West Gondwana assembly: a view from southeastern Brazil

A.C. Pedrosa-Soares[1*], C. Valeriano[2], C. Tassinari[3*], F. Alkmim[4*], G. Queiroga[4], I. Dussin[1,2*], M. Heilbron[2*] and T. Novo[1]

[1]*Universidade Federal de Minas Gerais, IGC-CPMTC, Campus Pampulha, Belo Horizonte, MG, Brazil; pedrosa@igc.ufmg.br*

[2]*Universidade do Estado do Rio de Janeiro, Faculdade de Geologia, Rio de Janeiro, RJ, Brazil*

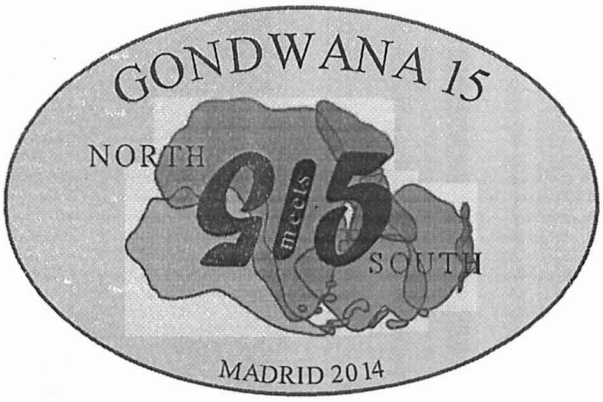
[3]*Universidade de São Paulo, Instituto de Geociências, Laboratório SHRIMP, Cidade Universitária, São Paulo, SP, Brazil*

[4]*Universidade Federal de Ouro Preto, Departamento de Geologia, Campus do Cruzeiro, Ouro Preto, MG, Brazil*

**Research fellow of the Brazilian Scientific Council (CNPq)*

Rock records from ocean opening and closure, like ophiolites and magmatic arcs, and of collisional to post-collisional magmatic events can provide important timing markers to solve palaeocontinent dispersal and assembly puzzles. The Araçuaí-Ribeira orogenic system (AROS), extending from southern Bahia to northern Paraná states in southeastern Brazil, includes rock records of all evolutionary stages expected from plate margin orogens, and presents a quite complete time record to figure out West Gondwaland assembly along that region and its counterpart in Africa (the West Congo and Kaoko belts). The youngest ophiolite slivers formed in AROS from ~ 660 Ma to ~ 595 Ma, and are found in places hundreds of kilometres apart from each other (e.g., Ribeirão da Folha, São José da Safira, Santo Antônio do Grama, Pirapora do Bom Jesus, Piên). These ophiolite complexes have been related to the Neoproterozoic Adamastor Ocean. Pre-collisional, calc-alkaline magmatic arcs (e.g., Rio Doce, Serra da Bolívia, Socorro, Cunhaporanga, Três Córregos) mostly developed from ~ 630 Ma to ~ 585 Ma, connecting AROS segments over almost 1500 km. This suggests that subduction of the northern Adamastor Ocean lasted at least until ~ 585 Ma. Ocean closure seems to have involved exotic terranes (e.g., Rio Negro island arc, Curitiba microplate) in the AROS segment to the south of latitude 21°S; to the north of this, an Adamastor ridge branch ended within an inland-sea basin (the Araçuaí–West Congo gulf) surrounded by the Congo–São Francisco palaeocontinent. The collisional climax, marked by the generation of a huge amount of S-type granites, took place from ~ 575 Ma to ~ 550 Ma along the AROS high-grade core. Late collisional (~ 550–520 Ma) thrust-related features occur in the northern AROS sector (associated with suture-related low-angle shear zones), and in the Búzios region (related to closure of a back-arc basin). Lateral escape tectonics along NE-trending, dextral, strike-slip shear zones, superimposed on preceding thrust fabrics, is a striking feature found from the central to southern AROS segments. A myriad of post-collisional plutons and mafic dykes intruded the AROS high-grade core from ~ 520 Ma to ~ 480 Ma, post-dating the collision-related regional foliation, as well as lateral escape shear zones. In this geotectonic scenario, the amalgamation of AROS together with the West Congo and Kaoko belts might be related to the regional collision climax (~ 575–550 Ma), which is a solid time marker for the assembly of this West Gondwana sector. As assembly of West Gondwana was coming to an end elsewhere, intraplate processes, including the latest closure of orogenic basins, terminal collision episodes, lateral escape shear zones and post-collisional plutonic activity, took place from ~550 Ma to ~ 480 Ma in the Araçuaí–Ribeira orogenic system.

GONDWANA 15
North meets South



ABSTRACTS BOOK

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