ACHIEVING LONG-TERM DATA ARCHIVING GOALS FOR OSIRIS-REx SAMPLE ANALYSIS THROUGH COORDINATED EFFORTS WITH ASTROMAT.

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Introduction: In September 2023, the OSIRIS-REx spacecraft will deliver samples from the surface of asteroid (101955) Bennu to Earth. A portion of those samples will be available to OSIRIS-REx mission sample scientists to perform detailed and coordinated analysis, which will produce key data to determine the B-type asteroid's history and that of its components and precursor objects. In addition to developing a comprehensive information system to manage the data produced throughout the sample analysis portion of the mission [1], the OSIRIS-REx team is updating the mission's data management plan to include a path forward for sample analysis data archiving. This effort was conducted in coordination with a special study by the Astromaterials Data System (AstroMat) to address the current lack of available archives for sample return mission data. We will present the results of this coordinated effort.

Data products anticipated from sample analysis: The OSIRIS-REx Sample Analysis Plan includes 55 different analytical techniques among five working groups: Spectral Analysis, Mineralogy and Petrology, Elements and Isotopic Analysis, Organic Analysis, and Physical and Thermal Analysis. Within these techniques, there are about 90 different kinds of data products, produced by at least 125 different instruments at 24 different laboratories. To comply with mission requirements, each of these data products needs to be archived before the conclusion of the Sample Analysis Phase of the mission.

Long-term archiving of sample data: Our goal is to identify the archiving needs of the OSIRIS-REx Sample Analysis phase, generate OSIRIS-REx–specific archiving requirements, and develop standards to which all OSIRIS-REx Sample Analysis data will adhere. In accordance with Planetary Data Ecosystem Independent Review Board (PDE-IRB)'s 2021 recommendations [2], these data must be archived such that they are openly accessible, curated to facilitate reuse by both humans and machines for future science, and preserved in a way that ensures their quality and long-term availability. However, because the OSIRIS-REx mission's Sample Analysis phase ends in September 2025, and there is no fully established, dedicated archive for astromaterials data from sample-return missions, meeting the standards recommended by the IRB report will not be possible by end of mission. To address this, OSIRIS-REx is working with AstroMat to determine the next steps toward establishing AstroMat as the universal sample-return data archive. By close collaboration between the two complementary OSIRIS-REx and AstroMat efforts, we are able to address the short-term needs of the OSIRIS-REx mission and ensure the long-term quality and availability of the OSIRIS-REx sample analysis data after the mission comes to an end.

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