PALAEOPROTEROZOIC ARC-CONTINENT COLLISION IN THE SERRINHA SUPERTERRANE, BAHIA, SÃO FRANCISCO CRATON, BRAZIL

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Cratons and Precambrian orogenic belts are key geological sites to help understand how the continental crust grows. Present-day arc magmatism is generally invoked as one of the two major sources of mantle-derived material to make the continents grow; the other is input from mantle plumes. However, the recognition of ancient arcs is not simple owing to processes that occur along the boundaries of tectonic plates. For instance, when an intra-oceanic arc collides with a continental margin, both the arc and the continent may undergo deformation, metamorphism, and be intruded by syn- to post-collision granites. This geological situation may be further complicated when the rock assemblages were displaced laterally.

A similar geological scenario can be envisaged for the Serrinha Superterrane, São Francisco Craton, Bahia. This superterrane is composed of Archaean and Palaeoproterozoic terranes. The Archaean rocks are represented by migmatite-gneisses of the Retirolândia, Jacurici and Uauá complexes, whereas the Palaeoproterozoic rocks are represented by the Rio Capim and Rio Itapicuru greenstone belts.

Geological mapping support of a model in which an Archaean continental plate, represented by the 2980-3160 Ma Retirolândia-Jacurici gneiss-migmatite complexes collided with a Palaeoproterozoic arc represented by the Rio Itapicuru greenstone belt. The arc is composed of ca. 2158-2155 Ma TTG plutons, 2145 Ma metabasalts, and 2139-2127 Ma calc-alkaline plutons. Metasedimentary rocks of the greenstone belt contain 2126-2240 Ma detrital zircon grains consistent with clast sources entirely from the arc. Collision of the arc with the Archaean continent took place shortly before 2110-2105 Ma, when K-rich plutons were emplaced into the metasedimentary and arc rocks along the basement-greenstone transition. Between Santa Luz and Nordestina, the collision zone is represented by west-verging, Archaean banded gneisses (deformed migmatites and mafic dykes), overthrust by metasedimentary rocks and granites of the Rio Itapicuru greenstone belt. Far to the south, the collision zone is a sharp contact between Archaean banded gneiss and the 2130 Ma

Teofilândia arc pluton. During arc-continent collision, the Archaean basement has underthrust the arc and later, during continent-continent collision (2080-2070 Ma), it has been uplifted, undergone partial melting, ultimately giving rise to the present-day dome and keel structure.

In the north, the Rio Capim greenstone belt lies in sharp contact with Mesoarchaean rocks of the Uauá terrane. The Rio Capim belt is smaller than the Rio Itapicuru belt and is composed of dacite (2148 Ma), amphibolite and gabbros (2143 Ma), and metasedimentary rocks intruded by a 2128 Ma-old granite. The Rio Capim belt is a fragment of an oceanic arc and the Uauá block a remnant of the continent. However, unlike observations presented for the Rio Itapicuru greenstone belt and basement, the contact between the Rio Capim arc and the Uauá terrane is marked by upright shear zones. Kinematic indicators along these shear zones demonstrate that the Uauá block was displaced from south to north during oblique collision.

The Palaeoproterozoic Rio Itapicuru and Rio Capim belts, and the Archaean Retirolândia, Jacurici, and Uauá terranes seem to belong to an accretionary orogen very much like the North American Cordilleras.

PALAVRAS CHAVE: ARC-CONTINENT COLLISION, PALAEOPROTEROZOIC