

## SPACE DATA STORAGE SYSTEMS AND TECHNOLOGIES

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A central aspect of most space missions is the acquisition from space of unique, mission-specific data and the subsequent return of these data to Earth. Because of technological requirements and constraints and the related design of the mission, a data storage subsystem, based on a data storage technology, is typically used to buffer data from the spacecraft and its instruments before raw or processed data are returned to Earth. The selection of the appropriate data storage technology for this function is based on a variety of considerations, including reliability, capacity, readiness, availability, mass, volume, power consumption, data rate, radiation insensitivity, nonvolatility, environmental stability, vibration insensitivity, data management flexibility, and cost, among other issues. Here, data storage technology selection, ranging from magnetic tape recording to solid-state memories, for past, present, and future missions, such as Voyager, Cassini, and Pluto Flyby, will be reviewed as mission requirements evolve, mission needs and designs become more complex, and progress is made in data storage technology.

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