NASA is preparing to expand the already legendary capabilities of its critical Earth-to-space communications network -- the Tracking and Data Relay Satellite System.

The TDRS-L satellite is at Cape Canaveral Air Force Station in Florida undergoing final preparations for its upcoming ride to space aboard a United Launch Alliance Atlas V rocket.

The Atlas V first-stage booster and Centaur upper stage were shipped together aboard ULA's massive Delta Mariner Barge.

The pair reached Port Canaveral on Nov. 1, 2013, and were trucked north to begin checkouts inside the Atlas Spaceflight Operations Center at Cape Canaveral Air Force Station.

A U.S. Air Force C-17 cargo plane delivered the TDRS-L satellite to Kennedy Space Center on December 6.
with an early morning touchdown at the Shuttle Landing Facility.

The 7,600-pound spacecraft was carefully removed from the aircraft and transported to the Astrotech payload processing facility in Titusville.

Once inside, it was uncrated and raised to vertical, kicking off several weeks of examinations, tests and other prelaunch activities.

In mid-December the rocket's first-stage booster rolled from the Atlas Spaceflight Operations Center to the Vertical Integration Facility at Space Launch Complex 41, and was raised into flight position.

Next, the Centaur moved to the launch complex and was attached atop the first stage.

Members of the news media got one last, up-close look at the TDRS-L spacecraft just after the new year -- and on Jan. 8, 2014, the satellite was enclosed within the
aerodynamic payload

fairing that will protect it through the early minutes of flight.

At last, the spacecraft was ready to move to the launch pad.

In the early morning darkness Jan. 20, the payload fairing carrying TDRS-L rolled from Astrotech to Space Launch Complex 41, where it was placed atop the Atlas V rocket to await launch day.

When countdown clocks reach zero, the Atlas V booster will ignite, sending TDRS-L toward a slot in geosynchronous orbit more than 22,000 miles above Earth to join the TDRS constellation.