


A41U-2681 - The Lunar Polar Hydrogen Mapper (LunaH-Map) Mission: Revealing Hydrogen Enrichments at the Moon's South Pole



 Thursday, 12 December 2019

 08:00 - 12:20

 *Moscone South - Poster Hall*

ePoster


Copy and pasted text document 2.txt

[Download](#)

Abstract

The Lunar Polar Hydrogen Mapper (LunaH-Map) mission is a planetary science cubesat mission designed to address the abundance and nature of lunar polar volatiles. LunaH-Map will deploy from the Space Launch System (SLS) Artemis-1 and maneuver into an elliptical orbit around the Moon to make maps of hydrogen (e.g. water-ice) enrichments within permanently shadowed regions (PSRs) at the lunar South Pole. LunaH-Map carries one science instrument, a miniature neutron spectrometer (Mini-NS) designed, built and calibrated as part of the LunaH-Map program. Mini-NS neutron data will be used to measure the water-ice abundances at spatial scales smaller than many lunar South Pole PSRs. These data will be used to test hypotheses about polar wander, constrain the sources and sinks for volatiles, and for planning future missions to the lunar surface. LunaH-Map was selected by the Small Innovative Missions for PLANetary Exploration (SIMPLEx) program in late 2015 and is co-manifested on SLS along with twelve other 6U-sized spacecraft conducting their own independent investigations and technology demonstrations. Arizona State University, in partnership with a small, agile team of experienced engineering professionals, leads the integration, testing and development of LunaH-Map. Subsystems and components have been developed in close partnership with commercial vendors. LunaH-Map has met all mission milestones, passed all design reviews, and is currently in integration and testing. As the first SIMPLEx mission, it is a pathfinder for the development of

small, science-driven, high-risk, high-reward planetary science missions. For these types of missions, the overall project profile (e.g. lower budgets, tighter schedules) can accept a greater level of risk, however, the types of destinations for these missions may be more limited to Earth, the Moon and perhaps Mars as there are more regular and repeated launch opportunities. Looking forward, small spacecraft missions for planetary science that are much smaller in scope than Discovery or New Frontiers (3 new SIMPLEx missions were selected in mid-2019 for Phase-A study which include new tailored Class-D requirements and up to ESPA-sized spacecraft) will provide benefits to both NASA and prospective PIs, and are well-positioned to complement the science of larger missions.

 AGU footer



CONTACT US

2000 Florida Ave. NW,
Washington, DC 20009
Phone: +1 202 462
6900
Toll Free: 800 966 2481
(North America only)

© 2019. American Geophysical Union | All rights reserved | Privacy Policy

[Erik Johnson](#)

Radiation Monitoring Devices Inc.

[James F. Christian](#)

Radiation Monitoring Devices, Inc.

[Lena Heffern](#)

Arizona State University

[James F Bell](#)

Arizona State University

View Related

[A41U - The Current and Future Scientific Impact of Small Satellites on Space Missions II Posters](#) >

[Atmospheric Sciences](#) >