

## ANTOFAGASTA - SALTA - CHACO PLAINS TRANSECT, CENTRAL ANDES.

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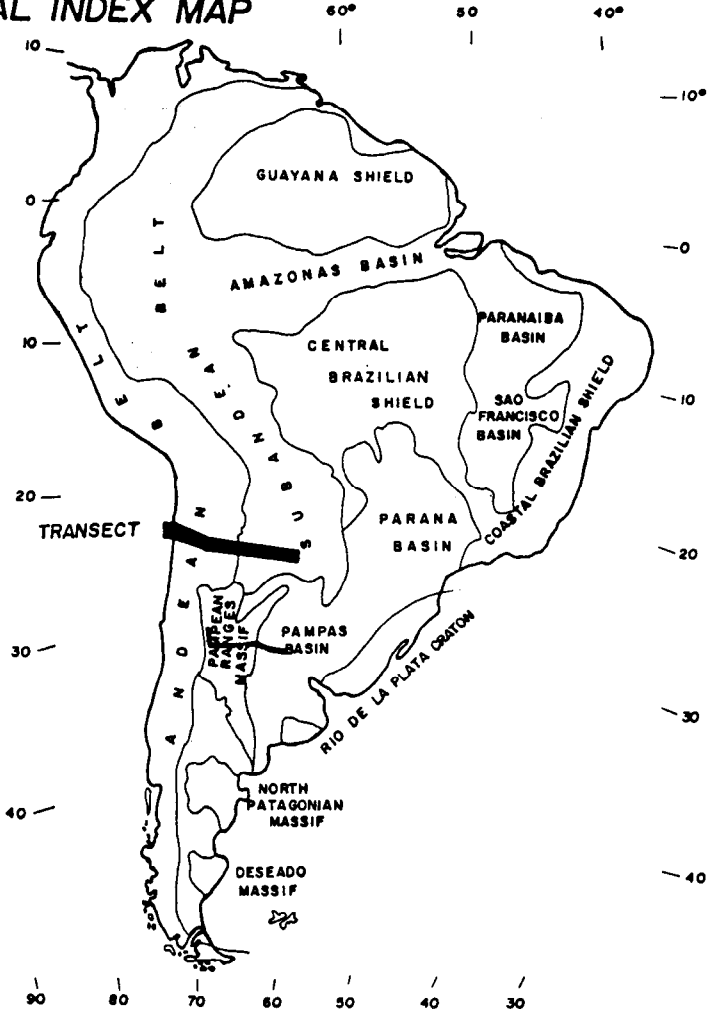
## RESUMEN

En el presente trabajo se sintetiza los resultados de las investigaciones geológicas y geofísicas realizados en el Norte de Chile y Argentina cuyo finalidad fue obtener información sobre la estructura de la litósfera Andina. Sobre el modelo litosférico realizado a los 24° l.s. se evalúan las unidades tectónicas y morfoestructurales de acuerdo a su actual asentamiento tectónico.

## INTRODUCTION

Geological and Geophysical investigations carried out by Global Transect Project (IGL - GGT) and Proyecto Argentino de Transectas (CAPLI - CONICET) at 24° Lat. S. between 1985 - 1989 are shown. The Transect is 100 Km wide and spreads from the Pacific Ocean to the Chaco Plains across the Andean and Subandean belts.

## REGIONAL INDEX MAP



This work summarizes the present knowledge on the subject but some of the hypothesis we have reached to are subject for further discussion, they are not meant to be considered definitive conclusions.

### The Geological-geophysical transect

The main morphostructural units developed in the western part of South America are shown in Fig. 1. The most important geological features in the region is the Andean Cordillera and its magmatic arc development as a result of the interaction of the South America and Pacific plates.

Many genetical hypothesis have been postulated among with ensialic origin of its Precambrian-Paleozoic basement, lithospheric collision, combined models and allochthonous terrane accretions. The latter has not been verified by this study; on the contrary a lot of distensive stage with rift basin generation and subduction processes along the Pacific margin of South America were detected. Upper Precambrian (Puncoviscana Fm), Ordovician (Santa Rosita Fm), Devonian-Carboniferous and Cretacic-Eogenic (Salta Group), are the main rift stage development. On the other hand, the active margins, have been proved to exist only since the Permotriassic times to the Present times.

