

The Southern Sub-Andean Fold and Thrust Belt

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A structural description of the Sub-Andean System is made, which includes details of the Western and Eastern Sub-Andean Ranges at the southern end of this geologic and oil province. Situated east of the Cordillera Oriental, the Sub-Andean ranges formed during the Tertiary orogenesis in southern Bolivia and northwestern Argentina.

Prior Pre-Silurian Arch and emplacement of the Eastern Foreland Sub-basins are discussed. The Santa Cruz Devonian and Tarija Carboniferous Sub-basins are two of the Eastern Foreland Sub-basins. The Mesozoic Grupo Salta and Paleozoic beds lie below an unconformity at the base of the Tertiary sequence.

A correlation between three structural units and three litho-tectonic units is made, which explains the observed deformation patterns. There is an assemblage of near-surface Tertiary and Carboniferous beds, with parallel folding (first structural level), ductile Devonian shale with disharmonic deformation (second level), and predominantly quartzite sequences, where fault-bend and propagation faults form (third level).

The relationship between the over-pressured Devonian shale zones and their location adjacent to detachment surfaces, as well as the generation of sled-runner faults is revised. The abnormally-pressured shale zones were recognized to be present prior to deformation.

The paper also comments on the competent quartzite layers and their capability to transmit stress long distances.