

Tuesday, March 8, 2011
POSTER SESSION I: IMPACTS II: TERRESTRIAL CRATERS
6:00 p.m. Town Center Exhibit Area

Watt N. Bouchet R. Lee C.-T. A.

[*Exploration of Tektite Formation Processes Through Water and Metal Content Measurements*](#) [#1109]

To better explore the effects of impacts on surface materials, we measured the compositions of tektites from Vietnam. While zinc/lead ratios were linearly correlated, there was no correlation between water content and zinc or lead contents.

Craig M. A. Osinski G. R. Flemming R. L. Cloutis E. A.

[*Spectral Identification of Impact Glasses Via NIR Reflectance Spectroscopy*](#) [#2411]

Impact glasses from Haughton and other known impact sites possess what appears to be a unique NIR spectral feature that may be indicative of their impact origin. As such, it is possible that impact glasses may be identified via the use of reflectance spectroscopy alone.

Osinski G. R. Tornabene L. L. Grieve R. A. F.

[*Impact Ejecta Emplacement on Terrestrial Planets*](#) [#1866]

Current models of ejecta emplacement do not account for several important observations of planetary ejecta deposits; in particular, the presence of double or multiple layers of ejecta. Here, we present a new working model in which ejecta is emplaced in a multi-stage process.

Chanou A. Osinski G. R. Grieve R. A. F. Ames D. E.

[*Quantitative Digital Image Analysis of Impact Melt-Bearing Breccias \("Suevites"\)*](#) [#2164]

Preliminary quantitative digital image analysis of 'suevites' with minimal manual intervention. Parameters including modal abundances of 'suevite' components were measured after particles of interest were segmented and analyzed using ImageJ software.

Mader M. M. Osinski G. R. Marion C. L.

[*Impact Ejecta at the Mistastin Lake Impact Structure, Labrador, Canada*](#) [#2505]

We recently identified impact ejecta deposits in the rim region of the Mistastin Lake impact structure, including impact glass-bearing polymict breccias and impact melt. A possible multistage impact ejecta emplacement model is discussed.

Gaither T. A. Hagerty J. J. Clark S. E. Hare T. M. Hayward R. K. Newsom H. E.

Wright S. P. McHone J.

[*Multi-Dimensional Characterization of Impact Ejecta Deposits from Meteor Crater, AZ*](#) [#1474]

Using the USGS Meteor Crater drill core sample suite, we are investigating the three-dimensional distribution and compositions of impact melts, metallic spherules, and meteoritic fragments with known lateral and vertical context within the ejecta.

Kring D. A. Balcerski J. Blair D. M. Chojnacki M. Donohue P. H. Drummond S. A. Garber J. M. Hopkins M. Huber M. S. Jaret S. J. Losiak A. Maier A. Mitchell J. Ong L. Ostrach L. R. O'Sullivan K. M. Potter R. W. K. Robbins S. Shankar B. Shea E. K. Singer K. N. Sori M. Sturm S. Willmes M. Zanetti M. Wittmann A.

[*Asymmetrical Distribution of Impact Ejected Lithologies at Barringer Meteorite Crater \(a.k.a Meteor Crater\)*](#) [#1746]

Eighty meters of ejected material was sheared from the rim of Meteor Crater and deposited at greater distances, which explains the asymmetry of ejecta around the crater.

Roy S. Stewart R. R. Kring D. A.

[*Seismic Investigations at Barringer Crater, Arizona*](#) [#1644]

A high-resolution seismic investigation of the shallow subsurface of the Barringer Crater, Arizona has been presented. Different layers have been identified based on the velocity variations.

Dulin S. A. Elmore R. D. Dennie D. P. Evans S. C. Mulvany P.

[*Paleomagnetic Investigations of the Decaturville, MO, and Sierra Madera, TX, Impact Structures*](#) [#1120]

In this study we are testing if a modified paleomagnetic conglomerate test on impact breccias, in conjunction with geochemical/petrographic studies, can be used to constrain the timing of the impacts and determine the origin of carbonate breccias.

Melero Asensio I. Martín-Hernández F. Ormö J.

[*Rock-Magnetic Properties of Drill Core LOC-9 from the Lockne Crater, Sweden*](#) [#1463]

This study provides a precise analysis of the rock magnetic properties, including characterization of the magnetic phases and identification of them for samples from the LOC-9 core from the Lockne impact crater, Sweden.

Melero Asensio I. Ormö J. Sturkell E.

