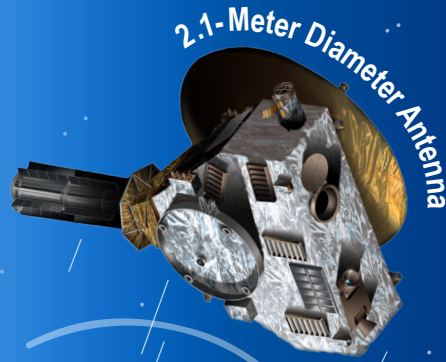


**C**ommunicating with NASA's New Horizons spacecraft is like choreographing an intricate dance. Mission operators not only pilot the spacecraft and run the science instruments, but also time commands to reach the spacecraft systems and instruments at specific points during the mission.

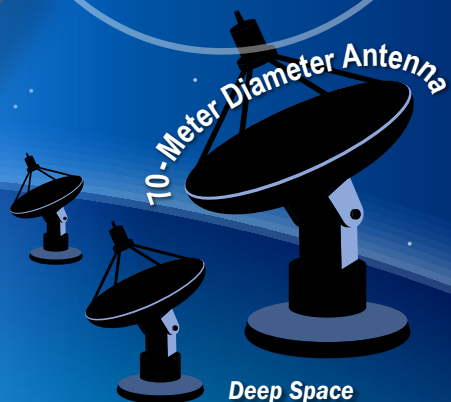
The mission team communicates with the spacecraft to monitor its temperature, health and power, as well as to send commands to operate New Horizons and receive science data. From Earth, signals will take 4.5 hours to reach New Horizons at Pluto and another 4.5 hours to return.

NASA's Deep Space Network (DSN) of antenna stations in California, Spain and Australia is central to all communication. Located around the globe about 120 degrees apart, the stations monitor the spacecraft regardless of Earth's orientation.

- 1** The New Horizons mission team and Science Operations Center (SOC) translate mission objectives into the spacecraft's language, a process called "sequencing."
- 2** The Mission Operations Center (MOC) then checks and transmits the commands to the Deep Space Network (DSN).
- 3** The DSN then sends, or "uplinks," the commands to New Horizons.
- 4** New Horizons processes the commands and responds back to the DSN with raw data that is then reported to Earth. The data transfer rate is up to 3,000 bits per second.
- 5** The DSN then transmits the raw data to the MOC.
- 6** The MOC stores the data in a daily archive.
- 7** The SOC then retrieves the data and converts them to units that can be used by the New Horizons science team to make discoveries and communicate results to the public.



2.1-Meter Diameter Antenna



10-Meter Diameter Antenna

Deep Space Network

# talking to New Horizons