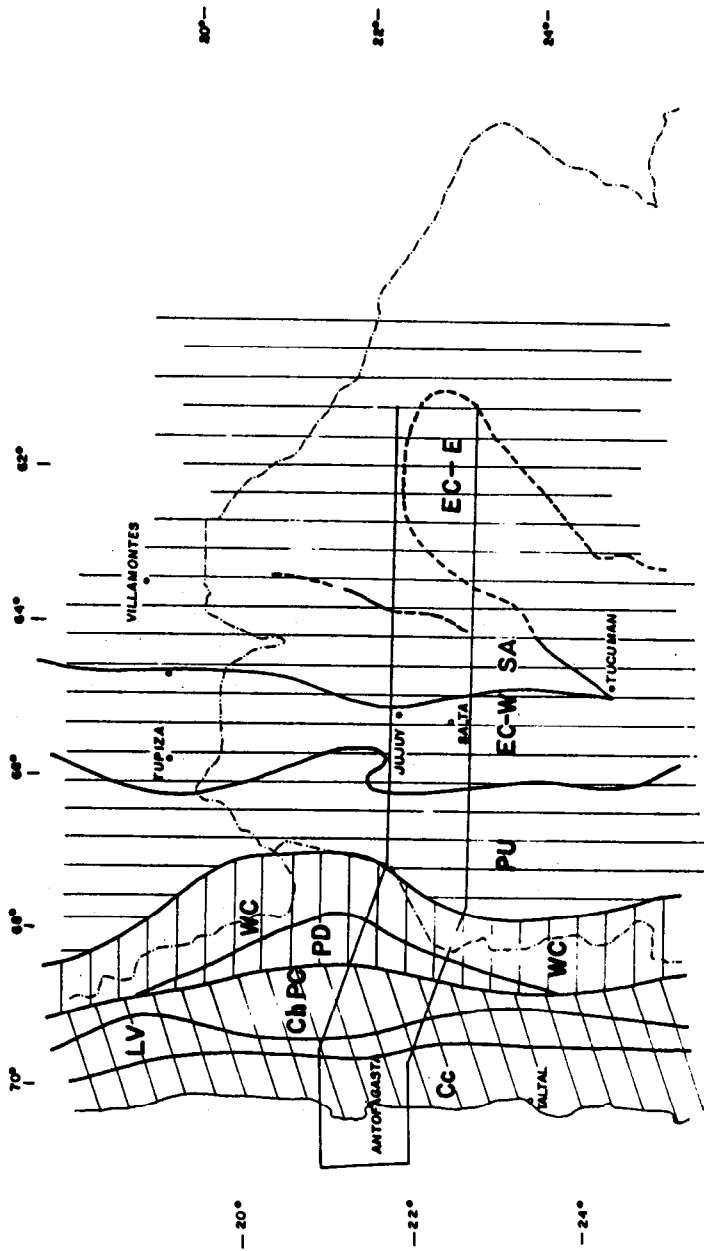
The lithospheric model shows two contrasted areas located to the East and to the West of Salta City meridian. The eastern sector shows a tectonic quietness during the Phanerozoic with no important diastrophic processes that disturbed stratigraphic conformity of the stable platform sedimentary sequences. Only the narrow Subandean belt shows thrust, overthrust and strong foldings.

The western side, shows great deformation, important shortening and crust thickening.

The Andean Orocline, has a thick crust (65-70 Km). Its model is from geological, petrological, gravimetrical, seismic and magnetotellurical data.

Petrological data from the lithospheric xenolites included in the Cretacic alkaline basalt, shows that, at least till the Cretacic, basic and acid granulites built up the lower crust while the upper crust was formed by sillimanitic gneises, biotitic schist and sediments. The successive development of magmatic arcs from the Jurassic to the present times, has certainly modified this structure in the Andean Belt. It should still be present under the eastern side of the belt (Chaco Plains). Some of the seismic, magnetotelluric and gravimetric anomalies, have been interpreted as a consequence of this crustal changes.

LOCAL INDEX MAP



- CC Coastal Cordillera
- ChPC Chilean Precordillera
- WC Western Cordillera
- EC-W Eastern Cordillera - West
- SA Subandean Belt
- LV Longitudinal Valley
- PD Preandean Depression
- PU Puna
- EC-E Eastern Cordillera - East Chaco