

# NEOGENE SYNOROGENIC SEDIMENTATION OF THE BROKEN BERMEJO FORELAND BASIN, SOUTHERN CENTRAL ANDES, ARGENTINA

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## Abstract

The study will focus on answering unresolved tectonic history and Neogene foreland basin sediment accumulation in the structural triangle-zone in the southern Central Andes thrust front. I will generate new structural, stratigraphic, thermochronologic, and provenance datasets from the Eastern Precordillera (EPC), which will resolve competing kinematic models and evaluate the structural relationships between the EPC with the Central Precordillera (CPC), and Sierras Pampeanas (SP) triangle-zone structures. The proposed research will test competing hypotheses proposing: (A) 12-9 Ma shortening of the EPC, kinematically linked to eastward propagation of thrusting prior to slab flattening, versus (B) younger shortening and uplift of the SP at 5-2 Ma, related to mid-crustal thermal weakening and crustal anisotropy induced by slab flattening. The Neogene sedimentary record contains the largest quantity of retrievable data revealing the history of uplift and erosion of the CPC, EPC, and broken foreland basin. Measuring stratigraphic variations on footwall and hanging wall blocks of EPC thrust system along stratigraphic sections will display depofacies, lithofacies, and paleoflow shifts, establishing a basin-wide sedimentary architecture of the Neogene foreland during triangle-zone deformation. The timing and pace of shortening and exhumation will be determined along several transects of well-exposed Neogene basin fill and Paleozoic bedrock. Along these transects, rock samples will be collected for low-temperature apatite (U-Th)/He thermochronometry and synthesized with key structures by mapping field relationships among stratigraphic units. Constructing cooling histories of Neogene basin fill and Paleozoic bedrock will distinguish timing between either 12-9 Ma or 5-2 Ma shortening, thus resolving the EPC kinematic history.