NASA will close 2015 with a mission that will accomplish a number of firsts and reestablish a crucial supply link to the International Space Station.

A Cygnus spacecraft larger than those that have flown before has been loaded with 7,383 pounds of materials the residents of the station will need to conduct important research and operate the orbiting laboratory.

Built by Orbital ATK, the enhanced Cygnus, as the spacecraft is called, boasts several upgrades including improved avionics and lighter solar arrays that generate as much power as their predecessors.

The spacecraft carries no astronauts but will fly autonomously to the space station. When in range, the astronauts will reach out with the station's robot arm and pull the Cygnus to a port where the crew can unpack it.

Orbital ATK's Dan Tani, a former station astronaut, spoke recently about the value of cargo arrivals.
Of course, it's a real morale boost, you know. It's like coming home from the store and unpacking the trunk full of all the stuff that you bought, a lot of stuff you didn't know you needed, but a lot of stuff like notes from home and things that are really meaningful.

A United Launch Alliance Atlas 5 rocket will lift the Cygnus into orbit from Cape Canaveral's Space Launch Complex 41. A workhorse rocket, the Atlas V has never launched a station-bound payload before.

For NASA, the mission represents a return to American cargo resupply missions that allow the station residents to perform science experiments in a unique environment off the earth to benefit all those on the earth.

As astronaut Scott Kelly continues his own record-setting yearlong mission, the supplies aid in other research important for answering
the riddles future crews will face during a journey to Mars.