Thursday, August 16, 2012
POSTER SESSION II:
IMPACT CRATERS AND SHOCKED METEORITES
6:30 p.m. Mezzanine Foyer

Hopper S. Frost R. Martens W.
Kandimalal Geomorphology: The Formation of the Wolfe Creek Impact Structure [#5103]
Geomorphology is the study of geological phenomena including astronomical events that have been recorded in “talking stories.” This account is supported by the geochemistry of the shale balls found scattered on the southwest apron of the crater.

Darlington V. J. Blenkinsop T. G. Orchiston W. Tomkins A.
The Lawn Hill Impact Structure: A Unique Terrestrial Crater? [#5032]
The Lawn Hill Impact Structure (LHIS) is located 250 km north of Mt Isa in Queensland. The structure consists of a central area ~8 km in diameter enclosed by a ~5-km annulus of Cambrian limestone, a unique structure for terrestrial impacts.

Suuroja S. Suuroja K. Flodén T.
Features of the Marine Impact Structures Neugrund and Kärdla (Baltic Sea, Estonia) [#5122]
Kärdla and Neugrund are two Early Palaeozoic marine impact craters located some 50 km apart along the Estonian coast of the Baltic Sea.

Unraveling the Impact History of the Moon Using Deformed Zircon [#5172]
EBSD and CL reveal different impact microstructures in lunar zircon grains, explained via a new shock deformation map for zircon. Localized impact-related U-Pb resetting in these zircon grains reveals a record of pre-3.9 Ga impact events on the Moon.

Echaurren J. C.
Lunar Orientale Basin: Estimation of Impact Conditions [#5163]
In this work will be estimated the possible impact conditions, that might have generated the structure associated to the Lunar Orientale Basin.

Giuli G. Cicconi M. R. Eeckhout S. G. Koeberl C. Glass B. P. Pratesi G. Paris E.
Iron Oxidation State in Impact Glass Spherules from the Bosumtwi Uppermost Impact Fallback Layer [#5332]
Impact glass spherules collected in the uppermost fallback layer at the LB-05B borehole of the Bosumtwi Crater display Fe oxidation state and coordination number similar to those of most tektites studied so far.

Povenmire H.
Possible Indochinite Tektites Found in North Western Canada [#5016]
Tektites found in Northern Canada show preliminary analysis similar to that of Australasian tektites.

Povenmire H. Childs C.
The First Georgia Area Tektite Found in Allendale County, South Carolina [#5017]
A Georgia area tektite found in South Carolina, description of the strewn field mapping of Georgia tektites.

Hagerty J. J. Gaither T. A. McHone J. F.
Characterizing Impact Ejecta Deposits at Barringer (Meteor) Crater, Arizona [#5296]
Drill cuttings from the Meteor Crater ejecta blanket are providing new data that confirm the results of previous studies while also revealing additional levels of complexity and/or mixing within the ejecta blanket that require further investigation.
Wetumpka impact structure is a small, marine target feature on the Coastal Plain of Alabama. Eight core holes have been drilled in Wetumpka and the resulting shallow subsurface stratigraphy is presented in summary here.

Indicators of Oblique Impact Trajectories in Terrestrial Small-Scale Impact Craters: Evidence from the Kamil Crater, Egypt
The exceptionally well-preserved Kamil Crater in Egypt provides a number of diagnostic features of oblique impact trajectories (i.e., not vertical, nor highly oblique <10°–15°) for terrestrial, small-scale, simple craters.

Meteoritic Debris from the Transantarctic Mountains: Evidence of a Regional Distribution
The regional occurrence of meteoritic debris in the Victoria Land Transantarctic Mountains supports the argument of a continental-scale distribution of meteorite debris associated with the airburst of a large cosmic body over Antarctica ~480 ka ago.

A Meteorite Impact Crater in Central Tibet?
A well-defined possible impact crater 27 m in diameter lies on the fluvial plain of the Shialzu River, at ~4550 m above sea level on the Tibetan Plateau. It could be an analog for impact craters in fluvial and permafrost settings on Earth and Mars.