[*Preliminary Geophysical Survey of the Målingen Structure, Sweden*](#) [#1542]

Geophysical results are obtained in order to develop a geophysical modeling of the Målingen structure and will be used to constrain numerical simulation to evaluate the potential impact origin and its relation with the Lockne impact crater.

Ormö J. Sturkell E. Melero Asensio I. Frisk Å. Lepinette A. Moro Martin A.

[*The Målingen Structure: a Probable Doublet to the Lockne Marine-Target Impact Crater, Central Sweden.*](#) [#1048]

Lockne/Målingen are likely the first documented doublet marine-target craters and their various sizes with respect to the same target water depth offers a unique chance to study the effects of target water depth on the cratering process.

Robbins E. A. Wolf L. W. King D. T. Jr.

[*Wetumpka Impact Structure \(Alabama\) — A Gravity Model*](#) [#2732]

This project utilizes high-resolution gravity data to explore the subsurface geology and structure of the Wetumpka impact structure. Gravity modeling shows that simple geologic layering cannot explain the observed gravity lows near the impact site.

King D. T. Jr. Ormö J. Petruny L. W. Harris R. S. Johnson R. C. Markin J. K.

Neathery T. L. Tabares Rodenas P.

[*Shallow Subsurface Stratigraphy of Wetumpka Impact Structure, Alabama \(USA\)*](#) [#2335]

This abstract examines the results of shallow core-hole drilling from 1998 to 2009, including data from eight wells. Lithologic logs from the eight wells are presented and interpreted in this presentation.

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

[*Wetumpka's Baillif Hill Stratigraphic Section — Mixed Crystalline and Sedimentary Megablocks and Impact Breccia*](#) [#2406]

The section at Baillif Hill in the intrastructure terrain of the Wetumpka impact structure contains a sequence of impact breccias and mixed sedimentary and crystalline megablocks. These deposits were previously known only from depths of <100 m near the crater center.

Markin J. K. King D. T. Jr. Ormö J.

[Wetumpka Resurge Chalk Deposits — Insights from X-Ray Computed Tomography](#) [#2579]

The Wetumpka impact structure is a marine target impact feature with resurge chalk deposits. CT analysis of 25 m of resurge chalk drill core shows many previously unrecognized sedimentary structures reflecting resurge processes.

Herrmann B. C. Mayne R. G.

[Impact at Ingalls? Evidence for Subsurface Ordovician Meteorite Impact Near Ingalls, OK](#) [#1032]

An Ordovician-aged structural anomaly in the subsurface of north-central Oklahoma has been suggested as having an impact origin. The claim will be investigated using well logs and rock cuttings from wells drilled into the structure.

Schmieder M. Buchner E. Reimold W. U.

[Impact-Related Deformation Features in Cherts from Terrestrial Impact Structures](#) [#2274]

A preliminary review of impact-induced and potentially impact-related microdeformation features in cherts from a number of sedimentary-hosted terrestrial impact structures (Jebel Waqf as Suwwan, Steinheim, Kentland, and Crooked Creek) is presented.

Ferrière L. Lubala F. R. T. Osinski G. R. Kaseti P. K.

[The Luizi Structure \(Democratic Republic of Congo\) — First Confirmed Meteorite Impact Crater in Central Africa](#) [#1637]

Our detailed analysis of the Luizi structure, combining a remote sensing study with geological field observations and petrographic examination of rock samples collected during our 2010 field campaign allows us to confirm its meteorite impact origin.

Milam K. A. Aden D. J. Kah L. C.

[Geochemical Analyses of the Tawaz Breccia, an Anomalous Mesoproterozoic Breccia in West Africa](#) [#2784]

The Tawaz breccia is an anomalous Mesoproterozoic breccia in West Africa that represents a tsunamite, potentially generated by an impact event.

Milam K. A.

[A Revised Diameter for the Serpent Mound Impact Crater in Southern Ohio](#) [#2797]

The Serpent Mound impact crater in southern Ohio is <14 km in diameter based on new analyses.

Beal R. A. Newsom H. E. Wright S. P. Misra S.

[Discovery of Mantled Sub-Millimeter Lapilli from the Lonar Crater, India](#) [#1509]

Lapilli in Lonar ejecta have rims of fine-grained basaltic minerals and scoriaceous melt particles. Accretionary lapilli cores consist of coarser-grain particles while armored lapilli have cores of basalt, shocked basalt, and impact melt spherules.

Arif Md. Deenadayalan K. Basavaiah N. Misra S.

[Variation of Primary Magnetization of Basaltic Target Rocks due to Asteroid Impact: Example from Lonar Crater, India](#) [#1383]

The abstract reports the variation of primary magnetization component at Lonar crater, India with regard to the direction of impact through the comparison of shocked and unshocked basalts collected from around the crater rim and at ~2 km east-southeast of the crater rim.

