

EXTENSIONAL TECTONIC AND INVERSION IN THE ARGENTINE CENTRAL ANDES BETWEEN 30° AND 31° S LATITUDE.

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The crustal structure in a cross-section through Cordillera Frontal has been analyzed. The Cordillera Frontal presents a polycyclic structure and two large groups of rocks can be distinguished: a Gondwanic (Paleozoic) basement, and a Andean cover. The basement is constituted by marine sedimentary units, intruded by Upper Paleozoic granitoid rocks. The most important Gondwanic structures, are East verging thrust and related folds. The Andean cover has a volcanic and volcanoclastic origin with some interbedded continental sedimentary rocks. The lower Permo-Triassic unit is linked to an extensional tectonic event and a Neogene sequence is connected to a compressional tectonic event that produced the inversion of the previous extensional features. The structures related to the Triassic extensional tectonic process are normal faults, grouped in bands N-S, with downthrow of the Western blocks and merge to a common detachment level dipping to the W. This geometrical configuration defines a half-graben model. The Neogene compressional structures are reverse faults and thrusts. The deep geometry of these reverse faults is in turn influenced by the geometry of the Mesozoic extensional system, which would be only partially inverted. The amount of shortening calculated from Cordillera Frontal cross sections is of about 10%. This fact contrasts with the estimated shortening of over 50% at the Precordillera. All this shows that most of the shortening in the Cordillera Frontal was transferred to the Precordillera through the detachment fault. These facts also show that Cordillera Frontal unit is an uplifted block in which the extensional struct