

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

Booth No. 219 CARBONIFEROUS GLACIATION IN SOUTHERNMOST BRAZIL AND URUGUAY (PARANÁ AND CHACO-PARANÁ BASINS): ICE EXTENT AND PALEOCLIMATE INDICATORS

Tuesday, 6 November 2018**09:00 AM - 06:30 PM**📍 *Indiana Convention Center - Halls J-K*

The late Paleozoic ice age (LPIA; Famennian-Wuchiapingian) was the last major icehouse of the Phanerozoic prior to the Mesozoic-early Cenozoic greenhouse. This has made the LPIA an important analog for interpreting feedbacks between glacial extent, climate, and other Earth systems. The Paraná Basin and the Chaco-Paraná Basin contain a detailed sedimentary record of LPIA glaciation. The border between these two basins is a paleotopographic high known as the Rio Grande do Sul Shield (RGS), an area critical to determining how LPIA glacial deposits in southwestern Africa, Uruguay, and southern Brazil are related. However, the size, location, and nature (i.e. thermal regime, confined vs. unconfined) of LPIA glaciation on the RGS remains disputed. Therefore, the sedimentology of several outcrops across the RGS were studied in detail. These outcrops contain evidence for wet-based or polythermal glaciers that existed under a temperate paleoclimate, and which experienced episodic stagnation and surge-like behavior. Sedimentary facies that support this interpretation include thin (mm-scale) mud/silt rhythmites with dropstones and diamictite pellets, conglomerates and diamictites with striated and faceted clasts, massive sandstone beds, and interbedded sandstone and mudstones. These sediments are interpreted to have been deposited in a proglacial outwash-dominated, terrestrial setting that transitioned to a glaciomarine environment following glacial retreat. Glaciotectonic deformation structures are consistent with highly pressurized groundwater and a glacier coupled to the foreland. These include décollement surfaces, large (10-80 m wavelength, 2-3 m high) folds, smaller (<1 m) asymmetric folds, thrust faults, overthrusts, normal faults, and hydrofractures. Orientation data collected from paleocurrents, grooved surfaces, ploughed clasts, and deformation structures indicate an unconfined ice center that advanced N-NW out of Uruguay or possibly Africa, which radiated across the RGS but possibly left the easternmost RGS unglaciated. This data contrasts with previous studies that have described confined valley glaciers on the RGS, a stand-alone ice cap, or a massive ice sheet that traveled east to west across the RGS.

Authors

Nicholas D. Fedorchuk*University of Wisconsin-Milwaukee***John L. Isbell***University of Wisconsin-Milwaukee***Neil Griffis***University of California, Davis***Isabel P. Montañez***University of California Davis***Fernando Vesely***Universidade Federal do Paraná***Eduardo L.M. Rosa***Universidade Federal do Paraná***Roland Mundil***Berkeley Geochronology Center***Roberto Iannuzzi***Universidade Federal do Rio Grande do Sul*

Guilherme A. Roesler

*Universidade Federal do Rio
Grande do Sul*

Qing-zhu Yin

University of California, Davis

Booth No. 219

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