

Tuesday, March 11, 2008

IMPACT EVENTS: MODELING, EXPERIMENTS, AND OBSERVATIONS I

8:30 a.m. Amphitheater

**Chairs:** K. A. Holsapple  
D. S. Powars

- 8:30 a.m. Horton J. W. Jr.\* Kunk M. J. Belkin H. E. Aleinikoff J. N. Jackson J. C. Chou I.-M.  
*Evolution of Crystalline Target Rocks and Impactites in the Chesapeake Bay Impact Structure, ICDP-USGS Eyreville B Core* [#1196]  
The deepest sections of ICDP-USGS drill cores from the late Eocene Chesapeake Bay impact structure provide insights into the origin and emplacement of crater-fill materials and processes in a nearshore marine environment.
- 8:45 a.m. Bartosova K. Koeberl C. \* Schmitt R. T. Reimold W. U. Ferriere L.  
*A Petrographical, Geochemical, and Shock Metamorphic Study of Suevite from the Eyreville Drillcore, Chesapeake Bay Impact Structure, USA* [#1065]  
Petrographical and geochemical information is presented on suevite from Eyreville drillcore, center of the Chesapeake Bay impact structure, and the proportions of unshocked and shocked quartz grains are evaluated.
- 9:00 a.m. Powars D. S. \* Catchings R. D. Gohn G. S. Horton J. W. Jr.  
*High-Resolution Seismic Reflection Images Spanning the 1.76-km-Deep ICDP-USGS Eyreville Coreholes Within the Moat of the Chesapeake Impact Structure* [#2216]  
The seismic images indicate that the upper impactites in the Chesapeake Bay impact central crater are highly variable laterally, with similar units at different depths deposited from multiple directions at multiple times.
- 9:15 a.m. Barnouin-Jha O. S. \* Ramesh K. T. Swaminathan P. K.  
*Advances in Dynamic Fracture with Applications to Planetary Cratering* [#1906]  
We present laboratory experiments and numerical studies exploring intermediate strain rate regimes that are commonplace during planetary impacts using new advances in impact fracture physics.
- 9:30 a.m. Yamamoto S. \* Sugita S. Matsui T.  
*Effects of Target Material Properties on Transient Crater Growth* [#1507]  
We measured the transient crater growth for various targets to study how target material properties are related to a scaling relation in the gravity regime.
- 9:45 a.m. Holsapple K. A. \*  
*Porous Material Models for Impact Studies* [#2257]  
A discussion of the modeling of the porous materials of the small bodies of the solar system.
- 10:00 a.m. Pierazzo E. \* Artemieva N. A. Baldwin E. C. Cazamias J. Coker R. F.  
Collins G. S. Crawford D. A. Davison T. Holsapple K. A. Housen K. R.  
Korycansky D. G. Wünnemann K.  
*The Impact Hydrocode Benchmark and Validation Project: Results of Validation Tests* [#1177]  
We present our first validation tests of a glass sphere impacting water and an aluminum sphere impacting aluminum as part of the collective validation and benchmarking effort from the impact cratering and explosion community.
- 10:15 a.m. Senft L. E. \* Stewart S. T.  
*Frictional Melting and Complex Crater Collapse* [#1417]  
We investigate the possible role of frictional melting in the collapse of complex craters, and find that including a simplified proxy for frictional melting effects into a cratering code leads to the formation of fractures that are favorably oriented for crater collapse.

- 10:30 a.m. Elbeshausen D. \* Wünnemann K. Collins G. S.  
*Crater Scaling for Oblique Impacts in Frictional Targets: Insight from 3D Hydrocode Modelling* [#1795]  
By using our 3D-hydrocode iSALE-3D we performed an extensive parameter study concerning oblique meteorite impacts. Our main goal is to quantify the influence of the impact angle on crater size for gravity-dominated craters in hydrodynamic and frictional target materials.
- 10:45 a.m. Herrick R. R. \* Yamamoto S. Barnouin-Jha O. S. Sugita S. Matsui T.  
*Constraints from Laboratory Experiments on Crater Excavation and Formation of an Uprange Forbidden Zone in an Oblique Impact* [#2305]  
Impact experiments were conducted for the purpose of detailing the topography and ejecta distribution for the spectrum of impact angles. We use the data to infer how the excavation flow produces the uprange forbidden zone in highly oblique impacts.
- 11:00 a.m. Kenkmann T. Poelchau M. H. \*  
*Matt Wilson: An Elliptical Impact Crater in Northern Territory, Australia* [#1027]  
The impact origin of the Matt Wilson structure is shown by shock indicators. It is the first elliptical crater ( $7.5 \times 6.3$  km) on Earth that contains a central uplift and provides insights to the mechanisms of crater formation at an angle of  $\sim 10^\circ$ .
- 11:15 a.m. Tagle R. \* Schmitt R. T. Erzinger J.  
*The Lockne Impact is not Related to the Ordovician L-Chondrite Shower* [#1418]  
Geochemistry of projectile traces from the Lockne impact structure, Sweden suggests the presence of a non-chondritic projectile, negating previous claims of a connection of this crater to the Ordovician L-chondrite shower.
- 11:30 a.m. Richardson J. E. \*  
*Modeling the Evolution of Cratered Terrain in Three Dimensions: A Study of Crater Creation and Erosion on Airless Bodies* [#2079]  
We describe the development and application of a 3D Cratered Terrain Evolution Model, which includes crater degradation due to the downslope motion of regolith, triggered by either slope instability or the seismic motion generated by nearby impacts.