

Tuesday, March 11, 2008

POSTER SESSION I:

IMPACT EVENTS: MODELING, EXPERIMENTS, AND OBSERVATIONS III

6:30 p.m. Fitness Center

Krøgli S. O. Dypvik H. Etzelmüller B.

Automatic Detection of Circular Outlines from Images of Gravity and Aeromagnetic Fields [#1210]

An image analysis technique is presented as a tool in the search for possible impact structures. The aim is to detect circular features in regional geophysical data.

Chappelow J. E.

Determining Simple Impact Crater Shapes from Shadows [#1441]

This work expands upon and generalizes previous work toward determining the shapes of impact craters from the shadows cast within them.

Byrne C. J.

Cavity Shape of Large Lunar Impact Features [#1288]

The shape of the apparent crater of an impact feature is sometimes described as a paraboloid. The radial profiles of several large lunar impact features have been examined and they are found to be better approximated with a negative cosine curve.

Shuvalov V. V. Trubetskaya I.

Impact Induced Aerial Bursts in the Earth's Atmosphere [#1042]

Aerial bursts are produced by comets and asteroids with sizes ranging from tens of meters to about one kilometer (energies from 10 Mt to 100 Gt of TNT equivalents). They produce strong devastation and fires on the Earth's surface.

Ivanov B. A.

Multiphase Equations of State for Planetary Impact Study [#1490]

EOS for olivine is important to study large scale impacts with the melting mantle. The first step to the ANEOS-based olivine description EOS for fayalite is presented.

Melosh H. J. Goldin T. J.

Heat and Drag Coefficients for Reentry of Impact Ejecta [#2457]

We present new formulations for the heat exchange and drag coefficients for small ejecta particles over the full range of entry velocities and atmospheric densities encountered during planetary atmospheric entry.

Artemieva N. A.

Tektites: Model Versus Reality [#1651]

Modelled properties of tektites (high ^{10}Be , absence of volatiles, etc.) are compared with available data. What happens with tektites ejected from small, kilometer-sized craters? Do solid distal ejecta exist?

Schultz P. H. Crawford D. A.

Consequences of Forming the South-Pole-Aitken Basin [#2451]

Hydrocode computations model the formation of the SPA Basin and shows that it could have fractured more than 50% of the lunar crust with effects extending to the core. An oblique impact by a 700-km-diameter asteroid would have produced offset antipodal effects.

Ernst C. M. Schultz P. H.

Effects of View Orientation on Impact Flash Observations: Implications for Lunar Impacts [#2291]

A low-angle view orientation should decrease the observed impact flash intensity since portions of the radiating material are hidden by the transient crater walls and expanding ejecta. We assess view orientation effects on the observed impact flash.

Stewart S. T. Seifert A. Obst A. W.

Measurements of Emission Temperatures from Shocked H₂O Ice [#2301]

The first shock temperature measurements for H₂O ice provide critical data for calculations of phase changes induced by impact events in the solar system.

Sugita S. Kadono T. Shigemori K. Fujioka S. Otani K. Sano T. Sakawa T. Azechi H. Ozaki N. Kimura T. Miyanishi K. Endo T. Arakawa M. Nakamura A. M. Matsui T.

Acceleration of Projectiles to >10 km/s with a Laser Gun: Toward Silicate Impact Vaporization Experiments [#2501]

A high-power laser has been used to accelerate silicate glass spheres to planetary-scale velocities, ~15 km/s. Such high impact velocities will allow us to observe vaporization processes of silicate in a laboratory.

Hollerman W. A. Melespin C. A. Fontenot R. S. Wasilewski P. J.

Measuring Triboluminescence Generated by Meso-Velocity Impacts [#1018]

From the last two years, triboluminescence (TL) research was completed using the one-stage gas gun at the NASA GSFC. This gun fired projectiles at a selection of simulated ZnS:Mn and regolith samples. TL can be detected from the front of some impacts.

Mihályi K. Gucsik A. Szabó J.

Drainage Patterns of Terrestrial Complex Meteorite Craters: A Hydrogeological Overview [#1200]

Drainage patterns and their hydrogeological consequences of the terrestrial impact structures were summarized in this study.

Orr W. R. Schultz R. A.

