

Tuesday, March 8, 2011
IMPACTS: MODELING AND REMOTE SENSING
1:30 p.m. Waterway Ballroom 5

Chairs: Sarah Stewart
 Gordon Osinski

- 1:30 p.m. Gldemeister N. * Durr N. Wnnemann K. Elbeshausen D. Hiermaier S.
[*Propagation of Impact-Induced Shock Waves in Heterogenous Rocks Using Mesoscale Modeling*](#) [#1104]
 In the framework of the "MEMIN" project, the effect of porosity in dry and water-saturated sandstone on shock wave loading is investigated. We conducted a series of numerical experiments of shock wave propagation in porous material using macro- as well as mesoscale models.
- 1:45 p.m. Elbeshausen D. * Wnnemann K.
[*The Effect of Target Topography and Impact Angle on Crater Formation — Insight from 3D Numerical Modelling*](#) [#1778]
 We present results of a comprehensive study comprising more than 1000 three-dimensional hydrocode simulations and give insight into the effect of impact angle and topography on the morphometry and morphology of impact craters as well as their formation process.
- 2:00 p.m. Johnson B. C. * Melosh H. J.
[*Homogeneous Nucleation of Silica Dust Following a Hypervelocity Impact*](#) [#1069]
 We show how a careful treatment of homogeneous nucleation during a vapor cloud expansion leads to a model, which makes predictions that are consistent with observations. We also show that the size of nucleation products depends on the impactor size and impact velocity.
- 2:15 p.m. Goldin T. J. * Koeberl C.
[*Interactions Between Hypervelocity Impact Ejecta and Planetary Atmospheres: From the Early Earth to Mars*](#) [#2766]
 Using a two-phase fluid flow code, we compare the reentry of high speed impact ejecta into the atmospheres of the modern Earth, the Archean Earth, Venus, and Mars.
- 2:30 p.m. Kraus R. G. * Stewart S. T. Swift D. C. Bolme C. A. Smith R. Hamel S. Hammel B. Spaulding D. K. Hicks D. G. Eggert J. H. Collins G. W.
[*Shock Induced Vaporization of Silica: Implications for Giant Impact Events*](#) [#2263]
 The quantity of vapor created during a giant impact is important to a number of problems in the planetary sciences. We investigate vaporization of silica by performing multi-Mbar shock and release experiments on quartz.
- 2:45 p.m. Marinova M. M. * Aharonson O. Asphaug E.
[*The Importance of Impactor Composition on the Geophysical Consequences of Planetary-Scale Impacts into a Mars-Like Planet*](#) [#2606]
 Planetary-scale impacts were ubiquitous in the final stages of planetary accretion. We explore the effects of impactor composition and internal structure on the geophysical and morphological consequences of these large impacts.
- 3:00 p.m. Stewart S. T. *
[*Impact Basin Formation: The Mantle Excavation Paradox Resolved*](#) [#1633]
 New insights into the multiphase flow of materials during impact basin formation reconcile excavation of the mantle with the limited distribution of olivine-rich deposits observed on the terraces of impact basins on the Moon and Mars.

- 3:15 p.m. Baker D. M. H. * Head J. W.
[*Impact Basin Formation: Testing the Nested Melt-Cavity Model with New Catalogs of Peak-Ring Basins on the Moon and Mercury*](#) [#1429]
Observations from new catalogs of the interior-ring and rim-crest diameters of peak-ring basins and protobasins on the Moon and Mercury are found to be consistent with the first-order predictions of the nested melt-cavity model for impact basin formation.
- 3:30 p.m. Daubar I. J. * McEwen A. S. Byrne S. Dundas C. M. Keska A. L. Amaya G. L. Kennedy M. Robinson M. S.
[*New Craters on Mars and the Moon*](#) [#2232]
New discoveries of recent, dated impacts on Mars now total 189. We have now discovered five new craters on the Moon using similar techniques and LROC data.
- 3:45 p.m. Ong L. * Berger A. J. Melosh H. J.
[*Characterization of a Corinto Crater Ray on Mars*](#) [#1552]
We measured nearly 18,000 secondary craters within a crater ray located 360 km from Corinto Crater. The crater densities range from 4000 to 5500 craters per km², and have one of the highest areal densities observed on a planetary surface.
- 4:00 p.m. Robbins S. J. * Hynes B. M.
[*Distant Secondary Craters from Lyot Crater, Mars, and Implications for Ages of Planetary Bodies*](#) [#1330]
We identified thousands of secondary craters in distinct clusters up to 5200 km from their primary crater, Lyot, on Mars. Their properties, relation to Lyot, and broader implications to secondary cratering and planetary ages will be discussed.
- 4:15 p.m. Singer K. N. * Nowicki L. McKinnon W. B. Schenk P. M.
[*Secondary Craters and Ejecta on Icy Satellites: Size-Velocity Distributions*](#) [#1649]
This work addresses size-velocity distributions of secondary craters on Europa and elsewhere, to determine the largest size fragments that might be ejected from an icy satellite by a given impact and as a test of spallation models.
- 4:30 p.m. Bray V. J. * Melosh H. J. McEwen A. S. Schenk P. M. Morgan J. V. Collins G. S.
[*Studying Cratering and Pit Formation Processes with Galileo and MRO DEMs*](#) [#1570]
We are utilizing topographic profiles to investigate the process of crater formation and to develop constraints for the various formation mechanisms suggested for central pit craters, an unusual crater type seen most commonly on ice-rich bodies.