Presentations

1. **An Elemental Analysis of Musgrave Province Pseudotachylite Breccia Melt vs. Wall Rock,** AGCC Adelaide 2018, D. P. Connelly MAPCIS Research, A. M. Sikder VCU, Jose Brum Olympus Scientific Solutions Americas, Tina R. Hill Bruker AXS Inc., Xin-Chen Liu (CES)
2. **Iridium Anomaly Associated with MAPCIS?** GSA Seattle 2017 D. P. Connelly MAPCIS Research Project, Arif M. Sikder Virginia Commonwealth University, Jose Brum Olympus Scientific Sol. Americas, Tina R. Hill Bruker AXS Inc., Xin-Chen Liu (CES)
3. **The Reitz Ring: A Separate Circular Structure or an Outer Ring of the Vredefort Impact?** GSA Denver, 2016 D.P. Connelly
4. **Vredefort Impact Structure, Larger than previously thought?** 35th IGC Cape Town, SA 2016 D.P. Connelly
5. **MAPCIS, New Imaging Reveals Deep Structure** GSA, Baltimore October 2015, D.P. Connelly, MAPCIS Research, Jaime L.B. Presser, Asunción, 2169 Paraguay
6. **Introduction to MAPCIS, a Possible End Ediacaran, Early Cambrian Impact,** 4th International Palaeontological Congress, Mendoza Argentina Sept. 2014, D.P. Connelly
7. **LIPS and Impact Events: a Connection between Kalkarindji LIP, Mooracochie Volcanics and MAPCIS?** GSA Denver Oct 27th 2013 D.P. Connelly
8. **Pseudotachylite Breccia of the Musgrave Province, Australia,** GSA Charlotte NC 2012
9. **Pseudotachylite Breccias of Mount Cuthbert, Mount Fraser, and the Kelly Hills, NT Australia,** 34th International Geological Congress, Brisbane 2012, D.P. Connelly
10. **The Timing of Rift Initiation Between the North Australia and Gawler/ South Australia Cratons,** GSA, Pittsburgh, 2011 D.P. Connelly
11. **The Down Range Geomorphology of MAPCIS,** GSA, Denver 2010*D.P. Connelly
12. **MAPCIS, a possible multiple impact event,** GSA, Portland, Oregon 2009 D.P. Connelly
13. **Age Dating MAPCIS, a multi-modal indirect approach,** GSA, Portland, Oregon 2009* D.P. Connelly
14. **MAPCIS the Case for a Massive Australian Precambrian/Cambrian Impact Structure,** GSA, Portland, Maine 2009 D.P. Connelly

Papers

1. **Causal Relationship Between Geological Catastrophes and Spiral Potential**, Zhang Wei-jia, Yu Hang-jie, Lei Yang & Daniel Connelly, Journal of Jishou University, July 2010

2. **Possible Impact at Precambrian-Cambrian Boundary and Its Influence on Biosphere,** Zhang Wei-jia, Daniel Connelly & Yu Hang-jie, Geological Survey and Research, Sept. 2010

3. **Discussion on the relationship between geological catastrophes and Milky Way spiral potential,** Zhang Wei-jia, Zou Xiaodong, Yu Hang-jie & Daniel Connelly Journal of Hunan University of Arts and Science, 2010

Special thanks to Dr. Malgorzata Piszcz-Connelly for all the support through the years.

October 2018

Guide to MAPCIS for AGCC

Massive Australian Precambrian/Cambrian Impact Structure

Like and follow MAPCIS Impact Crater on Facebook

1: 250,000 Geoscience Australia surface geology maps composite, show the exposed 600km diameter main crater rim. Note that the approximate 100km N-S crustal shortening after the impact is accounted for. *Christine Edgoose* of GSA, Alice Springs was kind and gave me the paper maps to study.

