Return to the Moon (02)
Scientific Highlights and Lessons from Recent Lunar Missions (1)

Author: Dr. Justin Kasper
Smithsonian Astrophysical Observatory, United States, jkasper@cfa.harvard.edu

Dr. Robert MacDowall
Goddard SFC, United States, robert.macdowall@nasa.gov
Dr. Joseph Lazio
Jet Propulsion Laboratory - California Institute of Technology, United States, Joseph.Lazio@jpl.nasa.gov
Prof. Jack Burns
Colorado Center for Astrodynamics Research, University of Colorado, United States,
jack.burns@colorado.edu
Dr. Kurt Weiler
Naval Research Laboratory, United States, Kurt.Weiler@nrl.navy.mil
Prof. Stuart Bale
University California Berkeley, United States, bale@ssl.berkeley.edu

HELIOPHYSICS SCIENCE ENABLED BY THE RETURN TO THE MOON

Abstract

Heliophysics, a combination of the disciplines of solar physics, space physics, and space weather, is the study of the system composed of the Sun's heliosphere and the objects that interact with it, including the moon. Heliophysics science has been tightly coupled with exploration since the beginning of the space program, as scientists work to both understand the physics of the Sun-Earth-Moon system and to develop predictive capabilities that enable operational planning for lunar, deep space, and eventually Mars missions. Renewed robotic and human exploration of the moon creates opportunities for several new classes of experiments on the lunar surface and in lunar orbit that will both provide real-time awareness of space weather conditions during manned missions and advance the field of heliophysics science. The purpose of this presentation is to summarize the scientific motivations and exploration benefits of heliophysics science experiments described in the 2007 NASA report "Heliophysics Science and the Moon: Potential Solar and Space Physics Science for Lunar Exploration". A series of potential experiments will be discussed, ranging from small dust and particle sensors to sophisticated radio and optical telescopes.