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1985), uma bacia de retro-arco com flysch e molasse com polaridade para E alimentada pela erosão do arco.

Encerrando a atividade tectônica deste terreno, ocorrem pequenos corpos graníticos e vulcânicas alcalinas ordovicianas, contemporâneas ao magmatismo da Orogenia Famatiniana da Argentina.

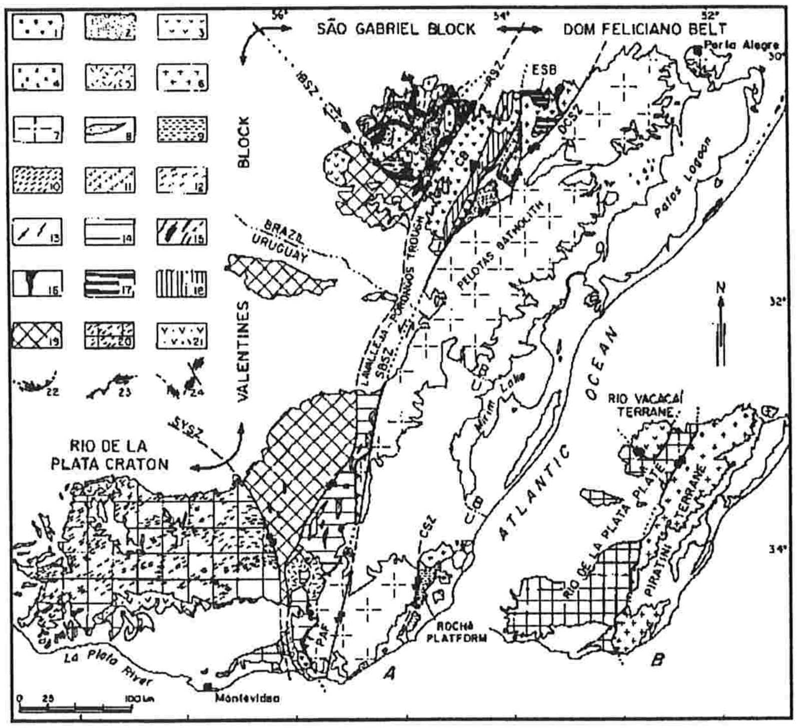

Fig. 1. Esboço geológico e tectônico do Escudo Gaúcho. 18, 19, 20 e 21- Embasamento paleoproterozóico com (21) greenstone belts, (20) com enxames de diques máficos, (19) com intrusões orogênicas neoproterozóicas e (18) milonitizado; 17- paragnaisses de alto grau; 16- anortositos; 15- ofiolitos; 14- Miogeoclínio Lavalleja; 13- Ortognaisses; 12 e 11- metavulcanogênicas; 8, 9 e 10- metaritmitos; 7- ortognaisse e granitos; 4, 5 e 6- granitos; 3- vulcânicas; 1 e 2- flysch e molasse (1) epiclásticos e (2) vulcanoclásticos; 22 e 23- falhas interplacas; 24- falhas intraplaca; Zonas de Cisalhamento: (SYSZ) Sarandi del Yi, (IBSZ) Ibaré, (IRSZ) Irapuá, (SBSZ) Sierra Ballena, (CSZ) Cordillera, (DCSZ) Dorsal do Canguçu: PAF- Front Pan de Azucar; ESB- Batólito Encruzilhada do Sul; CB- Bacia do Camaquã.

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THE AGUAPEÍ BASIN (SOUTHWEST AMAZONIA): A GRENVILLE AGE AULACOGEN OF THE SUNSAS OROGEN

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INTRODUCTION

The most complete geologic record of the Mesoproterozoic (1.6-1.0 Ga) of South America is represented by outrocops in southwestern Amazonia. Different authors (e.g., Litherland et al., 1986; Tassinari et al ,1987) have identified

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two tectonic cycles superimposed on an Eoproterozoic basement in this region, responsible for the building of two mobile belts: (i) the internal, NW/SE Rondonian Belt (Early Mesoproterozoic), and (ii) Sunsas Belt (Late Mesoproterozoic), marginal and with a WNW-ESE direction, associated with the subtransversal, NNW/SSE Aguapei inland basin (Fig. 1.A). Recent Proterozoic reconstitutions of supercontinents (e.g. Hoffman 1991, Sadowski & Bettencourt, 1993) have considered the Sunsas belt as an exposition of the Grenville Belt produced during the Laurentia-Amazonia collision at the end of Mesoproterozoic. In this correlaction, one of the weak points has been the lack of paleogeographic information on this possible margin. The aim of this work is to contribute to the tectonic and paleogeographic framework of the Aguapei basin, related to this marginal evolution, and which is interpreted as an aulacogen associated with the development of the "oriental" passive margin of the grenvillian ocean, represented by the Sunsas Belt. The deformation and metamorphism wich affected this margin are the product of its collision with Laurentia or with small terranes between the Amazonia and Laurentia plates.

