

Pre-orogenic structural control in west-vergent thrust system structure style, Northern Chile (20°30'-21°30'S)

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The structural configuration of the Andean western flank, in the Northern Chile, has been mainly characterized by the study of the sedimentary and volcanic coverage of the Oligocene to the recent. From this, structural styles related to monoclinial and anticline flexures and reverse faults, known as the West-Vergence Thrust System, have been defined. However, there are still uncertainties regarding the nature of this structural system that accommodates much of the compressive deformation of the Neogene.

Graben and half-graben arrays identified in 2D seismic reflection sections were repeatedly reactivated in reverse kinematic sense, from the Upper Cretaceous and subsequently affecting the Oligocene syn-orogenic sequences. Main structures, anticline and monocline flexures, in the study area are spatially associated with the propagation of pre-orogenic structures, located over inversion anticlines, where the Cenozoic cover reacts as trishear to accommodate the shortening produced by the tectonic inversion of the Tarapacá Basin. Kinematic models give us the chance to better understand the interaction between pre-orogenic structures and nowadays Andean western flank structural configuration.