

# MESOZOIC SEDIMENTATION, PROVENANCE AND BASIN EVOLUTION ALONG THE EASTERN MARGIN OF THE CENTRAL ANDES (19° - 22°S): INSIGHTS FOR POTENTIAL RIFT-RELATED EXPLORATION PLAYS

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## Abstract

The tectonosedimentary evolution of the Mesozoic pre-Andean basin within western Gondwana is of critical importance to enhancing the hydrocarbon prospectivity of rift- and inversion-related traps and reservoirs in the Subandean fold-thrust belt, Chaco foreland basin, and Altiplano hinterland basin of southern Bolivia (19°-22°S). Relationships between erosion, sediment routing systems, timing and style of fault movement, and their role in controlling depocenter locations have not been fully addressed for the Mesozoic record of Bolivia. A >1.3 km Mesozoic succession of mixed carbonate and siliciclastic rock was deposited in a diachronous rift basin, subsequent thermal sag basin, and possible distal foreland basin. The Mesozoic basin architecture will be revealed through measurement of six key stratigraphic sections in the Subandes, along with rigorous stratigraphic-structural mapping across thrust faults in search of evidence for fault reactivation and tectonic inversion. Furthermore, paleocurrent measurements, detrital zircon U-Pb geochronology, sandstone petrology and conglomerate clast counts will elucidate sediment dispersal pathways. In turn, depositional age constraints will be refined through palynology and Ar-Ar geochronology of interbedded basalts. Assessment of Andean analogs for extensional tectonics (Mitu basin, Peru, and Salta basin, Argentina) will constrain regional reconstructions of the evolving tectonic framework during the Mesozoic. Significantly, determining the interplay of sedimentation dynamics and structural configurations during the Mesozoic will reduce uncertainties related to development of known Neogene petroleum systems and suggest new exploratory plays for the Subandean, Chaco, and Altiplano basin systems.

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