Daniel P. Connelly

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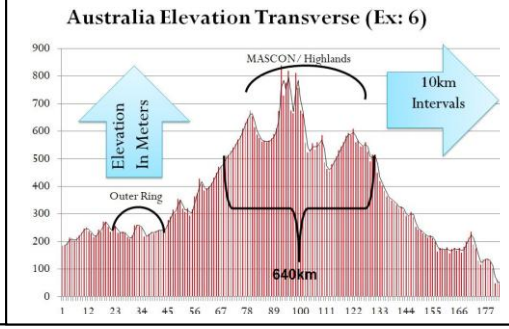
A pharmacist, graduated from the University of Sciences Philadelphia. A passion for geologic sciences is self taught specializing in bolide impacts specifically one impact known as MAPCIS. Travels to collect samples take me to the wilds of Australia, Canada, Mexico, Israel, USA and South Africa. I have multiple papers and presentations over the past ten years on the unique aspects of MAPCIS. I am fortunate to have the guidance of PhD geologists, astrophysicists and other specialists. My goal is to bring MAPCIS to the geologist community of Australia, where the enormity of this discovery can be fully explored.

Introduction

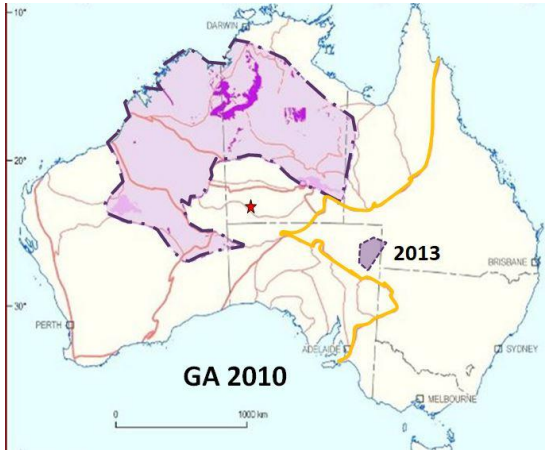
In 2007, a 2000km diameter ring on Australia was visible on Google Earth. Curiosity got the better of me and I needed to know if it was real or a photographic artifact. The journey began there, with a series of questions and research to answer those questions. I had the advantage/disadvantage of having no preconceived notions or training on Australian geology. I had to design ways to break the research into manageable pieces that were affordable and doable with limited equipment. I found much of the research had already been done by accomplished geologists, twenty, thirty and even fifty years ago. Their papers were invaluable. I learned descriptions were accurate even as the interpretations may not have been. Armchair research was verified through the ground truthing of collecting specimens and having experts examine and test them.

This guide is an outline. You will need to read the papers and presentations for details and references.

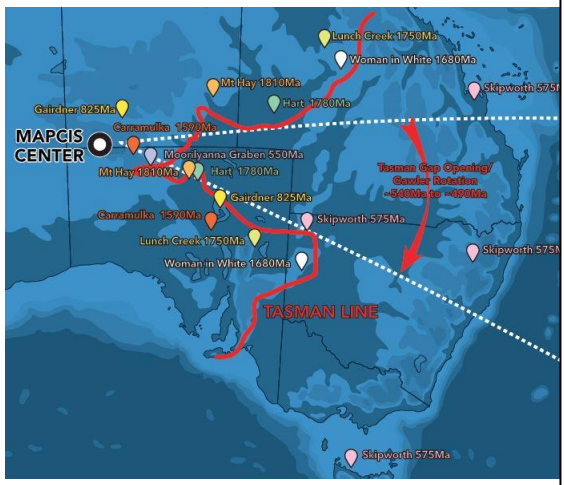


Surprisingly, bisecting the outer ring of the original 2007 Google Earth image allowed me to accurately find the impact center which was verified later.

I believe my initial hypothesis that this ring was directly caused by the impact is incorrect. The ring is shallow, wide and covered by younger volcanic and sedimentary layers. I now believe it is a persistent flex in the crustal rock which reflects through overlying layers and is caused by the MASCON of the true crater which is ~600km in diameter



Kalkarindji LIP and coeval Mooracoochie volcanics are major early Cambrian events that surround MAPCIS and define the MASCON uplift as lava doesn't flow up hill. The Mooracoochie ~517Ma fills in the opening Tasman rift valley. The star is MAPCIS center



It can be shown that one craton (Gawler/South Australia) began rotation after MAPCIS and having MAPCIS center as the Euler point and ending rotation with the Delamarian Orogeny ~500Ma

MAPCIS is the Rosetta Stone of geology, answering enigmas and overturning long held axioms. There is so much more to study. I am current compiling the locations of MAPCIS zircons worldwide which carry a distinctive Musgrave Province signature. But it will take hundreds of teams of scientists years to fully understand MAPCIS. One of the great questions will be how MAPCIS affected life during the Cambrian by changing the chemistry of the biosphere.