The Acraman Impact Melt Rock Revisited
Various transitional subtypes of impact melt rock can be distinguished in the central part of the deeply eroded Acraman impact structure. A U-Pb and Ar-Ar dating campaign is underway to narrow down the age for the impact.

Cleanskin Structure, Northern Territory and Queensland, Australia: Evidence for an Impact Origin
The Cleanskin structure, Australia, is a 15 km diameter circular feature with central uplift. Evidence for impact-produced shock includes shatter cones, planar fractures with feather features and possible planar deformation features in quartz.

Early Modification Stage (Pre-Resurge) Sediment Mobilization in the Lockne, Concentric, Marine-Target Crater, Sweden
A matrix-supported, sedimentary breccia occurs between the crystalline breccia lens and the resurge deposits in the crater infill. Its formation was controlled by the asymmetry of the crater caused by oblique impact combined with the layered target.

Stishovite in Shock Veins Within Manicouagan Impact Structure
The high pressure silica polymorph, stishovite, is discovered in the shock veins developed within the central uplift of the Manicouagan impact structure.

(U-Th)/He Dating of Uplift-Induced Cooling in a Complex Terrestrial Impact Structure: The Manicouagan Example
(U-Th)/He methods were applied to preexisting Proterozoic rocks that comprise the central peaks at the 90 km Manicouagan impact structure in Quebec, to yield an “uplift” age in good agreement with the structure’s accepted 214 Ma U-Pb “formation” age.
van Zalinge M. E.  Hamers M. F.  Drury M. R.

*The Guarda Structure (Portugal): Impact Structure or not? Microstructural Studies of Quartz, Zircon and Monazite* [**#5045**]

The Guarda Structure in northeastern Portugal has been proposed as a potential impact structure. We have studied the structure in detail, but no field or microscopic evidence has been found to support the impact hypothesis.

Williams F. A.

*Variations Through the Boltysh Suevites: Glasses, Groundmass and Hydrothermal Minerals* [**#5077**]

Boltysh Crater suevites are a relatively thin layer and display a wide variation in the impact glasses, groundmass and hydrothermal minerals. Backscatter electron images, combined with core observations, highlight some of the interesting variations.


*The Structure of Arizaro, Salta, Argentina: A New Simple Type Meteorite Impact Site?* [**#5042**]

A possible new impact crater had been found in Puna, Argentina: the structure of Arizaro (24°55'45.30"S, 67°27'09.64"W), located at 3650 meters above sea level. This structure is probably a new young simple-type impact crater on Tertiary-Quaternary sedimentary deposits.

Acevedo R. D.  Rocca M.  Alonso R.  Rabassa J.  Ponce J. F.

*The Structure at Sierra Ambato, Catamarca, Argentina: A New Meteorite Impact Site?* [**#5039**]

A new possible impact crater was discovered in Catamarca Province: the structure at Sierra Ambato (28°03'23.22"S, 66°03'11.06"W), located at Sierras Pampeanas (3500 meters above sea level). It is 1.0 km in diameter.

Acevedo R. D.  Rocca M.  Rabassa J.  Ponce J. F.  Stinco S.

*Near Earth Asteroids: A Classification System According to Their Shapes* [**#5043**]

A new way to classify near Earth asteroids (NEAs) according to their shapes is proposed. This classification is based on the asteroid roundness and sphericity in the same way that it is used in geological sciences to describe clasts in mechanical sedimentary rocks.

Vasconcelos M. A. R.  Maziviero M. V.  Crósta A. P.

*The Riachão Impact Structure: Evidences of an Oblique Impact* [**#5127**]

High-spatial resulution remote sensing data have been analyzed in combination with digital elevation data in order to investigate the formation of the Riachão impact crater, Brazil, as a result of an oblique impact.

Sturm S.  Wulf G.  Jung D.  Kenkmann T.

*Impact Ejecta Thickness Interpolation of the Bunte Breccia Deposits Outside the Ries Crater, Southern Germany* [**#5064**]

Preliminary interpolation results of the thickness variation of the southwestern continuous ejecta blanket outside the Ries impact crater indicate a systematic thickness distribution that deviates from a steady decrease with radial range.

