

MESOZOIC STRATIGRAPHY AND PALEO GEOGRAPHY OF NORTHERN PATAGONIAN CORDILLERA (LAT. 45°-47°S), CHILE.

Manuel SUAREZ⁽¹⁾ and Rita DE LA CRUZ⁽¹⁾

(1) Avenida Santa María 0104, Correo 9, Santiago, Chile

ABSTRACT: Mid-Upper Jurassic rift-related volcanism in Northern Patagonian Cordillera, between 45°-47° Lat.S, was followed by the development of a Lower Cretaceous marine basin formed by post-rift thermotectonic subsidence. Subaerial volcanism was reinstalled by the mid-Cretaceous. Extensional, strike-slip and contractional tectonics locally occurred.

KEY WORDS: Patagonian Cordillera, stratigraphy, paleogeography, tectonics.

INTRODUCTION

During the Jurassic-Cretaceous thick volcanic and sedimentary sequences accumulated in northern Patagonian Cordillera (45°-47° L.S), in southern Chile. Recent work identified volcanic and sedimentary facies and environments and a new stratigraphic scheme; this allows paleogeographic and tectonic reconstructions.

GEOLOGICAL SETTING

Six Mesozoic formations (with a seventh of Cretaceous?-Tertiary age) were recognized (Fig.1; Suárez and De La Cruz, 1992). The oldest (Ibañez Formation, Niemeyer *et al.*, 1984), includes a Mid-Upper Jurassic thick acid volcanic unit (calderas) with intercalated sedimentites. This unit was coeval with a widespread rifting episode in Patagonia (see Gust *et al.*, 1985). An intermitent marine transgression, that left preserved parts of truncated volcanic cones and locally was synchronous with active volcanism, marked the initiation of an Upper Jurassic - Lower Cretaceous widespread marine basin. A deepening - shallowing upward trend can be recognized in the sedimentary infill of it; from base to top the following units were recognised (Suárez and De La Cruz, 1992, in prep.):

- . shallow marine limestones, 6-40 m thick (Cotidiano Formation, defined in Argentina, see Ramos, 1981).
- . over 100 m thick succession of tuffs (including ignimbrites), tuffaceous sandstones and limestones. Toqui Formation (Suárez and De La Cruz, in prep.),.
- . Shelf and prodelta black shales (Katterfeld Formation defined in Argentina, see Ramos, 1981).
- . Deltaic (braid-delta) and tidal bioturbated sandstones, prograding to the west overlain by fluvial sandstones (Apeleg Formation, defined in Argentina, see Ramos, 1981).

Subsequently, the products of active subaerial volcanism (calderas) covered the area (Divisadero Formation, see Niemeyer *et al.*, 1984; Suárez and De La Cruz, 1992).

Extensional, strike-slip and locally contractional tectonics affected this rocks. The latter was observed north and south of Lago General Carrera, where post-Lower Miocene thrusts were identified (Suárez and De La Cruz, 1992).

CONCLUSIONS

The Upper Jurassic - Lower Cretaceous marine formations includes relatively shallow marine facies; no important fan-delta system were observed, suggesting the absence of steep margins. Therefore, it is inferred that the basin was formed by a widespread post-rift thermotectonic subsidence.

The post-Lower Miocene thrusting may be related to that described in Argentina at latitud 48°S (Ramos, 1989) and formed as a result of the collision of the Chile Ridge with the Chile Trench.

ACKNOWLEDGEMENTS

This work was financed by SERNAGEOMIN, Intendencia XI Region ad FONDECYT N°1930246.

REFERENCES

- GUST, D.A.; BIDDLE, K.T.; PHELPS, D.W. and ULIANA, M.A., 1985. Associated Middle to Late Jurassic Volcanism and extension in southern South America. *Tectonophysics* 166, 223-253.
- NIEMEYER, H.; SKARMETA, J.; FUENZALIDA, R.; ESPINOSA, W., 1984. Hojas Península de Taitao y Puerto Aisén, Región de Aisén del Gral. Carlos Ibañez del Campo. Carta Geológica de Chile, N°60-61, SERNAGEOMIN, Santiago, Chile 80pp.
- RAMOS, V.A., 1981. Descripción geológica de la Hoja 47ab. "Lago Fontana". Provincia del Chubut. Ser. Geol. Nacional. Ministerio de Economía, Subsecretaría, Boletín N°83, Buenos Aires.
- RAMOS, V.A., 1989. Andean foothills structures in northern Magallanes Basin, Argentina. *American Assoc. Petrol. Geol. Bull.* 73, 887-903.
- SUAREZ, M. and DE LA CRUZ, R., 1982. Geología de la parte oriental de las Hojas Puerto Cisnes, Coyhaique, Chile Chico. Unpublished report. Servicio Nacional de Geología y Minería, Chile.

FIG. 1 SCHEMATIC MESOZOIC STRATIGRAPHIC DIAGRAM

