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Maximizing Utility for Ares V - Unpressurized Cargo and Secondary Missions for Heliocentric Observations

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Heliophysics seeks to understand the influence of the Sun throughout the solar system and, in particular, its connection to the Earth and the Earth's extended space environment. The launch vehicle options for heliophysics missions have been reduced over recent years, causing the implementation of many proposed missions to be no longer viable. The current near-term launch options for future heliophysics missions limit the capability and frequency of missions. A recent NASA study has identified a means of accommodating Unpressurized Caro (UPC) on Ares V in addition to the primary lander payload. The UPC study included systems, mechanical, thermal and avionics engineering as well as the definition of preliminary concepts of operation. Preliminary trajectory studies were completed to understand the capability of UPC payloads on the Ares V to reach multiple inner solar system destinations, including missions that perform heliocentric observations. Requirements for including the capability to launch UPC payloads from Ares V are being developed for the Constellation Program This work expands the utility of the United States' next generation of Heavy Lift launch vehicles. Heliocentric mission planners will be able to receive early data and open up communications channels to utilize these new and expanded UPC services.