Review of Faults Associated with Complex Impact Structures in Sedimentary Rock Targets, with Reference to the Upheaval Dome Impact Structure, Utah, U.S.A. [#1076]

We present a compilation of the literature on known terrestrial impact structures and focus on complex impact structures within sedimentary rock targets. We find that bedding-parallel, or low-angle faults, are observed in the field but not geophysically.

Rossman N. R. Anderson J. L. B.

The Rock Elm Impact Structure: Morphometry of the Southern Fault Block from Seismic Refraction Surveys [#1112]

Characterization of the three-dimensional structure and velocity structure of a 1.5-km-wide slump block and surrounding rock units along the southern margin of the Rock Elm impact structure using seismic refraction data.

Núñez del Prado H. Macharé J. Macedo L. Chirif H. Pari W. Ramirez-Cardona M. Aranda A. Greenwood R. C. Franchi I. A. Canepa C. Bernhardt H.-J. Plascencia L.

The Meteorite Fall in Carancas, Lake Titicaca Region, Southern Peru: First Results [#2555]

The meteorite fall that occurred on September 15, 2007, in the Carancas community is a rare case where it is possible to study both impact phenomenology and meteorite characteristics, including accurate time framework.

Miura Y.

Multiple Explosions During Cratering at Carancas Meteorite Hit in Peru [#2027]

Quenched texture of flake and needle grains of Carancas meteorite in Peru, South America, indicates two steps of explosions as first excavation and second steam explosion against cold wet-ground.

Harris R. S. Schultz P. H. Tancredi G. Ishitsuka J.

Preliminary Petrologic Analysis of Impact Deformation in the Carancas (Peru) Cratering Event [#2446]

We present the first petrologic and petrographic analyses of materials deformation resulting from the September 2007 Carancas impact cratering event.

Dypvik H. Kalleson E.

Marine Impacts — Mechanisms of Late Syn-/Early Post-Impact Crater Infill [#1135]

Several sedimentary processes are recognized in marine impact structures. The main sedimentary successions reflect marine conditions and sedimentary processes partly controlled by the size and age of impact, water depth and target lithologies.

Tagle R. Spray J. G. Schmitt R. T.

Search for Projectile Traces in Melt Rocks of the Charlevoix and Dellen Impact Structures [#1787]

The identification of the extraterrestrial traces in Dellen and Charlevoix, two impacts structures with relatively small projectile contribution to the impact melt rocks, are presented and the implications are discussed.

Nagy Sz. Gucsik A. Bérczi Sz. Ninagawa K. Nishido H. Kereszturi Á. Hargitai H. Okumura T.

K-Feldspar and Biotite as Shock Indicator Minerals from Bosumtwi Impact Crater [#1144]

Biotite and K-feldspar minerals were investigated by SEM to evaluate the shock stages at Lake Bosumtwi impact event.

Ninagawa K. Gucsik A. Nishido H. Okumura T. Sakamoto M.

Micro-Raman Study of Silicate Glass from Mt. Oikeyama, Japan [#1203]

Further evidence of an impact origin including maskelynite was identified at Mt. Oikeyama by Raman spectroscopy.

McHone J. F. Fries M. D. Killgore M.

Raman Detection of Titania-II, an Impact Induced Rutile Polymorph in Suevite Ejecta at Bosumtwi Crater, Ghana [#2450]

Raman spectroscopy has been used to identify a shock-induced crystalline polymorph (TiO₂-II) of rutile (TiO₂) in acid treated rocks from Bosumtwi crater.

Mason C. E. Repetski J. E. Smith W. C. Lindgren P. Parnell J. Lee P.

Thermal and Hydrothermal Alteration of Conodonts From Target Bedrock and Impact Breccias from the Haughton Impact Structure, Devon Island, Nunavut, Canada [#2551]

Samples of carbonate bedrock and clasts from melt breccia within and near the Haughton impact structure (Tertiary), Devon Island, Canada, yield conodonts that provide new data on the age and thermal history of the impacted rocks.

Wittmann A. Reimold W. U. Hansen B. Kenkmann T.

Petrography of the Suevite-like Depth Interval (1397–1550 m) in Drill Core Eyreville-B, Chesapeake Bay Impact Structure, USA [#2435]

A sub-division of suevite-like deposits in a drill core through the Chesapeake Bay impact structure based on component-size distribution and petrography suggests a gradation from groundsurge to fallback within the first ~6 minutes after impact.