"Fortune favors the bold"

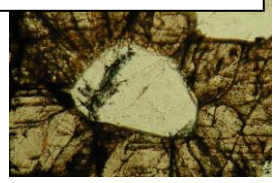
Be bold either for or against as the journey will reach the same end.

Sincerely

Daniel P. Connelly

Shocked quartz: Arif Sikder

Diaplectic glass: Arif Sikder

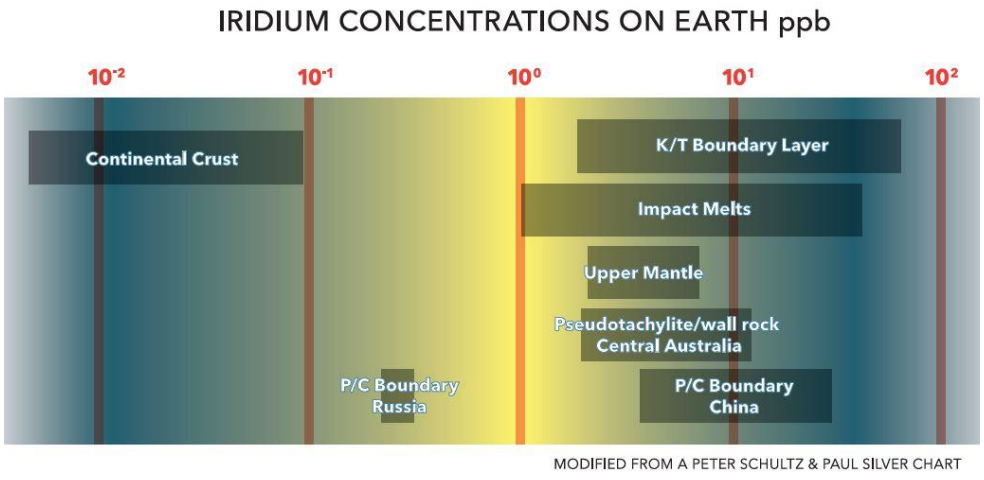


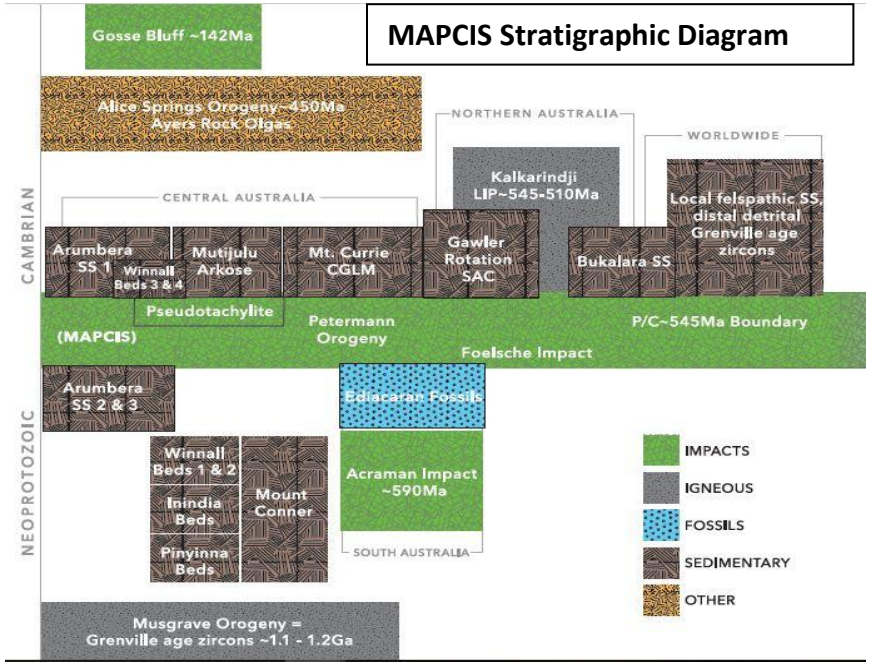
Pseudotachylite breccia of the Musgrave Province

Pt. breccia samples are the most important pieces of physical evidence for the impact. I collected samples from locations 40km, 60km and 100km from the center of the impact. The samples are not different on gross inspection from the samples I collected from the verified impacts of Sudbury Canada and Vredefort, South Africa.

