

32nd IGC - Florence, 2004**Abstract title**

THE IMATACA COMPLEX AND THE CUCHIVERO GROUP: Nd SIGNATURES AND IMPLICATIONS FOR ARCHEAN AND PALEOPROTEROZOIC EVOLUTION OF NW AMAZONIAN CRATON

Authors

TEIXEIRA WILSON¹, TASSINARI COLOMBO¹, MUNHÁ JOSÉ²

presenter's e-mail: wteixeir@usp.br

1 - Institute of Geosciences, University of São Paulo

2 - Department of Geology, Faculty of Sciences, University of Lisbon

Keywords

Archean

Paleoproterozoic

Crustal evolution

Amazonian Craton

Nd isotopes

Abstract

The Imataca Complex (IC) is an allochthonous Archean block in NW Amazonian craton, where the Gury fault constrains the continental suture with the Maroni-Itacaiunas province (2.3-2.1 Ga). IC comprises mostly high-grade paragneisses. Calc-alkaline gneisses, migmatites and granitoids are also present, as well as marbles, quartzites, and bifs. During the Transamazonian orogeny (2.15-2.00 Ga) granulite metamorphism overprinted the Archean terrane, and contemporary plutonism took place. The Cuchivero Group (1.93-1.82 Ga) signs the southwest boundary of IC. It consists of a calc-alkaline association with quartz dioritic and granodioritic gneisses, tuffs and lava flows that unconformably overlie the Maroni-Itacaiunas province.

The U-Pb work investigated mostly zircons (IC granulites) with well-igneous oscillatory zoning. These sites provided indications of timing of high-grade events, and yielded 207Pb/206Pb ages of 2629 (5) and 2739 (14) Ma. A zircon core gives 2816 (7) Ma, agreeing well with the age of the La Ceiba migmatite. These data suggest a main period of accretion, high-grade metamorphism, extensive melting and migmatite injection during the late-Archean. Moreover, three dominant oscillatory-zoned (middle/end) sites yielded a weight mean 207Pb/206Pb age of 3229 (39) Ma, which is consistent with a mid-Archean age (ca. 3.2 Ga) for some IC protolith(s). A fourth site yielded 3036 (9) Ma, and reflect partial Pb loss during younger thermal events.

Thirty TDM model ages of IC rocks are between 3.2-3.0 Ga and 2.9-2.7 Ga. The youngest group of ages is consistent with some of the U/Pb zircon data above. This suggests the late-Archean was not only a period of crust reworking, but also of accretion of mantle derived material. Thus, the proto-Imataca (ca. 3.2 Ga) terrane must have grown considerably at that time. Seven TDM model ages of Cuchivero rocks are between 1.96 and 2.26 Ga. The calculated epsilon Nd (t) values range from +1.57 to -0.20, suggesting short crust residence for the protoliths - a contrasting signature compared with that of the IC rocks with epsilon Nd (t) values from -8.8 to -1.0.

From the above, the NW Amazonian craton was formed through successive juvenile and reworking events, during the Archean and Paleoproterozoic. The Paleoproterozoic scenario results from continental growth of the Imataca terrane into the proto-Amazonian craton, combined with further accretion of the Cuchivero volcanic-plutonic arc association at the late-Paleoproterozoic.

ACCEPTED as Poster Presentation

in session: "T06.03 - Dynamics of the Earth during Archean and Proterozoic"