Glidewell J. Harris R. S. King D. T. Jr. Petruny L. W.

Stratigraphy, Petrology, and Shock Petrography Based on Well Logs and Selected Samples from the Eyreville Drill Core: Chesapeake Bay Impact Structure, Virginia [#2438]

Well logs and samples of the ICDP-USGS Eyreville core show that the Chesapeake Bay impact structure is filled by >1.3 km of sands and breccias that are in four stratigraphic sections. We completed petrographic and shock feature analysis of >50 samples.

Fernandes V. A. Wittmann A. Schmitt R.-T. Reimold W. U. Hecht L. Povenmire H.

Petrography, Geochemistry, and Radiometric Dating of Impact Melts from the Chesapeake Bay Impact Structure, USA [#2383]

Various impact melts from a USGS-ICDP drill core in the Chesapeake Bay crater are used for a petrologic comparison of melt particles from resurge and ejecta plume deposits with impact melt rocks that allow a first direct radiometric dating.

Thackrey S. Lee P. Mason C. E. Parnell J.

Proximal Multi-layered Ejecta of the Haughton Impact Crater (Devon Island, High Arctic); Insights into Emplacement Mechanisms of Layered Ejecta [#1579]

We report the discovery of a well preserved, proximal multi-layered ejecta deposit on the NW sector of the Haughton impact crater. The deposit provides evidence that subsurface volatiles plays a vital role in the emplacement of layered ejecta.

Schönian F. Stöffler D. Kenkmann T.

Particle Abrasion Within the Chicxulub Ejecta Blanket: Implications for the Emplacement Process [#2029]

Roundness and sphericity of 1575 clasts from 14 localities of Chicxulub ejecta blanket were measured. Increasing particle abrasion with crater distance can be related to a viscous and erosive secondary flow with increasing strain localization.

Misra S. Dube A. Srivastava P. K. Newsom H. E.

Time of Formation of Ramgarh Crater, India — Constraints from Geological Structures [#1502]

The Ramgarh structure, India, is a complex meteoritic impact crater on Neoproterozoic Vindhyan Supergroup. Formation of the structure likely occurred during development of fracture systems on target-rock sediments, which also deformed the crater.

Misra S. Lashkari G. Panda D. Dube A. Sisodia M. S. Newsom H. E. Sengupta D.

Geochemical Evidence for the Meteorite Impact Origin of Ramgarh Structure, India [#1499]

Microprobe analyses of the millimeter-sized magnetic spherules from alluvium inside the Ramgarh Crater show very high proportions of Fe_2O_3 (~34 wt%), Ni (~4000 ppm), and Co (~7000 ppm) in many samples, suggesting a meteorite impact origin of this crater.

Albin E. F. Harris R. S. King D. T. Jaret S. J. Petruny L. W. Gibson C. J.

The Woodbury Structure: Evidence for an Ancient Impact Crater in West-Central Georgia, USA [#2506]

We present new data in support of the hypothesis that the Woodbury structure was formed by an impact event.

Claeys Ph. Chan J. C.-W. Dujardin R.

The Luizi Structure: Remote Sensing Study of a Possible Impact Crater in Central Africa [#1720]

A remote sensing study of the Luizi structure in Katanga, Democratic Republic of Congo, shows morphological features such as rim and central uplift compatible with an impact crater origin.

Ormö J. Bayaraa T. Gomez-Ortiz D. Komatsu G. Tserendug S.

Magnetic and Gravity Modeling of the Proposed Tsenkher Impact Structure, Gobi Altai, Mongolia [#1664]

Following the 2007 expedition to the Tsenkher structure in the Gobi desert we have now conducted a geophysical modeling of the structure. An impact origin is supported.

Komatsu G. Ormö J. Bayaraa T. Matsui T. Gereltsetseg L. Tserendug S. Goto K.

Gomez-Ortiz D. Demberel S.

The Tsenkher Structure in the Gobi-Altai, Mongolia: Preliminary Results from the 2007 Expedition [#1622]

The 3.6–3.7 km Tsenkher structure located in Mongolia was proposed to be an impact crater. Volcanic hypotheses are not ruled out, but its uplifted rim, extensive breccia deposit, and rootless structure are consistent with an impact origin.