The evolution of data and practices within a single mission Science Data Center.

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Now entering it’s fifth year of on-orbit operations, the Magnetospheric MultiScale (MMS) Mission has produced over eleven million data files, totaling nearly 180 terabytes (as of early 2020) that are available to the science team and heliophysics community. MMS is a constellation of four identical satellites, each with twenty-five instruments across five distinct instrument teams, examining the interaction of the solar wind with Earth's magnetic field. Each instrument team developed their data products in compliance with standards set by the mission's long term data repository, NASA's Space Physics Data Facility (SPDF). The Science Data Center at the Laboratory for Atmospheric and Space Physics at the University of Colorado is responsible for producing and distributing these data products to both the project’s science team as well as the global scientific community.

This paper will highlight the challenges the MMS SDC has found with maintaining a data repository during an extended mission, from overall data volumes that preclude providing access to every version of each data product (currently nearing one petabyte for MMS) to adjusting to changing standards and publication requirements. We will also discuss the critical need for cooperation between a mission’s science team, instrument teams, data production, and repositories in order to ensure the data meets the needs of the science community both today and in the future, particularly after the end of a given mission.