

## SpaceX Dragon cargo makes another to-fro space delivery



SpaceX-owned commercial cargo craft, Dragon, a free-flying spacecraft designed to deliver both cargo and people to orbiting destinations, got un-docked from ISS and splashed down in the Pacific Ocean west of Baja California. It is the only spacecraft currently flying that is capable of returning significant amounts of cargo to Earth.

Delivering 2.8 tons of supplies, experiments and holiday treats to the International Space Station, the spacecraft completed a 39-day round-trip mission and bringing back in the specimens of research and no-long-in-need hardware of ISS. The supply ship departed the space station at 6:33 p.m. EST (2333 GMT) Sunday with a ground-commanded release from the orbiting research lab's 58-foot (17.7-meter) Canadian-built robotic arm. The Dragon capsule fired its thrusters for a series of departure burns to fly away from the station's vicinity, setting up for a de-orbit burn at 11:19 p.m. EST (0419 GMT) to slow the craft's velocity enough to drop out of orbit and re-enter Earth's atmosphere. The un-piloted vehicle released a series of parachutes to get slow down for a splashdown.

Wrapping up the company's 16th Dragon resupply mission to the International Space Station since 2012, SpaceX confirmed a successful splashdown in a tweet at 9:12 p.m. PST Sunday (12:12 a.m. EST; 0512 GMT Monday). The NASA-SpaceX \$3.04 billion deal aims for 20 cargo missions from 2012 to the next year from now. Another deal with unspecified cost guarantees at least six additional resupply missions to the station through 2024, to SpaceX from NASA.

The delivery payload, inside the Dragon's internal compartment, included 40 mice sent to study the effects of microgravity on the animals' immune systems, a scientific investigation to grow protein crystals in microgravity, experiments to study the causes of muscle abnormalities observed in spaceflight, and to examine the corrosion of carbon steel materials in space while spaceship's rear cargo bay contained a pair of NASA payloads that were mounted outside the space station by the robotic arm. With one to demonstrate new tools and techniques that could lead to a future capability to refuel satellites with cryogenic propellants in space, and another to scan the planet with a laser to measure the height, density and structure of forest canopies, data that could tell scientists more about the role of forests in the carbon cycle.

The astronauts installed refrigerated samples and other equipment into Dragon spacecraft for return delivery to Earth, after unpacking fresh supplies. The return trip scheduled for Thursday was then pushed back to Sunday due to bad weather conditions and then scheduling the splashdown from Sunday morning to Sunday evening. SpaceX's Dragon recovery team will hoist the capsule on a boat for the trip back to the Port of Los Angeles, where crews will remove time-sensitive samples from Dragon for a return to science labs around the country for analysis. The Dragon capsule completed its [second trip to space](#) after a successful flight to the ISS in February 2017.