THE AGUAPEÍ BASIN

Analysis of stratigraphy, sedimentology, structure, provenance and paleocurrents of the Aguapei Basin permitted the identification of three depositional episodes: 1) RIFT STAGE; 2) DOWNWARP MARINE STAGE; 3) INVERSION STAGE. In all of these evolutionary stages, the basin is transversally divided into three zones: the Central, Western Marginal and Eastern Marginal Zones (Fig.1a). In the Central Zone the sediments are immature and thicker and were affected by intense deformation caused by dextral NNW transpression and metamorphosed at greenchist facies, locally reaching the biotite zone (Theodorovicz & Câmara, 1991). From the Central Zone to the marginal zones, a gradal increase of sediment maturity and reductions of the thicknesses, metamorphism and deformation, are observed with anquimetamorphic and sub-horizontalised deposits at Rio Branco (EMZ) as welll as at Huanchaca (WMZ).

The RIFT STAGE encompasses conglomerates and sandstones deposited by alluvial and braided river systems passing at the top to shallow marine shelf deposits that mark the transition to the posterior stage. In The Central Zone the intense syn-sedimentary fault activity is reflected in the deposition of thick pockets of conglomerates, arkoses, feldspathic graywackes and quartz-graywackes. At the marginal zones thinner more mature quartz-conglomerates and quartz-arenites occur. The paleocurrent analysis indicates a preferentially longitudinal sedimentary infill with a subordinate NE as well as NW, tranversal pattern. (Fig. 1B).

The DOWNWARP MARINE STAGE records the period of maximum expansion of the depositional area of the basin, intense subsidence with varied facies associations. The thicker strata are again concentrated in the Central Zone, particularly at its southern extremity, thinning in the marginal zones (Litherland & Power, 1989; Saes et. al., 1987). The paleogeographic differentiation at this stage records a northwestwards transgression, characterized by coastal deposits in the northern region (Huanchaca, Ricardo Franco, São Vicente), shallow marine shelf in the middle region (Rio Branco, Santa Barbara) and deep marine deposits in the southernmost region (Santo Corazon, Serra do Amolar). The coastal deposits include a sucession of reddish, interlayered quartz-arenites and pelites, with SE

