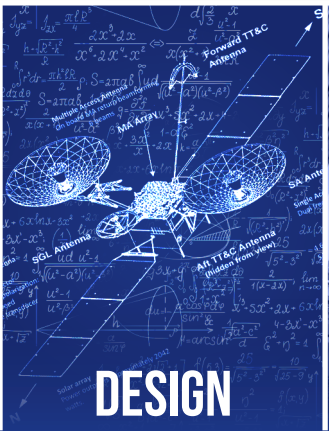
National Aeronautics and Space Administration

TRACKING AND DATA RELAY SATELLITE

PROVIDING AROUND THE CLOCK COVERAGE

NASA's Tracking and Data Relay Satellites (TDRS) provide communications services to NASA's most storied missions. Through this constellation of satellites, NASA has the ability to transmit valuable spacecraft data via a bent-pipe relay system from anywhere in low-Earth-orbit.

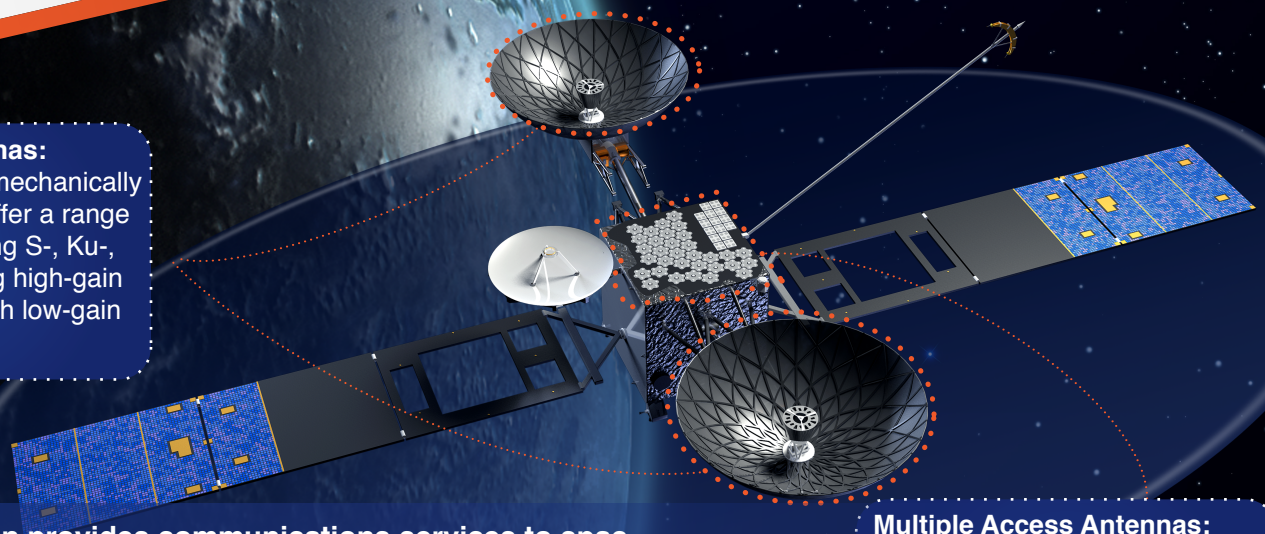
THE JOURNEY TO THE PAD



THE OPERATIONAL MISSION

PAYLOAD SERVICES

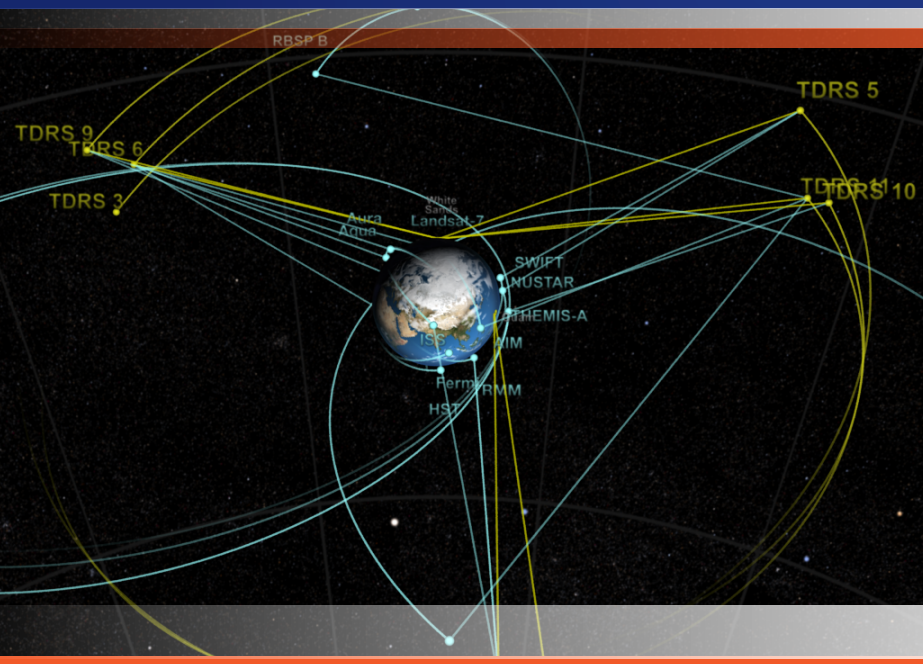
Single Access Antennas:
Two 15-foot diameter mechanically steerable anntennas offer a range of frequencies, including S-, Ku-, and Ka-band, providing high-gain support to satellites with low-gain antennas.



The TDRS constellation provides communications services to spacecraft through two different types of antennas systems, the single access antenna system and the multiple access antenna system. The single access antennas are large parabolic-style antennas and the multiple access are phased-array antennas.

Multiple Access Antennas:
The phased array antennas are designed to receive signals from up to five spacecraft simutaneously in the S-band frequency, providing a demand access capability.

ORBITAL LOCATION



The TDRS constellation is located at an altitude of 22,300 miles at geosynchronous orbit, which is approximately three Earth diameters. At that altitude, the spacecraft orbit at the same speed as the Earth rotates, and they can contiously remain in view of the same location above Earth. With TDRS in three different locations around Earth, the constellation can provide 100% coverage for a satellite's entire orbit.

WANT TO LEARN MORE ABOUT TDRS:

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