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AN EARLY EDICARIAN MAGMATIC ARC AT THE NORTHERNMOST PART OF THE "TRANSVERSAL ZONE", CENTRAL DOMAIN OF THE BORBOREMA PROVINCE-BRAZIL

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The aim of this paper is to introduce the concept of an Early Ediacaran magmatic arc (ca. 635-580 My) at the northernmost part of the Transversal zone, the central sub-province of the Borborema Province, northeast South America. This is based on the synthesis of different theses and dissertations, and other papers, carried out on this subject in the last 30 years.

The arc is now positioned between 35°15´and 40°30´ W (about 600 km long) and 7°15´ and 8°00´ S (up to 100 km wide), following a general E-W structural trend.

Based on field, geochemical, petrological and isotopic data, about 80 different stocks and batholiths of I-type granitic rocks have been mapped along this arc. These granitic rocks are preferentially intruded into low grade schists of the Neoproterozoic (Cryogenian-Ediacaran) Piancó-Alto Brígida ("SPAB") orogenic branching system (but nor exclusively).

Three classical supersuites of granitic rocks have since long time been recognized along this tectonic zone: a) epidote-bearing granodiorites and tonalites ("Conceição" type; b) high-K calc-alkaline granites ("Itaporanga type") and c) trondhjemites ("Serrita"). A fourth group, of per-alkalic and shoshonitic rocks occurs to the south of the previous ones, but they appear to reflect a special tectonic condition, following Paleoproterozoic basement segments, and may represent a superposed (rift-related?) tectonic setting.

The continental part of the lower plate (to the north) is characterized by NNE-SSW trending Paleoproterozoic fold belts, circumscribing important Archean nuclei. The oceanic part of this plate was completely recycled in the mantle by subduction, but some scarce ophiolitic remnants may be seen either among the low grade schist of the "SPAB" or as xenoliths within the granitic ("Conceição" type) intrusions.

The upper continental plate presents a WSW-ENE general structural trend and is composed of Neoproterozoic fold belts (Tonian and Cryogenian-Ediacaran), and with a linear segment of Paleoproterozoic basement, the Alto Moxotó terrain ("TAM"), to the south.

The limit between these two plates is now represented by a boundary transform ("Patos Lineament") of dextral character, which displays a very important linear belt of tectonites, 5 to 20 km wide ("keirogen") and more than 600 km long, at the southern edge of the continental lower plate (the so-called Rio Grande do Norte domain). A forearc belt, the Rio Salgado belt, is recognized immediately to the south of the Patos Lineament, comprising a volcanic-sedimentary sequence with meta-andesites and meta-keratophyres.