Wednesday, October 21, 2015
A VOLATILE MOON
8:30 a.m. USRA Conference Center

Mapping of and variations in lunar volatile deposits, plus future missions defining such deposits for use of In Situ Resources to further exploration.

Chairs: **Dana Hurley**
James Carpenter

8:30 a.m. Hardgrove C. * Bell. J. Thangavelautham J. Klesh A. Starr R. Colaprete T. Robinson M. Drake D. Johnson E. Christian J. Genova A. Dunham D. Williams B. Nelson D. Babuscia A. Scowen P. Cheung K. M. McKinney T. Taits A. Hernandez V. Wren P. Thoesen A. Godber A. Beasley M.
The Lunar Polar Hydrogen Mapper (LunaH-Map) Mission: Mapping Hydrogen Distributions in Permanently Shadowed Regions of the Moon's South Pole **[#2035]**
LunaH-Map is a 6U CubeSat that will carry two neutron spectrometers and produce high spatial resolution maps of near-surface hydrogen (H) within PSRs at the lunar South Pole. LunaH-Map will map H at <10km/pixel to place constraints on H distributions.

8:45 a.m. Clark P. E. * Malphrus B. Reuter D. MacDowall R. Folta D. Mandell A. Brambora C. Patel D. Farrell W. Petro N. Banks S. Hohman K. Hruby V.
The Lunar Ice Cube Mission **[#2025]**
Lunar Ice Cube, a science requirements-driven deep space exploration 6U CubeSat mission, has just been selected for the NASA NextSTEP slot on the EM1 launch.

9:00 a.m. Cohen B. A. * Hayne P. O. Greenhagen B. T. Paige D. A.
Lunar Flashlight: Exploration and Science at the Moon with a 6U CubeSat **[#2008]**
The Lunar Flashlight mission, manifested on the SLS EM-1 flight scheduled for 2018, will illuminate permanently shadowed regions at the lunar south pole to measure the abundance and distribution of surface water ice for human resource utilization.

9:15 a.m. Archinal B. * Lee E. Weller L. Richie J. Edmundson K. Laura J. Robinson M. Speyerer E. Boyd A. Bowman-Cisneros E. Wagner R. Nefian A.
Update on High-Resolution Geodetically Controlled LROC Polar Mosaics **[#2040]**
We describe progress on high-resolution (1 m/pixel) geodetically controlled LROC mosaics of the lunar poles, which can be used for locating illumination resources (for solar power or cold traps) or landing site and surface operations planning.

9:30 a.m. Mazarico E. * Nicholas J. B.
Illumination Modeling of the Lunar Poles, and Its Benefits to Exploration and Science Investigations **[#2041]**
The modeling of illumination conditions from a topographic model is an important tool for exploration planning and for scientific understanding of volatile distribution. We present results for the lunar poles, and discuss new uses of such models.

9:45 a.m. Colaprete A. * Shirley M. Heldmann J. Wooden D. H.
The Final Minute: Results from the LCROSS Solar Viewing NIR Spectrometer **[#2051]**
This paper summarizes new results from the LCROSS solar viewing spectrometer which indicated water ice and vapor present over the impact site four minutes after impact.

10:00 a.m. McClanahan T. P. * LEND Team Parsons A. M. Williams J. P. Mazarico E.
Diurnally Varying Hydrogen Volatiles or Regolith Temperature? Mare and Highlands Studies of the Moon's Diurnally Modulating Epithermal Neutron Flux Using LRO's LEND, Diviner, and LOLA Instruments **[#2073]**
In this study we seek to discriminate the source of variation that is diurnally modulating the Moon's neutron emission flux. We characterize the neutron emission flux from the topography in the northern mare and highlands regions.

10:15 a.m. Hayne P. O. *
New and Evolving Views of the Moon's Volatiles from the Lunar Reconnaissance Orbiter **[#2068]**
We present results from all seven LRO investigations, and discuss attempts to synthesize the disparate information to create a self-consistent model for lunar volatiles.

10:30 a.m. Stickle A. M. * Hurley D. M. Patterson G. W. Cahill J. T. S. Retherford K. D. Gladstone G. R. Greathouse T. K. Mandt K. E. Hendrix A. R. Egan A. Kaufmann D. Pryor W. Feldman P. Stern A.
Comparisons of LRO LAMP and Mini-RF Datasets Within Anomalous Polar Craters **[#2065]**
LAMP, Mini-RF/Craters at the lunar poles/Is there water ice?

10:45 a.m. Hibbitts C. A. *
Measurements to Understand the Origin and Evolution of Hydroxyl and Water on the Illuminated Moon **[#2067]**
Infrared spectral imaging of the illuminated Moon over 2.6 to 3.6 microns enable us to more fully understand the sources, sinks, and evolution of water on the Moon.

11:00 a.m. Benna M. * Hurley D. M. Stubbs T. J. Mahaffy P. R. Elphic R. C.
Observations of Meteoroidal Water in the Lunar Exosphere by the LADEE NMS Instrument **[#2059]**
The NMS instrument has detected signatures of water group neutrals in the exosphere of the Moon as sporadic, short-lived signal increases above instrument background (spikes).

11:15 a.m. Hurley D. M. * Cook J. C. Retherford K. D. Greathouse T. K. Gladstone G. R. Mandt K. Grava C. Kaufmann D. Hendrix A. R. Feldman P. D. Pryor W. Stickle A. Cahill J. Killen R. M. Stern S. A.
Contributions of Solar Wind and Micrometeoroids to the Inventory of H_2 in the Moon's Exosphere **[#2061]**
LAMP observations of H_2 in the Moon's exosphere link the solar wind as a source of H and micrometeoroid release of implanted H as H_2.

11:30 a.m. DISCUSSION