Thin sections of the samples found diaplectic glass, shocked quartz, shocked feldspar and other indicators of an impact. Elemental analysis of the Pt. breccia finds levels of Iridium consistent with other large impacts and impact boundary layers. Special thanks to Dr. Arif Sikder and his team from Virginia Commonwealth University.

I must note that decades old research misinterpreted the Pt. breccia of the Musgraves as purely formed from seismic events was the standard interpretation before large Pt. was definitively connected to large impacts. This misinterpretation has carried forward into almost all research and created a stumbling block concerning the study of geology of central Australia and the Precambrian/Cambrian boundary worldwide.





Dating the Impact

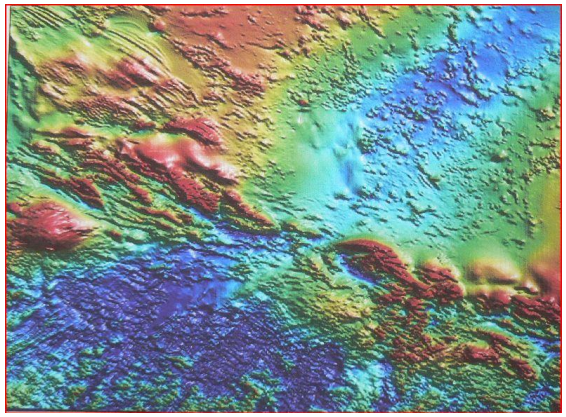
Evidence for the date has the age of MAPCIS narrowed down to a period between ~550Ma to ~535Ma which is equivalent to the Petermann Orogeny in central Australia which brackets the accepted age of the Precambrian/Cambrian boundary. The is supported by changes in the protolith age in the faults of the Musgrave province from ~1.1Ba to ages approximating the impact age especially nearer the center of the impact.

An attempt to further narrow the age range by dating the Pseudotachylite melt through the help of Sydney Hemming at Lamont-Doherty Earth Observatory, Columbia University was unsuccessful.

The Enigma of the Petermann Orogeny

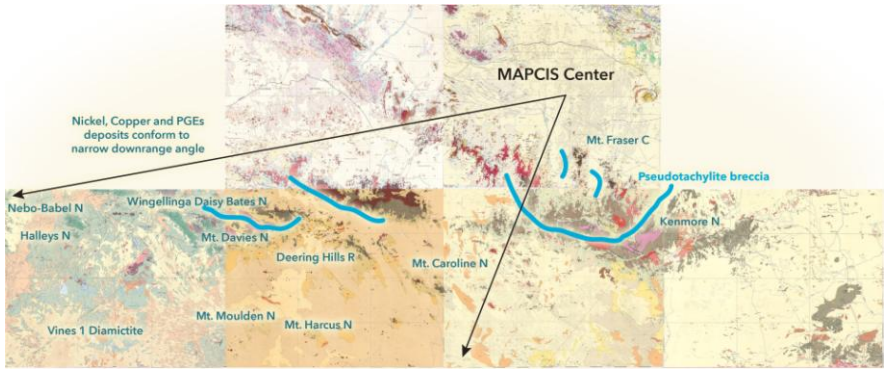
Over the past few decades several hypotheses competed to explain the strange geology of the Petermann Orogeny of Central Australia. All the hypotheses have fatal flaws. There are two groups: The stabilists/internalists believe an imbalance from sedimentary loading and/or heat buildup in central Australia caused a violent overturn of the crust. The externalists/dynamacists believe glancing collisions from India, North America or other blocks transmitted energy through the crust causing a violent overturning in the center. Each group believes the other is absolutely wrong and I agree.

