

Wednesday, March 9, 2011
MARE BASALTS FROM SOURCE TO ERUPTION
1:30 p.m. Waterway Ballroom 6

Chairs: Clive Neal
Penny King

- 1:30 p.m. Gaffney A. M. * Borg L. E. Williams R. W.
[*Combined Hf-Nd-Sr Isotopic Constraints on the Mineralogical Characteristics of Mare Basalt Sources*](#) [#1337]
New Hf-Nd-Sr isotopic results for mare basalts provide constraints on the long-term Lu/Hf, Sm/Nd, and Rb/Sr characteristics of the basalt sources.
- 1:45 p.m. Muirhead A. C. * Zhong S.
[*Spatial Correlation of Deep Moonquakes and Mare Basalts and Implications for Lunar Present-Day Mantle Structure, Magmatism and Thermal Evolution*](#) [#1089]
We have correlated the presence of mare basalts deep moonquake (DMQ) clusters. We also quantify the relationship between mare basalts and topographic lows. Given our results, we propose that the DMQ are occurring predominantly in the source region of the mare basalts.
- 2:00 p.m. O'Sullivan K. M. * Neal C. R. Simonetti A.
[*Crystal Stratigraphy of Apollo 12 Basalts*](#) [#2172]
We use crystal stratigraphy to explore the petrogenesis of the Apollo 12 ilmenite, pigeonite, and feldspathic suite basalts.
- 2:15 p.m. Snape J. F. * Crawford I. A. Joy K. H. Burgess R.
[*A Petrographic Study of Basaltic Fragments in Apollo Regolith Sample 12003*](#) [#2020]
We have performed a petrological study of a selection of Apollo 12 basaltic regolith grains. Based on our results we have identified four separate basaltic groups that we believe may have originated from multiple lava flows.
- 2:30 p.m. King P. L. * Lee R. J. Ramsey M. S. McCutcheon W. A.
Schofield C. M. D. Shearer C. K.
[*Using Thermal Infrared Spectroscopy of Glasses to Unravel Composition and Thermal History — A New Thermometer for Lunar Glass Beads?*](#) [#2069]
The SiO₂ content and thermal history of glasses is recorded in the reflectance infrared band position at ~10 μm. We discuss using the band position to determine the last temperature that lunar pyroclastic glasses experienced.
- 2:45 p.m. Allen C. C. * Greenhagen B. T. Donaldson Hanna K. L. Paige D. A.
[*Remote Analysis of Lunar Pyroclastic Glass Deposits by LRO Diviner*](#) [#1512]
LRO Diviner compositional data are closely correlated with FeO abundance across the full range of Apollo soils and pyroclastic glasses. These data have the potential to provide remote analyses of previously unsampled lunar pyroclastic deposits.
- 3:00 p.m. Zanetti M. * Hiesinger H. van der Bogert C. H. Jolliff B. L.
[*Observation of Stratified Ejecta Blocks at Aristarchus Crater*](#) [#2262]
Large blocks of Aristarchus Crater ejecta show alternating layers of bright and dark material. The blocks are only observed on the mare side of the impact crater and are interpreted to be flood basalt sequences.

- 3:15 p.m. Ashley J. W. * Boyd A. K. Hiesinger H. Robinson M. S. Tran T. van der Bogert C. H. Wagner R. V. LROC Science Team
[Lunar Pits: Sublunarean Voids and the Nature of Mare Emplacement](#) [#2771]
The LROC Narrow Angle Camera was used to image three pit features within lunar maria from both nadir and off-nadir slews, enabling the direct imaging of a sublunarean void.
- 3:30 p.m. Hiesinger H. * van der Bogert C. H. Reiss D. Robinson M. S.
[Crater Size-Frequency Distribution Measurements of Mare Crisium](#) [#2179]
We present new absolute model ages of mare basalts in Mare Crisium based on crater size-frequency distribution measurements performed on LROC WAC images.
- 3:45 p.m. Whitten J. L. * Head J. W. Staid M. I. Pieters C. M. M³ Team
[Volcanism in the Orientale Basin: A Comparison to Other Nearside Lunar Basins](#) [#2245]
M³ data are used to characterize volcanic features in Orientale basin, including model ages, areas, and volumes. Orientale results are compared with other researchers' work to identify similarities and differences between the various lunar basins.
- 4:00 p.m. Hurwitz D. M. * Head J. W. Hiesinger H. Wilson L.
[Modeling Affects of Lunar Surface Slope, Temperature, and Material Properties on the Efficiency of Erosion During the Formation of Rima Prinz](#) [#1176]
Analytical models are used to determine relative roles of mechanical and thermal erosion in the formation of lunar sinuous rilles. Variations in surface slope, temperature, and material properties are explored to simulate the formation of Rima Prinz.
- 4:15 p.m. Spudis P. D. * McGovern P. J. Kiefer W. S.
[Large Shield Volcanoes on the Moon](#) [#1367]
Altimetry from LOLA reveals that almost all volcanic complexes in the lunar maria occur on topographic swells, tens to hundreds of kilometers in extent and several kilometers high. We propose that these swells are shield volcanoes, equivalent to large basaltic shields found on Earth, Mars, and Venus.
- 4:30 p.m. Antonenko I. * Osinski G. R.
[Unravelling the Volcanic History of South Pole-Aitken Basin](#) [#2649]
Fusion of multiple 1-km/pixel datasets is used to study regional volcanic units in the South Pole-Aitken Basin. Preliminary results include identification of 83 possible basalt-excavating craters (>5 km diameter) and potential unmapped surface maria.