AN OVERVIEW OF HELIOPHYSICS SCIENCE ENABLED BY THE RETURN TO THE MOON. H. E. Spence[1] , J. Spann[2], and A. B. Christensen[3]; [1] Center for Space Physics, Boston University 725 Commonwealth Avenue, Boston, MA, [2] Science and Exploration Research Office, VP60, NASA Marshall Space Flight Center, National Space Science and Technology Center, 320 Sparkman Drive, Huntsville, AL 35805, [3] Northrup Grumman, 1744 So. Point Dr, St George, UT.

Introduction: The lunar plasma and radiation environment and those physical processes that drive and control it, are intrinsically part of the science domain of NASA's Heliophysics Division. Since the inception of the space program with Explorer 1 in 1958 and continuing to the present, scientists in the Heliophysics community have concentrated on characterizing and understanding the connected Sun-Earth system including the regions the Moon traverses and the interaction of plasmas and radiation with large and small bodies. This has been accomplished with in situ and remote sensing instrumentation and physics- and numerically-based models that provide understanding of the dominant mechanisms that define the environment in which the Moon is immersed. Therefore, the Heliospheric science community is uniquely and in many cases exclusively qualified to address interesting and compelling science problems that are enabled by the return to the Moon. This talk will provide an overview of representative, high-priority science investigations that are made possible by the return to the lunar surface. The content of this presentation is a result of an ongoing effort to inventory and articulate compelling science topics and how they are enabled by the return to the Moon.