Carli C. Pittarello L. Capaccioni F.

[VNIR Spectroscopic Measurements of Samples from Basaltic Impact Crater Rocks](#) [#1119]

Impact cratering is an important geological process affecting the morphology, the petrography, and mineralogy of the original surface. We report a preliminary VNIR spectra characterization and interpretation of impact crater basaltic samples.

Misra S. Newsom H. E.

[*Incompatible Trace Element Fractionation in Impact-Melts of Lonar Crater, India — Evidence of Differential Impact Melting of Target Deccan Basalt*](#) [#1060]

Incompatible trace element analyses of impact-melt bombs from Lonar crater, India, show that these melts were generated by plagioclase-dominated partial melting of target Deccan basalt.

Misra S. Andreoli M. A. G. Gibson R. L. Wela S.

[*Petrographic Observations of Shock Deformation Between ~18 and 20 km Radius in the Morokweng Impact Structure, South Africa*](#) [#1102]

In the present study we have reported our detailed petrographic observations on the type of shocked deformations on two boreholes drilled at ~18–20 km distance to the southwest and northwest of the center of the Morokweng impact crater, South Africa.

Anders D. Kegler P. Buchner E. Schmieder M.

[*Carbonate Melt Lithologies from the Steinheim Impact Crater \(SW Germany\)*](#) [#1997]

Studies of samples from the Steinheim impact structure, Germany, yielded smaller amounts of carbonate melts, either as calcite patches within the Steinheim suevite melt particles, or as dolomitic melt veins injected into host limestone fractures.

Sturm S. Willmes M. Hiesinger H. Kenkmann T. Pösges G.

[*Megablocks in the Ries Impact Crater, Germany: New Discoveries and Statistical Analysis of Distribution and Lithologies*](#) [#1705]

A comprehensive map of the megablock zone of the Ries crater in Germany was created by means of remote sensing and shallow drilling, and the distribution of the megablocks in relation to the crater center and crater rim was determined.

Muttik N. Kirsimäe K. Newsom H. E. Williams L. B.

[*Boron Isotope Composition of Smectite in Suevites at the Ries Crater, Germany*](#) [#2413]

This study represents preliminary $\delta^{11}\text{B}$ data of smectite minerals in crater fill and surficial suevites from the Ries Crater, Germany, to determine the temperature and fluid composition during initial phyllosilicate formation in suevites.

Jaret S. J. Chakrabarti R. Yu G. Petaev M. I. Jacobsen S. B.

[*Rare Earth and Trace Element Geochemistry of Impact Melts from the Gardnos Impact Structure, Norway*](#) [#2589]

This study consists of trace-element geochemical analysis of individual melt clasts from suevitic breccias and of melt-breccia dikes.

Troiano J. Ebel D. S. Friedrich J. M. Landman N. H. Boesenberg J. S. Bigolski J. N.

[*Iridium Anomaly in the Ivanhoe Creek Section New Jersey Coastal Plain K/Pg Boundary*](#) [#2733]

We report on the position of the Cretaceous/Paleogene (K/Pg) Ir anomaly in a trench section from the Ivanhoe Creek area of Monmouth County, New Jersey.

Koeberl C. Pittarello L. Brigham-Grette J. Melles M. Minyuk P. El'gygytgyn Science Team

[*El'gygytgyn, an Impact Crater in Siliceous Volcanic Rocks: Preliminary Classification of the ICDP Drill Core*](#) [#1510]

The complex impact crater El'gygytgyn was recently drilled to yield a 200-m-long drill core into shocked and brecciated volcanic rocks.

Boctor N. Koeberl C. Steele A. Hemley R. J. Armstrong J.

[*Accessory Minerals in Shocked Rocks from the EL'Gygytgyn Impact Structure, Russia*](#) [#1892]

We present initial results on samples from the El'gygytgyn impact structure.

Wittmann A. Goderis S. Claeys P.

[Preliminary Petrography of Impactites from El'gygytgyn Crater, NE Siberia, Including Cores from ICDP-Lake Drilling Hole D1](#) [#2792]

Comparison of glassy melt bombs near the crater rim with impactites from a drilling near the central uplift of El'gygytgyn crater indicate a melt deficiency in this impact structure.

Thomson O. A. Cavosie A. J. Radovan H. A. Moser D. E.

