfully tested a motor used for the Orion spacecraft's abort system Thursday. The brief test of the motor, at a company facility in Utah, demonstrated its ability to pull the Orion away from an SLS in an emergency. *(Jeff Foust @ SpaceNews.com)*



**Boeing Partially Unveils New Midsize Airplane Concept.** Some details of New Midsize Airplane (NMA) concept were released at the Paris air show. The NMA will use composites "extensively" in the wings and fuselage. Perhaps the most intriguing design aspect of the NMA is the fuselage geometry which is a hybrid cross-section, blending the passenger comfort of a twin-aisle on the main deck and the cargo compartment of a single-aisle below deck. Boeing is in discussions with GE Aviation, Pratt & Whitney and Rolls-Royce to define the NMA's clean-sheet propulsion system, which has been described as 40,000-50,000lb-thrust with the possibility of bypass ratios significantly above the current standard of 10:1. *(Stephen Trimble @ FlightGlobal.com)*