and M^3's (current) photometric corrections suffer the greatest error.

[31] Some of the inaccuracies in Clementine reflectance data stems from our limited understanding of the effect of lunar environmental conditions (e.g., illumination geometry) on remote reflectance data, such as its effect on the spectral continuum slope. Clementine reflectance data set would have been more accurate had it not required calibration based on laboratory measurements of Apollo 16 soil samples. New information from M^3, Kaguya, and Lunar Reconnaissance Orbiter could be used to revisit Clementine calibration.

[32] M^3 and Clementine data will always be very different from each other. Notwithstanding the inherent differences between the instruments and their calibrations, both missions are over, and much of their data for any given location were acquired under different illumination geometries. To bring both data sets to comparable levels would have require rigorous preflight testing and characterization for each instrument and measurements of the changes that were inflicted upon the instrument beginning from launch to mission completion. However, even with that, images would need to be acquired from (lunar) morning and afternoon illuminations to obtain absolute spectral information for all regions of the Moon. Last, the thermal and photometric corrections would need to be capable of accurately correcting all conditions that affect them because inherent difference between the instruments (such as field of view, spectral resolution) would preclude their ability to capture precisely the same regions under precisely the same illumination conditions.

[33] Photometric models, including corrections for the thermal contributions, are still being improved as is our understanding of the causes and effects illumination conditions and the space environment have on reflectance data. This type of data comparison is an important step in that process. This comparison is not meant to highlight the flaws or inaccuracies in one instrument over another, but instead to relish in our accomplishments of the past, delight in our progress, and explore our ability for further improvement. It is from this type of comparative analysis and future, more detailed ones that we will learn and understand how to bring remote measurements closer to reality and improve the return of scientific knowledge from spacecraft data. The Moon, as our nearest celestial neighbor is the best recorder of our solar system's history and perfect example of naked exposure to space. Between 2006 and 2010, we increased the number of spacecraft that acquired global data of our Moon by half, compared with all years previous; the available data volume has several data sets with which to refine our understanding.

[34] **Acknowledgments.** The authors wish to thank the Indian Space Agency, ISRO, for providing the Moon Mineralogy Mapper the opportunity to ride as a guest instrument on Chandrayaan-1. The authors also thank the reviewer for insightful comments and suggestions.

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