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Open Science in Action: The Role of SWxSOC in Expedited Data Release and Cloud-based Data Processing for Heliophysics Missions

NASA's Space Weather Science Operations Center (SWxSOC) is an effort to develop a multi-mission Science Operations Center for the community and specifically Space Weather missions that require data products to be released consistently and quickly. The SWxSOC is committed to Open Science in its approach to software development and data product releases. We are currently supporting the Heliophysics Environmental and Radiation Measurement Experiment Suite (HERMES) that will fly on the Lunar Gateway and the PADRE Small Sat mission. SWxSOC has established an open-source, reusable solution for transitioning data management from on-premises to the cloud, processing data files, and setting up a cloud-based analysis environment to monitor instrument anomalies. Leveraging Amazon Web Services (AWS) and making open-source tools available on GitHub, HERMES exemplifies NASA's commitment to open-source standardization, showcasing the real-world effectiveness of cloud technology in data processing, analysis, and observability. This enhances current operations and ensures faster, standardized deployments for future missions.