All current hypotheses require magical erosion to explain observations. The Eclogite from 40km deep is now on the surface in the central Musgraves. The origins of the massive amounts of sediment which filled in the intracratonic basins like the Amadeus and Officer basins during the Petermann Orogeny. The requirement of 40km of erosion of granite and gneiss over 15 -20 million years is simply impossible. Whereas an impact the size, age and location of MAPCIS striking the Centralian Superbasin neatly solves the problems



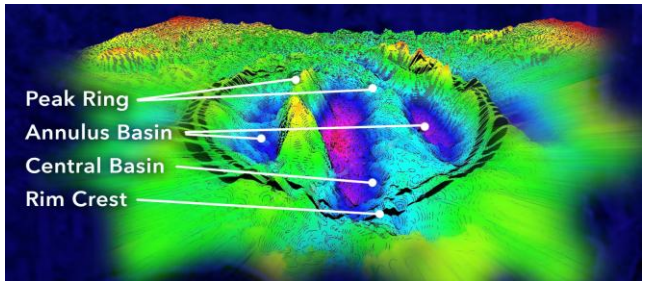
An almost perfect image of a large oblique angle impact, which is subsurface between Uluru and Mt. Conner impacting from the NE to the SW.

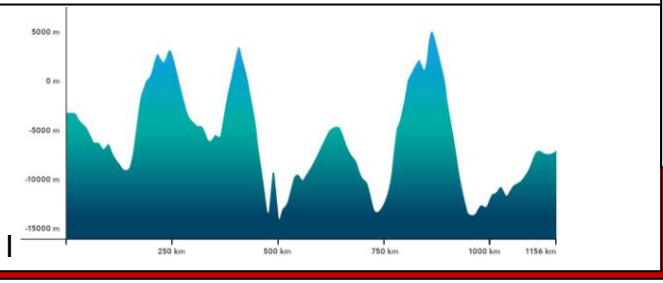
The Magnetic Intensity Map on the GA 2002 Ayers Rock 1:250,000 surface geology map shows the exact impact center, depth, direction and the zone of maximum violent upheaval in the Musgrave Mountain Range



Detailed 1:250,000 surface geology maps show where the 12 km long radial and arcuate Pseudotachylite breccia deposits (blue) run for 300km with their location relative to the center of impact.

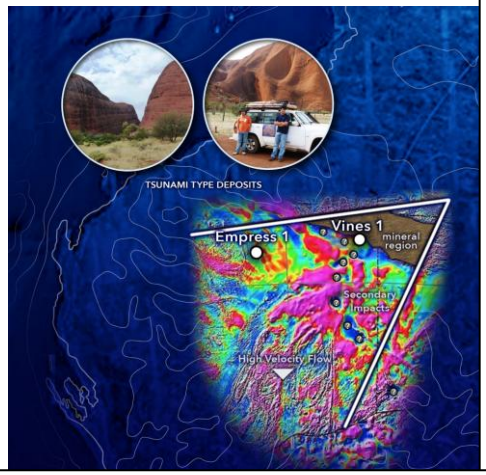
I also find the major deposits of Nickel, Copper & PGEs are mostly restricted a 60 degree angle downrange from the impact center. The economic importance of knowing the location of the impact cannot be over estimated. Tens of millions of dollars have been spent fossicking in areas with a low probability of finding minerals.





Free air gravity as interpreted by Jaime Baez Presser

Jaime Baez Presser a geologist from Paraguay who researches deep structure specializes in finding kimberlite pipes was initially a detractor. He wanted to show that the surface geology was not matched by any deep structure. He was able to show to his surprise that 15km of continental crust is missing and matches the surface features. He has become a strong supporter.



North of the Musgrave Province there are km thick Cambrian conglomerate/sandstone deposits. South of the Musgrave Province and mineral zone are km thick Cambrian diamictites deposits as found at the Vines 1 drill site which are covered by early Cambrian Table Hill Volcanics. We can see on magnetic anomaly maps what appear to be high velocity flows and possible secondary impacts within the 60 degree angle downrange.

The Neoproterozoic Centralian Superbasin ~830Ma to ~540Ma the site of the impact would produce massive high velocity tsunami like deposits from the impact itself and from the refilling of the basins which were divided into the Amadeus, Officer, Georgina and Ngilia basins which match the deep structure and the P/C boundary