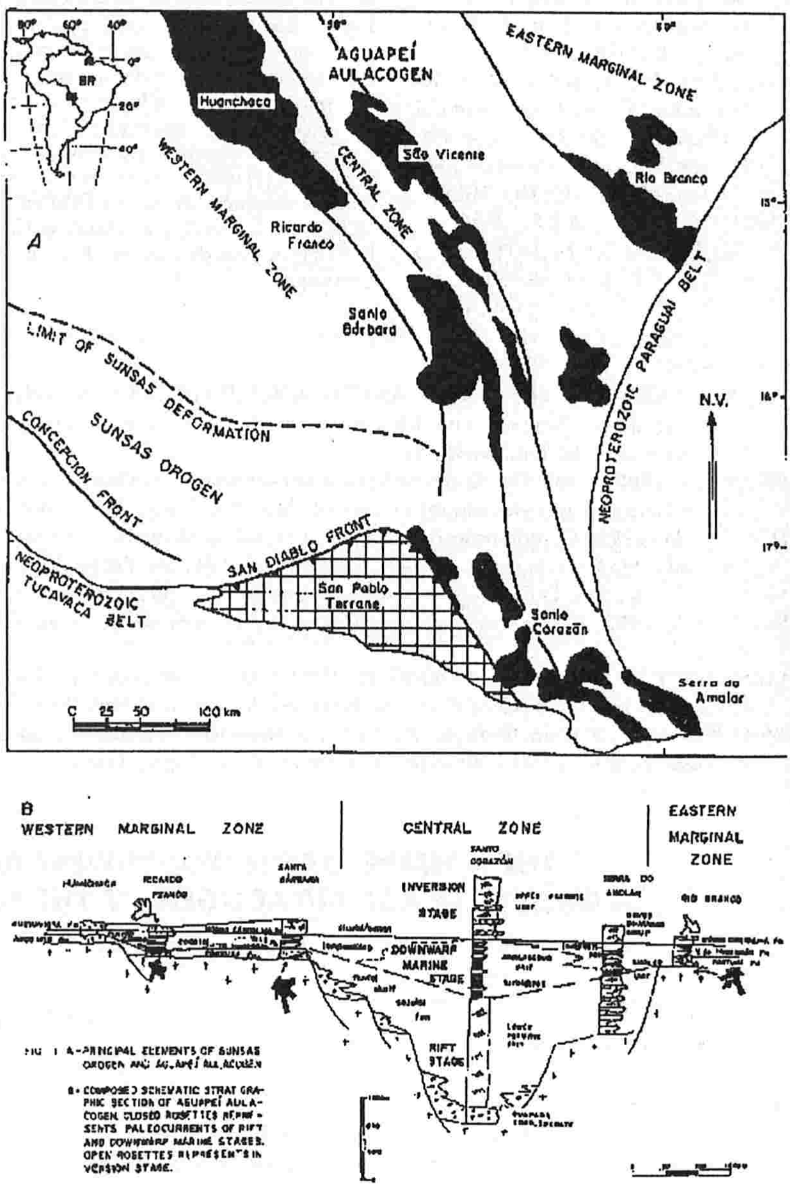

FIG 1 A-PRINCIPAL ELEMENTS OF SUNSAS OROGEN AND AGUAPEÍ AULACOGEN

B- COMPOSED SCHEMATIC STRATIGRAPHIC SECTION OF AGUAPEÍ AULACOGEN. CLOSED ROSETTES REPRESENTS PALEOCURRENTS OF RIFT AND DOWNWARP MARINE STAGES. OPEN ROSETTES REPRESENTS INVERSION STAGE.

directed paleocurrents (Litherland et al., 1986). The shallow marine shelf is represented by pelites and very fine sandstones arranged in coarsening upward cycles, with abundant hummocky cross bedding, wavy-linsen, sineresis cracks, diapirs, intraclasts and other structures characteristic of a shallow marine storm dominated context (Saes & Leite, 1993). The deep marine sedimentation constitutes the thick column of pelites with thin sandstone interbeds that, having the record of graded bedding (Litherland et al., 1986) sugest turbidite deposits (Saes & Leite, 1993).

The INVERSION STAGE has deposits markedly distinct from the previous stages, from which it is separated by a paraconformity in the marginal zones and by an unconformity in the Central Zone in the Serra do Amolar (Theodorovicz & Câmara, 1991). This unconformity, when considered with the paleocurrent and provenance analysis show a basin restructuration, with the source land at SE, and transport to NW of the sediments from there eroded, like alluvial fans and braided rivers locally reworked by eolian dunes. These deposits are thicker, coarser and less mature in the meridional portion of Central Zone, where are registered sandstones, pelites, conglomerates and diamictites with boulders of 1.5m of diameter, whose principal source is the sediments of previous stages, evidencing the autophagic character, similar to that observed in molassic deposits.

RELATIONSHIP OF SUNSAS BELT WITH THE AGUAPEI AULACOGEN

The model here exposed comes from two suppositions: (i) that the Aguapei Basin constituted an aulacogen, which is compatible with its transversal (Fig. 1.B.) and longitudinal paleogeographic differenciation, tectonic compartimentation and sub-transversal position with relation to Sunsas Belt, of same age and; (ii) that the Sunsas Belt represents a passive margin that has suffered subduction under a plate that came from southwest, considering the actual geographic coordinates. A possible evidence of this meridional plate is represented in the Fig. 1.A. under the designation of San Pablo Terrane, a possible suspect terrane.

The hypothesis that the Sunsas Belt could represent a subducted margin is supported by sedimentation, magmatism, mineral resources, deformation and metamorphism. Its metassediments, in acoordance with Litherland et. al. (1986) are correlated with those described in the Aguapei Basin, being the junction of the two basins - passive margin and aulacogen - exposed in Santo Corazon region. The magmatic rocks that in this belt are dominantly syn-tectonic, granites, forming concordant sheets with the principal foliation of the host rock, having mineralogic characteristics of crustal fusion granites, associated with migmatites and B, Be, W, F, Nb, Sn and Ta bearing pegmatites (Litherland et al., 1986), typical of collisional environments. The post-tectonic granites form small stocks, compositionally analogous to the previous and with high initial ratios of $^{87}Sr/^{86}Sr$ (e.g. Casa de Piedra Granite, 1005 Ma and initial ratio 0.7156; Litherland et al., 1986), sugestive of a genesis from crustal fusion.

These elements of the Sunsas Belt in conjunction with those described in the Aguapei Basin sugest the following evolution: (i) development of a passive margin in the southwestern margin of Amazonia in the beginning of Late Mesoproterozoic - Sunsas margin - and an interior rift - Aguapeí aulacogen, (ii) tectono-sedimentary evolution of this margin during the Late Mesoproterozoic and subduction under a southwestern plate, consequent deformation, collisional plutonism, metamorphism and generation of mineralized pegmatites. In this model, a possible evidence of the overthrusting plate may be situated south to San Diablo Front - the San Pablo Terrane - where only in this region are described calc-alkaline granodiorites, related to Sunsas cycle (San Pablo and Nomoca granodiorites, Litherland et al., 1986) presumably generated in a magmatic arc.

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