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Late Cenozoic basin evolution and fold-thrust deformation in the southern Central Andes: Initial constraints from synorogenic deposits of the Precordillera, Argentina

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In the Precordillera of Argentina, Cenozoic shortening associated with flattening of the Pampean segment of the subducting Nazca plate has resulted in a thin-skinned fold-thrust systems that partitioned and uplifted Cenozoic foreland basin deposits. The kinematic and temporal evolution of the Andean Precordillera can be approached through detailed analyses of the sedimentary fill now preserved in intermontane regions and the bedrock low-temperature thermochronology of the fold-thrust belt. In this project, we focus on Neogene foreland basin fill exposed in the central and eastern Precordillera along the San Juan River (Quebrada Albarracín and Pachaco regions) and on the western flank of the Sierra Talacasto. The sedimentary successions exposed in these regions record the hinterland development of the Frontal Cordillera (detrital zircon provenance and composition of sandstone and conglomeratic units), regional volcanism (pyroclastic flows and tuffaceous sandstone units), and initial construction of the Precordillera. We investigate the development and subsequent structural partitioning of these synorogenic successions using detrital zircon U-Pb geochronology, facies analysis of measured stratigraphic sections, and preliminary apatite (U-Th)/He cooling histories to constrain the age of uplift-induced exhumation of successive thrust sheets in the Andean Precordillera.

Keywords: precordillera, Argentina, basin evolution, fold-thrust, geochronology, exhumation