

Tuesday, March 15, 2005
MARTIAN IMPACTS: PRIMARY AND SECONDARY
8:30 a.m. Salon A

Chairs: J. B. Plescia
A. S. McEwen

- 8:30 a.m. Barlow N. G. *
Martian Impact Craters as Revealed by MGS and Odyssey [#1415]
 The revision of the “Catalog of Large Martian Impact Craters” using MGS and Odyssey data is revealing important new information about crater ejecta and interior features and the environmental conditions under which they form.
- 8:45 a.m. Mouginis-Mark P. J. * Boyce J. M.
The Unique Attributes of Martian Double Layered Ejecta Craters [#1111]
 We have used all THEMIS VIS images obtained up until October 2004 to study the morphology and distribution of double layered ejecta craters on Mars and find several unique attributes. eighty-nine craters, 7.5–29.0 km in diameter, have been identified.
- 9:00 a.m. Suzuki A. * Kumagai I. Nagata Y. Kurita K. Barnouin-Jha O. S.
The Formation of Radial Linements on Fluidized Ejecta [#2331]
 We have conducted laboratory experiments using water and glass beads to see the interaction between a vortex ring and a particle layer. We indicate that even present Martian conditions are sufficient to form surface lineations seen on ejecta of pedestal craters.
- 9:15 a.m. Abramov O. * Kring D. A.
Impact-induced Hydrothermal Activity on Early Mars [#1048]
 We present the numerical simulation results of hydrothermal activity in early Martian craters. Duration of hydrothermal activity in a range of craters is estimated, and the system mechanics are discussed. Habitability of these systems is considered.
- 9:30 a.m. Plescia J. B. *
Small-Diameter Martian Craters: Applicability for Chronology [#2171]
 Craters in the size range of meters to hundreds of meters can not be reliably used for either relative or absolute chronologies on Mars.
- 9:45 a.m. Hartmann W. K. *
Adventures (Arrrgggh!) in Crater Counting: Small Crater Controversies [#1427]
 An invited review is given regarding crater counting techniques.
- 10:00 a.m. Tanaka K. L. * Skinner J. A. Jr. Barlow N. G.
The Crater Production Function for Mars: A -2 Cumulative Power-Law Slope for Pristine Craters >5 km in Diameter Based on Crater Distributions for Northern Plains Materials [#2162]
 Based on revised geologic mapping and an improved crater database for the Martian northern plains, we propose that the Mars crater size-frequency crater production function follows closely a -2 power law in the 5 to ~ 100 km diameter range.
- 10:15 a.m. McEwen A. S. * Preblich B. Turtle E. Studer D. Artemieva N. A. Golombek M. P. Hurst M. Kirk R. L. Burr D. M.
Distant Secondary Craters and Age Constraints on Young Martian Terrains [#2111]
 Small martian craters (<300 m) are mostly distant secondaries, not useful for age dating, and the primary production function is “flatter” than previously assumed, which is why much of the Martian surface has well-preserved meter-scale morphologies.

- 10:30 a.m. Tornabene L. L. * McSween H. Y. Jr. Moersch J. E. Piatek J. L.
Milam K. A. Christensen P. R.
Recognition of Rayed Craters on Mars in THEMIS Thermal Infrared Imagery: Implications for Martian Meteorite Source Regions [#1970]
Additional discoveries of large martian rayed craters in THEMIS TIR images has interesting implications for possible source regions of the Martain Meteorites. Links between rayed craters as seen in THEMIS TIR, possible source regions and the MM are presented.
- 10:45 a.m. Bart G. D. * Melosh H. J.
Ejected Boulders: Implications for Secondary Craters and the Age Dating of Surfaces [#2022]
We characterized boulders around four craters on the Moon and Mars and compared the results with studies of secondary craters. Our cumulative SFD plot for boulders has a slope of -4 , similar to that which was found for secondary craters.
- 11:00 a.m. Artemieva N. A. *
Small Primaries Versus Large Secondaries on Mars — Numerical Approach [#1589]
Using numerical simulations we compare crater strewn fields created by a disrupted and dispersed projectile with distal secondary craters formed by high-velocity ejecta from 10-km-diameter Zunil crater.
- 11:15 a.m. Bottke W. F. * Nesvorny D. Durda D. D.
Are Most Small Craters Primaries or Secondaries: Insights from Asteroid Collisional/Dynamical Evolution Models [#1489]
We determined the main belt and NEA size distributions (SD) for $D > 10$ cm bodies over the last 4.6 Gy. The slope of our NEA SD at small sizes is shallower than the lunar/martian crater SD. Because crater scaling laws cannot explain the difference, most small craters must be secondaries.
- 11:30 a.m. Bierhaus E. B. * Merline W. J. Chapman C. R.
Variation in Size-Distributions Between Adjacent and Distant Secondary Craters [#2386]
We find that on Europa adjacent secondary craters exhibit steeper size-distributions than the distant secondary craters.
- 11:45 a.m. DISCUSSION ON PRIMARY VS. SECONDARY CRATERING