

The Tertiary Chaco Basin, Southern Bolivia: Example of a Sequentially Migrating Foreland Depocenter

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The up-to-200-km wide and up-to-6-km-thick Oligocene-Recent Chaco basin is bordered to the east by the Brazilian Shield and to the west by the Subandean topographic front. Our study combines outcrop stratigraphic and sedimentologic work with subsurface seismic and well data to demonstrate the eastward migration of the Chaco foreland basin. This basin developed in response to erosion of the uplifted Andean fold- and thrust belt and loading of a flexurally supported foreland.

We interpret the thin and condensed basal pedogenic horizons and fluvial systems of the Oligocene Petaca Fm. as forebulge deposits. Overlying marginal marine, deltaic, and shoreline facies deposits of the Early Miocene Yecua Fm. may represent the distal foredeep, expressing the “underfilled stage” between the loading of the widening basin following initial Andean uplift and subsequent infill by thick, westerly-sourced, low- and high-sinuosity fluvial-facies sediments of the Tariquia Fm. Overlying strata in distal-alluvial-fan facies of the Guandacay Fm. represent the proximal foredeep. Finally, the thick and syndeformational conglomerates of the Emborozu Fm. in proximal-alluvial-fan-facies represent the wedge-top.

Results from our basin study are in accordance with independently derived results from fission track and structural studies, which indicate a close co-evolution between the westerly Subandean fold-thrust-belt and the easterly foreland basin. Understanding this relationship and basin migration can be instrumental to understanding petroleum system risks in and underlying the foreland basin strata, such as maturation, migration, and charge.
