



Active shortening and intermontane basin formation in the central Puna Plateau: Salar de Pocitos, NW Argentina (24°37'S, 67°03'W)

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Similar to other Cenozoic orogenic plateaus, extensional tectonics associated with mafic volcanism typifies the Altiplano-Puna of the southern Central Andes, while the flanks of the plateau and adjacent foreland areas experience shortening. Extensional tectonism in the plateau region since the late Miocene has been explained with delamination of lithospheric mantle. However, new evidence for protracted basin-wide shortening in the Salar de Pocitos region in the south-central Puna documents that the kinematic changeover from shortening to extension is highly diachronous. In this study we assess the deformation and geomorphic history of the Salar de Pocitos region using DGPS surveys, CRN dating of deformed pediment surfaces, and U/Pb dating of volcanic ash horizons in deformed strata.

With average elevations of about 3.7 km the Altiplano-Puna is a first-order morphotectonic province of the southern central Andes and constitutes the world's second largest orogenic plateau. With few exceptions the Andean plateau consists of internally drained, partly coalesced sedimentary basins that are mainly bordered by reverse-fault bounded ranges, 5 to 6 km high. While there are many unifying plateau characteristics in the Altiplano (north) and Puna (south), including internal drainage, semi-arid to arid climate and associated deposition of evaporites, there are notable differences between both plateau sectors. In contrast to the vast Altiplano basin of Bolivia, the Argentine Puna comprises numerous, smaller and partly coalesced basins that reflect continued compartmentalization by the combined effects of tectonism and volcanic activity.

The N-S oriented Salar de Pocitos basin is the vestige of a formerly contiguous sedimentary basin within the Puna interior. Unlike many other basins in this region it is bordered by the limb of an anticline developed in Tertiary sedimentary rocks on the west, while the eastern border is a reverse-faulted range front. To the north and south the basin is closed by transverse volcanic edifices. Unambiguous evidence for sustained contractional tectonic activity exists along the western basin margin. Fanning of dipping Miocene strata and regraded, inclined gravel-covered pediment surfaces and wind gaps document Tertiary to Quaternary growth of the approximately N-S oriented and N plunging anticline. Late Pleistocene and Holocene lake shorelines and associated lacustrine deposits are also tilted eastward along the same structure indicating ongoing contractile deformation. Our observations support the notion that the Pocitos anticline is growing and that the basin is asymmetrically deforming. Second, the onset of extensional deformation within the Puna Plateau appears to be highly disparate in space and time and differs from the plateau margins.