

**4-7 November**
Indianapolis, Indiana, USA

12-10: HIGH-RESOLUTION AGE CONTROL FOR THE LATE PALEOZOIC ICE AGE SUCCESSIONS ACROSS SW AND SC GONDWANA – IMPLICATIONS FOR CLIMATIC FORCING FOR THE END OF THE LPIA

Sunday, 4 November 2018**10:15 AM - 10:30 AM**📍 *Indiana Convention Center - Room 143-144*

The late Paleozoic Ice Age (LPIA) is Earth's only record of an icehouse to greenhouse transition which occurred under the influence of a vegetated world colonized by metazoan life. Detailed field mapping, analysis of sedimentary facies and provenance of glaciogenic and post-glacial sediments have refined our understating of this glaciation; one that is characterized by multiple large-scale variations in ice volume and distribution, pronounced shifts in sedimentary facies, and fluctuations in base-level, which can be observed throughout the mid- and high-latitude successions. Despite considerable efforts, correlating the mid- to high-latitude deposits in time and space has been hindered by a lack of diagnostic fauna, paleomagnetic reversals and reliable high-resolution geochronology. Furthermore, this lack of reliable age control limits our ability to investigate the synchronicity of the glaciogenic record, the correlation of the glaciogenic history with the well constrained low-latitude records and the assessment of forcing mechanisms (climatic and/or tectonic) responsible for the termination of the LPIA. Here we present new high-resolution U-Pb single zircon crystal CA-TIMS ages from primary volcanoclastic layers throughout the southwest and south-central Gondwanan successions of the Karoo, Kalahari and Paraná basins with the aim of refining late Paleozoic stratigraphy. Complications in our dataset arise due to the mixing of inherited components within primary volcanic zircon crystals, as well as unresolvable open system behavior that produce spurious younger ages. Despite these inherit geologic complications, our new U-Pb zircon CA-TIMS ages have resulted in the building a robust and exportable chronostratigraphic framework with sub-permil level precision. Furthermore, our new ages present a more parsimonious interpretation for the demise of the LPIA in these regions, where ice loss (gain) is coupled with CO₂, though additional aspects such as paleogeography, topography and moisture sources influence local to regional ice thresholds.

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Final Paper Number 12-10

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Day: Sunday, 4 November 2018

Geological Society of America Abstracts with Programs. Vol. 50, No. 6, ISSN 0016-7592
doi: 10.1130/abs/2018AM-324163

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