

ECOSTRESS launches to space station on SpaceX mission

July 2 2018



SpaceX launches its Falcon 9 rocket and Dragon cargo craft carrying JPL's ECOSTRESS mission from Space Launch Complex 40 at Cape Canaveral Air Force Station in Florida at 5:42 a.m. EDT June 29, 2018. About nine minutes and 31 seconds after launching from Cape Canaveral Air Force Station in Florida on June 29, 2018, the SpaceX Dragon spacecraft carrying JPL's ECOSTRESS mission separates from the second-stage engine. Credit: NASA TV

An Earth science instrument built by NASA's Jet Propulsion Laboratory in Pasadena, California, and experiments investigating cellular biology and artificial intelligence, are among the research heading to the International Space Station following Friday's launch of a NASA-contracted SpaceX Dragon spacecraft at 5:42 a.m. EDT.

Dragon lifted off on a Falcon 9 rocket from Space Launch Complex 40 at Cape Canaveral Air Force Station in Florida with more than 5,900 pounds of research, equipment, cargo and supplies that will support dozens of investigations aboard the [space station](#).

NASA astronauts Ricky Arnold and Drew Feustel will use the [space station](#)'s Canadarm2 robotic arm to capture Dragon when it arrives at the station. Live coverage of the rendezvous and capture will air on NASA Television and the agency's [website](#) beginning at 2:30 a.m. PDT (5:30 a.m. EDT) Monday, July 2. Installation coverage is set to begin at 6 a.m. PDT (9 a.m. EDT).

JPL's ECOsystem Spaceborne Thermal Radiometer Experiment on Space Station ([ECOSTRESS](#)) will provide a new space-based measurement of how plants respond to changes in water availability. This data can help society better manage agricultural water use.

"ECOSTRESS' unique orbital perch aboard the space station will allow it to observe the same spot on Earth every few days at different times of day for at least a year, giving scientists the ability to track changes in plant water use over the course of a typical day," said ECOSTRESS Principal Investigator Simon Hook of JPL. "Current polar-orbiting satellites can only provide a single snapshot of evapotranspiration each day, at the same time of day. The team is ready to receive our first science data, expected in early July."

Research materials flying inside Dragon's pressurized cargo area include

a [cellular biology](#) investigation (Micro-12) to understand how microgravity affects the growth, gene expression and ability of a model bacterium to transfer electrons through its cell membrane along the bacterial nanowires it produces. Such bacteria could be used in microbial fuel cells to make electricity from waste organic material.

An observational pilot study with the Crew Interactive MObile companion (CIMON), aims to get first insights into the effects of crew support by an [artificial intelligence](#) (AI) in terms of efficiency and acceptance during long-term missions in space.

Among the hundreds of pounds of hardware flying to the space station is a spare Canadian-built Latching End Effector (LEE). Each end of the Canadarm2 [robotic arm](#) has an identical LEE, and they are used as the "hands" that grapple payloads and visiting cargo spaceships. They also enable Canadarm2 to "walk" to different locations on the orbiting outpost.

This is SpaceX's 15th cargo flight to the [space](#) station under NASA's Commercial Resupply Services contract. Dragon is scheduled to depart the station in August and return to Earth with more than 3,800 pounds of research, hardware and crew supplies.

Provided by Jet Propulsion Laboratory

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