

TECTONIC INHERITANCE AND STRUCTURAL STYLES IN THE MERIDA ANDES (WESTERN VENEZUELA).

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INTRODUCTION

Unlike the adjacent Caribbean and Central Andean orogens, the Merida Andes (Fig. 1) do not relate to direct interactions between the South American craton and either arc terranes or oceanic domains, but represent only minor intraplate readjustments between the Eastern Cordillera in the south and the South Caribbean transform margin in the north. Although no deep seismic profiling has yet been attempted across the Venezuelan Andes, a large set of conventional seismic reflection profiles has been recorded by the petroleum industry in the Maracaibo and Barinas-Apure basins, respectively along the North and South Andean foothills. In addition, isolated refraction and magnetotelluric data are available. However, only the gravimetric coverage is really complete, thus providing a relatively coherent image of the basement architecture.

STRUCTURE OF THE SOUTH ANDEAN FLANK

The Barinas-Apure basin extends from the Andean foothills in the northwest to the Guyana shield in the southeast, thus encompassing most of the drainage area of the Rio Apure, a tributary of the Orinoco River. Southwards, it connects directly with the Llanos basin in Colombia. The Barinas basin hardly compares with a flexural basin. It is largely dominated by either north- or south-verging basement-involved structures. The tectonic inheritance is obvious, as Paleogene normal faults are locally inverted and early emplaced Paleogene Caribbean nappes are frequently reactivated or refolded by younger oblique Neogene Andean structures. Seismic profiles in this area also attest to the strong Neogene structural inversion of Upper Jurassic-Lower Cretaceous grabens. Seemingly, Paleozoic, Hercynian or more likely Caledonian structures were reactivated during both the Tethyan rifting and the Andean deformations, and account for local pre-existing crustal heterogeneities.

STRUCTURE OF THE NORTH ANDEAN FLANK

Tectonic inheritance is less obvious along the North Andean flank, with most structures being exclusively derived from the Neogene Andean compressions. Although outcrop conditions are rather poor, numerous seismic lines and exploration wells also provide good control of the overall architecture

