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Contractional inheritance and rheology controls in a FTB: the Argentinian Precordillera, Central Andes (30°S)

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The Central Andes (12°S-36°S) stretches over more than 2400km. They are characterized by strong longitudinal and latitudinal segmentation (Sierra Pampeanas, Precordillera, Cordillera Frontal, Cordillera Principal from east to west), each domain having distinctive basement involvement and showing different structural styles. The Argentinian Precordillera, located at 30°S, has long been interpreted as a thin-skinned wedge detached below into the lower part of Paleozoic succession. It makes up a typical Coulomb foreland thrust belt system. However, the impact of the Paleozoic inheritance derived from the various orogenic stages on the current structural style has been overlooked. The Chanic structures that developed in Silurian / Devonian times have been reactivated by the Andean deformation that took place from Oligocene to Plio-Pleistocene times. The current structure of the Precordillera has been the subject of numerous studies in the last decades. Thanks to compilation of this literature and fieldwork, we present a new cross-section considering these 2 superimposed events. This cross-section can be divided into 2 different zones depending on the dominant structures. The western Precordillera involves an Ordovician succession characterized by Chanic superimposed folding phases with cleavage development. On the contrary, in the eastern part, most of the observed structures were developed during Andean orogeny. The structural style is characterized by thrusts faults and penetrative deformation is absent. The Sierras Pampeanas in the East are a Miocene thick-skinned system that makes up a typical broken foreland system. The association of both systems of Precordillera and Sierras Pampeanas delineate an inheritance-controlled original orogenic thin-skinned system that turns to the east into a broad thick-skinned system involving up to Precambrian rocks.