Miura Yas.

*Terrestrial Impact Structures of Two Target Materials and Textures* [**#5115**]

Terrestrial impact structures are divided into impacts on hard rock (type 1) and soft materials (type 2) remained at lowlands and highlands, where carbon-bearing micrograins are material state change indicators at broken impact structures on Earth.

Poelchau M. H.  Hoerth T.  Schäfer F.  Deutsch A.  Thoma K.  Kenkmann T.

*Impact Cratering Experiments into Quartzite and Tuff: First Results from the MEMIN Research Unit* [**#5140**]

The effects of porosity on the cratering process will be examined in experiments planned for June 2012. Porosity in combination with target strength is expected to have an effect on crater morphology and ejection behavior.
**Shock Recovery Experiments (2.5–17.5 GPa) with Porous Sandstone: Comparison with Meso- and Macro-Scale Numerical Models** [#5121]

We present shock petrography for porous sandstone shocked up to 17.5 GPa and compare results with numerical models of impact on porous rock.

Buhl E. Poelchau M. Kenkmann T. Dresen G.  
**Grain Size Reduction as a Strain Rate Indicator for Deformation in Experimental Impacts** [#5379]

Sub-surface investigations of experimentally impacted sandstones revealed localized particle size reduction. Strain rate estimations for the development of the deformation zones were conducted on the basis of particle size measurements.

Ben-Yehoshua D. Krietsch H. Kenkmann T.  
**Experimental Impact Crater Collapse in Analogue Materials: A New Experimental Setup** [#5358]

The technique of particle tracking strainometry provides an accurate measure of the instantaneous displacement field in impact experiments. The experiments were conducted with an airgun and were recorded three-dimensionally by two high speed cameras.

Palasse L. Goran D. Schwager T. Berlin J. Salge T.  
**Advances in EBSD Technology: A Powerful Method for the Analysis of Impactites and Meteorites** [#5342]

Electron backscatter diffraction is an analytical technique for assessing the petrographic texture of a rock and the crystallographic orientation of minerals. Recent advances in software and hardware can help to understand impact and shock processes.

McHone J. F. Shoemaker C. Killgore M. Killgore K.  
**Shatter Cones in Meteorites** [#5393]

Shatter cones found in meteorites indicate a history of impact events prior to arriving on Earth.

Kenkmann T. Poelchau M. H. Trullenque G. Hoerth T. Thoma K. Deutsch A.  
**Shatter Cones Formed in a MEMIN Impact Cratering Experiment** [#5092]

Experimentally formed shatter cones help to constrain the physical boundary conditions required for their formation. We produced shatter cones in porous sandstone at 4.3 kJ shock loading. Their surfaces contain vesicular melt films.

Grokhovsky V. I. Gladkovsky S. V.  
**The Static and Dynamic Fracture Toughness of Chinga Ataxite** [#5285]

In the present work we discuss the effect of temperature on both impact strength and fracture toughness of Chinga iron meteorite.

Lindgren P. Lee M. R.  
**Tracing the Shock History of Carbonaceous Chondrites Using Calcite Twins** [#5260]

We are carrying out a survey of calcite twinning in a suite of CM2 carbonaceous chondrites to assess whether calcite twin morphology (complexity, density, thickness, spacing etc) can provide new insights on their shock magnitude and history.

Bunch T. E. Wittke J. H. Irving A. J. Kuehner S. M. Sipiera P. P.  
**Three Very Highly Shocked Ureilites NWA 4165, NWA 6871 and NWA 7195: Evidence for Recrystallization and Melting of Silicates and Vaporization of graphite and Diamond** [#5240]

Three ureilites found in Northwest Africa exhibit extreme shock modification of both silicate and carbon phases.

Krzesińska A.  
**Postshock Annealing of the Baszkówka Meteorite** [#5205]

Chromite-plagioclase assemblages, native copper flanks and macroporosity are observed in the Baszkówka meteorite. Silicates, however, do not show crystal defects. Healed cracks testify on the annealing of their structure after strong shock event.