[First Report of Detrital Shocked Zircons from the Paleoproterozoic Sudbury Impact Structure, Ontario Canada](#) [#2217]

We report the first occurrence of detrital shocked zircons in North America, eroded from the giant Sudbury impact structure.

López C. Cavosie A. J. Radovan H. A. Moser D. E. Byerly G. Lowe D.

[A Search for Shocked Zircons in Impact Horizons from the Barberton Greenstone Belt, South Africa](#) [#2236]

Zircons from three spherule-bearing impact ejecta layers from Barberton, South Africa, were investigated for the presence of impact shock microstructures.

Prado D. C. Cavosie A. J. Gibbon R. J. Radovan H. A. Moser D. E. Wooden J.

[Geochronology of Detrital Shocked Zircons in a Pleistocene \(ca. 1.6 Ma\) Fluvial Deposit 500 km Downriver From the Vredefort Dome, South Africa](#) [#2247]

Here we present U-Th-Pb age determinations for detrital shocked zircons found in Pleistocene (ca. 1.6 Ma) fluvial terrace deposits near Windsorton South Africa, 500 km downriver from the Vredefort Dome.

Huber M. S. Ferriere L. Losiak A. Koeberl C.

[ANIE: A Mathematical Algorithm for Automated Indexing of Planar Deformation Features in Shocked Quartz](#) [#1200]

A mathematical method of indexing planar deformation features in quartz and a Microsoft Excel macro for automated indexing is presented, allowing for more rapid and accurate results than the previously used manual method.

Losiak A. Ferrière L. Koeberl C.

[What is the Role of Alpha-Quartz in Impact Shock Metamorphism? Angles Between Pole Orientations of Planar Deformation Features as a Proxy for the Shock-Induced Temperature Change](#) [#1284]

We present preliminary results of a study on the variation of combinations of PDF orientations in quartz grains. PDF orientations within the studied samples reflect the symmetry of α -quartz, but it appears as if some quartz grains were of α -quartz type when the PDFs formed.

Losiak A. Wojciechowski J. Ferrière L. Huber M. Koeberl C.

[A Web-Based Program for Indexing Planar Deformation Features in Quartz](#) [#1286]

Here, we present a web-based program for indexing PDFs that also allows for analysis of azimuthal angles between PDFs in a given quartz grain.

Goto K. Nakano Y. Matsui T. Tada R. Tajika E.

[Abundance, Grain Size and PDF Orientations of Shocked Quartz Grains Around the Chicxulub Crater](#) [#1571]

We measured abundance, grain size, and PDF orientations of shocked quartz grains around the Chicxulub Crater in order to investigate the distribution and variation of shocked quartz grains produced by the Chicxulub impact.

Kuriyama Y. Nakamura N. Muto J. Nagase T. Pati J. K.

['Ballen Quartz' from the Dhala Impact Structure and its Crystal Orientation Pattern by Electron Back Scattered Diffraction \(EBSD\) \[#1657\]](#)

We present the first crystallographic orientation analysis of ballen quartz from the Dhala impact structure by an electron back-scattered diffraction (EBSD).

Varga T. N. Gucsik A. Bérczi Sz. Nagy Sz. Veres M. Varga T. P.

[Micro-Raman Properties of Quartz in Suevite Breccia from Ries Impact Crater, Germany \[#2150\]](#)

The purpose of this study is to determine the possible shock pressures observable in the suevite found in the Ries Crater by micro-Raman spectroscopy, and by comparison with previous studies, thus utilizing the method of shock barometry.

Das P. K. Misra S. Newsom H. E. Sisodia M. S.

[Possible Planer Fractures, Coesite, and Accretionary Lapilli from Ramgarh Structure, India: New Evidence Suggesting an Impact Origin of the Crater \[#1294\]](#)

The new findings of PF in quartzs in sandstone from the rim of the structure, along with accretionary lapilli from soil inside the structure, and the presence of coesite in these lapilli, suggest that Ramgarh is an impact crater.

Kattenhorn S. A. Daly R. G.

[Impacts into Salt Basins: The Role of Salt Mobilization in Crater Modification and Deformation \[#2803\]](#)

Impacts into target materials containing a mobile layer such as salt may result in post-impact crater modification by diapirism. We advocate this process occurred at Upheaval Dome, Utah.

Dorsey R. J. Greeley R.

[Distinguishing Endogenic and Impact Craters Using Depth to Diameter Ratios and Circularities \[#2722\]](#)

Based on concerns for surface age dating, morphometric data from the McCartys Flow, New Mexico, was compared to craters in the Colombia Hills area in Gusev Crater, Mars, to distinguish impact craters from volcanic craters in lava flows.