

123-17 - DETRITAL ZIRCON GEOCHRONOLOGY AND PROVENANCE OF GLACIOGENIC STRATA OF THE MIDDLE CARBONIFEROUS SAN EDUARDO FORMATION, CALINGASTA-USPALLATA BASIN, NW ARGENTINA



Monday, 23 September 2019



9:00 AM - 6:30 PM



Phoenix Convention Center - Hall AB, North Building

Booth No. 284

Abstract

The Calingasta-Uspallata Basin preserves a near continuous sequence of glaciomarine deposition from the middle to late Carboniferous, represented by five separate formations. Correlation between these formations have been achieved using index marine invertebrates, which also provides some implications for max-depositional ages. However, no isotopic dating analyses have been sought in this basin to further constrain the age of deposition or provide a source of provenance for sediments. The San Eduardo formation near the El Leoncito Astronomical Complex, San Juan Province, Argentina, was deposited within the Calingasta—Uspallata Basin on the western margin of the Proto-precordillera during the late Mississippian to early Pennsylvanian. This succession preserves a complete sequence of proximal glaciomarine, nearshore, and fluvial systems deposited at the beginning of the late Paleozoic ice age. Samples were collected from various stages throughout the sequence for detrital zircon U-Pb geochronology to determine sediment provenance as a way of isolating different glacier sources. Results indicate multiple stages of glaciation, with at least three distinct source areas. The lowermost stage includes locally sourced basement and recycled underlying Silurian, represented by similar Famatinian (500-460 mya) and Grenville peaks (1250-1000 mya) peaks, where the Grenville source likely originating from the Western Sierras Pampeanas, which would represent a breaching of the Proto-precordillera from the east. The middle stage shows a population distinct unto itself, with a peak during the Mississippian (330-360 mya). A volcanic island arc was situated along the Andean margin during the late Paleozoic, likely resulting in the influx of Carboniferous aged volcanic sediments. The lower most stage shows relations based on K-S results to formations within the Paganzo basin to the northeast, likely serving as the outwash of these distant glaciers through braided fluvial systems. This study will expand upon current chronologic knowledge within the Calingasta-Uspallata basin and will be supported by sandstone petrology and mineralogic composition, pebble counts and composition of dropstones.