



Booth No. 414 LATE PALEOZOIC PALEOCLIMATIC COMPARISONS OF MID-LATITUDE BASINS IN WESTERN ARGENTINA: CONTROLS ON EARLY PENNSYLVANIAN DEGLACITATION IN WESTERN GONDWANA

Monday, 23 October 2017

09:00 AM - 06:30 PM

📍 Washington State Convention Center - Halls 4EF

The late Paleozoic ice age (374-254 million years ago) was the longest-lived ice age of the Phanerozoic. At times during this interval, glaciers covered large areas of Gondwana, which included areas adjacent to present-day San Juan and La Rioja Provinces of Argentina. This study focuses on mid-paleolatitude basins, including the Paganzo and Calingasta-Uspallata Basins in Argentina. Significant ice centers disappeared in the Paganzo Basin in the mid-Carboniferous and were replaced by alluvial fan, fluvial, paleosol, and eolian deposits, which comprises a well-dated record of climate change from glacial to post-glacial arid conditions. This shift in climate was previously attributed to the drift of Gondwana across the South Pole, as well as to changing atmospheric CO₂ concentrations. However, the apparent polar wander path of Gondwana, partial pressure of atmospheric CO₂, and other global drivers can be ruled out as a cause for deglaciation as other parts of Gondwana including areas at similar paleolatitudes (e.g., Paraná Basin in Brazil) remained glaciated until the end of the Pennsylvanian and into the Permian. The disappearance of glaciers may instead be attributed to tectonic controls, resulting from the uplift and collapse of block-faulted highlands around and within the basin. Preliminary results from an in-depth geochemical analysis using the Chemical Index of Alteration of the fine-grained sedimentary deposits across the Paganzo and Calingasta-Uspallata basins illustrate a trend of a potentially warmer and more humid environment than previously thought at the end of the Carboniferous. Additionally, to tackle the problem of constraining glacial centers in the Paganzo Basin, facies analysis and grain surface textural analyses were conducted in order to aid in determining depositional environments for paleovalleys within the Paganzo Basin that were previously interpreted as having been carved by glaciers. Quartz sand grains from glacially-influenced environments in Wisconsin are analyzed and compared to quartz sand grains from the Olta-Malanzán paleovalley in Argentina.

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