BUILDING ON THE CORNERSTONE MISSION: FOCUSED LRO WORKSHOPS TO SUPPORT SCIENCE TEAM SYNERGIES. J. W. Keller and N. E. Petro, NASA Goddard Space Flight Center, Solar System Exploration Division (John.W.Keller@nasa.gov; Noah.E.Petro@nasa.gov).

Introduction: The Lunar Reconnaissance Orbiter (LRO) mission is now in its 8th year of operations. In that time the mission has evolved from it's focused ESMD exploration mission to a SMD science mission, and on to extended science missions [1, 2]. As part of that evolution the LRO project and science teams continue to look for ways to improve and enhance the mission. During the current "Cornerstone Mission" phase of the LRO mission [3] we have instituted a new approach to foster both inter-team collaborations as well as solicit input from scientists outside of the LRO science teams. In the first half-year of the Cornerstone Mission, LRO has supported four workshops that have brought together all of the science teams to collaborate on new analyses. Here we highlight these workshops and their outcomes, and briefly discus their impact.

Focused Workshops: During the Cornerstone Mission the LRO instrument teams have identified a number of key science themes that drive their observations during the extended mission [3]. These themes serve as a basis for the identification of the thematic workshops.

Young Lunar Volcanism: With the identification of possible recent lunar volcanism [4], a serious re-examination of our assumptions of the timing of volcanic activity has occurred. While the possibility of volcanism as recently as 50 mya is compelling, several questions about how to sustain such long-lived volcanism have been raised. This workshop brought together all of the seven LRO instruments as well as experts from outside the science teams to discuss the implications for such volcanism and future observations that may confirm or refute these findings.

Diurnally Varying Surface Hydrogen: The surprising pre-LRO discovery of varying surface hydration [5] has become a key question in the continued LRO observations at the Moon [e.g., 2, 6]. However, several possible alternate explanations for this observation have been made [7, 8] that do not support mobile hydrogen. With the ongoing LRO mission, a number of instruments can contribute to this question, while constraining either the amount of hydrogen that may be moving [9] or the spatial (both lateral and vertical) scales at which they migrate [2].

Rock-breakdown and Regolith Formation: A number of LRO observations have called-into-question long-held assumptions on the rate at which the regolith forms and rocks breakdown into regolith [10-12]. This workshop aimed at identifying lunar features that would serve as calibration points to best constrain what can observed remotely for understanding regolith formation.

Bombardment History: A number of recent publications have questions the long-held assumptions of when particular basins formed [13, 14]. These highlight the uncertainties in timing for a number of pre-Necartian aged basins, as well as a suite of uncertainties in the impactor flux and source of the impactors. This particular workshop not only highlighted the work to be done in identifying basin stratigraphic relationships between basins, but also how LRO data may be used to constrain the impactor populations in the earliest history of the Moon.

Outcomes: These workshops have acted to enhance existing LRO science team collaborations, and have lead to the development of new collaborations. During the remaining Cornerstone Mission, these interactions will improve the quality of the already high-quality LRO science. We also anticipate that these workshops will lead to the development of many new science questions for LRO to address in several future extended missions.

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